

Consumer Electronics Show ...what does it all mean?

Disruptors, Innovators & Cash Cows – the best of CES 2018



Industry Outlook

- CES is usually a reliable barometer for the state of tech industry and this year was no exception. The sector is, without doubt, experiencing a period of rapid expansion, with digital technologies permeating almost every vertical market.
- The show itself has become a huge event. This was the biggest show in its 51 year history, encompassing almost every strand of digital transformation, with 2.75 million square feet of exhibition space, 300 conference streams and numerous press events and launch parties. Of particular interest this year was the expansion of Eureka Park, the platform for start-ups, inventors and entrepreneurs. This section of the show had doubled to over 900 micro exhibitors, a very healthy sign for the sector.

So what's new for 2018?

- As usual there were lots of new product launches and initiatives, but no overwhelming headlines or brand new trends. CES 2018 was much less about the launch of new hardware categories or applications and much more about the continued evolutionary development to the established goals of smart people, cars, homes and cities.
- The show was really about 'ingredient technologies'. Those technologies that glue the industry together, or will enable future applications and solutions, ie 5G; AI; AR; VR; sensors; IoT etc and the movement to realising the goals above. In overall terms the industry could be seen as moving from a product-centric focus to more of a customer solution/service approach.
- Products featuring AI-powered voice assistants were present throughout the show, with Google Assistant very much sharing the limelight with Amazon Alexa.



Intel – Stand Out Vendor

- In terms of the stand out company for this year, for me I would have to say, Intel. The presentation from Brian Krzanich, Intel's CEO, showed vision and purpose. The push into processor-hungry applications such as 'True' VR and volumetric video (AI + advanced camera tech + millions of HD images) and the introduction of the Voxel (3D pixels) are real drivers for the company. Data and processing power is the underlying currency and will enable many new immersive video experiences. Intel identified the Sports sector as being a trail blazer in this regard.
- Neuromorphic Computing – mimicking how the brain learns and understands is still at an early stage, but Intel already have a prototype chip. This will be a key area going forward.
- A 49 cubit Quantum chip was also shown, illustrating the leap in power and capability now becoming possible. This will vastly reduce the time to resolve problems and speed up development.
- The [amazing show at the Bellagio featuring 250 light emitting drones](#) underlined the confidence shown by Intel (not to mention the flying car demo) and is a flag bearer for the wider market at this exciting time in the industry.
- The sections below summarise some of the key launches and development by market.

Tony Crabtree, Managing Director

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Consumer Electronics Show 2018



Key Facts:

- *51st Consumer Electronics Show.*
- *Over 170,000 attendees and 3,900 exhibitors.*
- *Amazon Alexa - the most talked about brand at CES 2018, for the second year running, with an expanding presence.*
- *Google – strong presence at CES, to promote the Assistant platform.*
- *Intel – showcasing a variety of processing capabilities across various verticals, showcasing the versatility of its processors in emerging computing spaces.*
- *Voice Assistants – the biggest trend for the second year running.*

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Key Takeaways from CES 2018

- **Development, not Disruption** – Once again, there were few breakout innovations at CES 2018, with the biggest announcements coming either from the integration of technologies (primarily voice assistants into other verticals) or the incremental improvement of existing technologies and devices.
- **Voice Assistants are Everywhere** – CES 2018 doubled down on voice assistants. Most particularly, *Alexa* and *Google Assistant*, with the latter putting on a large display and announcing devices with partners that directly compete with the Echo Show. Alexa and Assistant are both becoming integrated into more and more devices, from cooking appliances to light switches to smoke alarms.
- **Wireless Charging is Go** – Following Apple's announcement in support of the Qi standard, many more vendors showcased Qi wireless charging products. In addition to this, far-field wireless charging company *Energous* announced its first wireless charging products and commercially available chipsets.
- **Hybrid Computing Clams Up** – Many hardware manufacturers previewed flexible laptop devices, but most of those are moving away from tablet-like detachable hybrids and instead moving to 'clamshell' hinged designs.

Key Takeaways from CES 2018 - continued



- **The Robot Population Grows** – The number of robots offering various services, from companionship to support in the hospitality and retail industries, grew but offered few new innovations. The biggest improvements were in navigation and interaction, both supported by AI.
- **TVs Creep Forward** – TVs at CES were somewhat muted, with most vendors refreshing 4K line-ups, with only a few presenting 8K at this stage. However, many of these new devices implemented new sound capabilities, as well as a growth in the number that support voice assistants.
- **Autonomous Cars Inch Closer** – A variety of deals were signalled between automakers and technology firms like Intel and NVIDIA, with concept cars with timelines for release being displayed. However, there were few new innovations for cars to be available during 2018, with infotainment system refinement being the biggest development overall.
- **Specialist, Refreshed VR** – Several firms showcased VR configurations for specific use cases, from VR at the gym to a VR headset paired with EEG readers for therapeutic purposes. Combined with a new untethered HTC Vive, there is refreshed excitement for the possibilities VR can offer, although not much on show at CES.

CES 2018 Winners

CES 2018

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amazon alexa



- **For the second year running, Alexa has been one of the biggest talking points at CES.** The range of partner devices containing Amazon's voice assistant grew hugely at CES this year, expanding to include more white goods, light switches, mirrors and carbon monoxide alarms. The full list is now some 4,000 products. The Verge's Dieter Bohn tweeted: "By day four of CES we will be reporting when a gadget doesn't have Alexa or Google Assistant".
- Alexa is also coming to a range of Windows 10 PCs, independent of Amazon's partnership with Cortana. Acer, Asus, HP and Lenovo have all confirmed that they will be providing Alexa in their desktop or laptop line-up.
- However, this dominance is not going unchallenged, with several hardware manufacturers also providing options for Google Assistant compatibility in addition to Alexa, or selling different hardware for each assistant.

Google Assistant



- **Following Alexa's ascent, Google invested in a huge advertising campaign and presence at CES.** The number of devices compatible with Google Assistant was confirmed by the company to be over 1,500, behind Alexa. The company was also at pains to emphasise that the system can connect to a wide range of 'dumb' devices, as well as having things with the Assistant fully integrated.
- Google's wide portfolio of devices had a weaker presence outside its own booths, with Alexa being the assistant of choice for many. However, larger companies are showing a desire to support both digital assistants.
- The announcement of the Assistant-powered Echo Show competitors by Lenovo and JBL, at a time when there are questions over the ability to use YouTube over the device, could allow Google to regain some ground on Amazon in 2018, as well as expand into a larger range of use cases.

Juniper Phased Evolution Model

CES 2018

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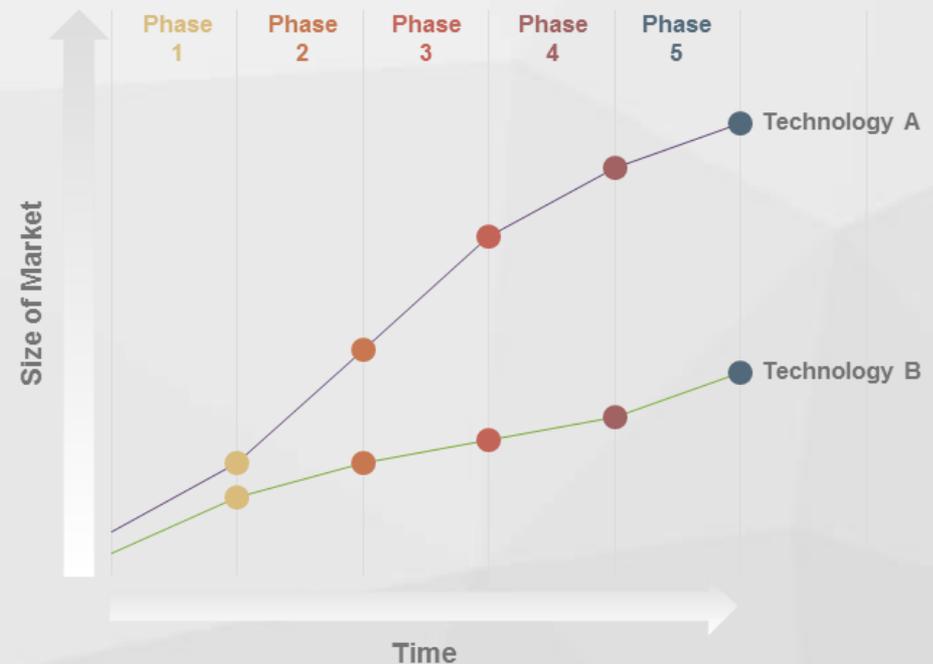
Juniper's Phased Evolution Model



We have outlined several key phases in the adoption of new technologies, which we categorise as follows:

- a) Phase I Technologies – Still in the early stages of development or market adoption, but offers significant potential.
- b) Phase II Technologies – Gaining traction in the market and moving to their third or fourth generation of development. Have yet to fulfil their potential.
- c) Phase III Technologies – Established technologies delivering good revenues, but still evolving. This is the early adopter stage and is generally when technology has its biggest impact.
- d) Phase IV Technologies – Technology and business case is established, with any expansion based on adoption by the late majority.
- e) Phase V Technologies – Initial markets are saturated. Category growth is achieved solely through expansion in new sectors and technology innovation.

Juniper Phased Evolution Model



Source: Juniper Research

CES 2018: Phased Development Summary



Phase I

3D Scanning, Autonomous Cars, Invisible Wearables

Phase II

3D Printing, ADAS, AR, Connected Appliances, Consumer Robotics, Exoskeletons, Smart Glasses, Smart Homes, Smart Toys, Smartwatches, Smart Clothing, Wireless Charging

Phase III (Auto):

Connectivity, Self-Parking, Vehicle Intelligence, Sensors

Phase III (Television & Home):

8K, Connected, Console Convergence, Curved, Sensors, Smart Homes, Voice Assistants, VR

Phase III (Mobile/Wireless):

Biometrics, Curved/Flexible, Drones, Fitness Wearables, Healthcare Wearables, Hearables, Sensors

Phase III (Media):

3D Scanning, Commerce, Entertainment, Crowdfunding

Phase IV & V

4K, Apps, Laptops, Smartphones, Tablets

Phase I Developments

CES 2018

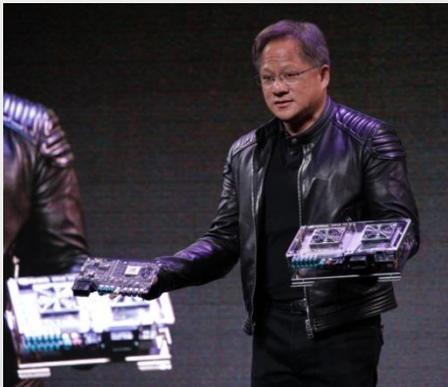
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Autonomous Cars

Fisker EMotion



NVIDIA



Toyota



- A great variety of autonomous cars, from both automakers and those providing the AI capabilities behind them, was on show at CES 2018.
- **NVIDIA** announced the Xavier autonomous vehicle SoC, which is capable of supporting level 5 autonomous vehicle capability. **Volkswagen** and **Uber** announced that they were using NVIDIA's existing Drive IX AV platform.
- Akio Toyoda, President of **Toyota** stated their goal to transition Toyota 'from an automobile company to a mobility company', becoming a MaaS (Mobility as a Service) business. Toyota unveiled their e-Palette Concept vehicle, a fully automated electric vehicle that can be scaled and customised.
- **Ford** took a much wider stance, positioning the car as part of an overall civic transportation system. In the words of Jim Hackett, the new President/CEO of Ford: 'How do we combine vehicles and technologies so they become more than the sum of their parts and redesign the surface transportation system of the world so that it is designed around communities?'

Related Research: [Autonomous Vehicles & ADAS: Adoption, Regulation & Business Models 2016-2025](#)

Related PR: ["ADAS & Autonomous Vehicle Software and Hardware Revenues to Exceed \\$35 Billion By 2020"](#)

Phase II Developments

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Consumer Robotics

Aibo by Sony



3E-C18 by Honda



LG



- The robots at CES 2018 were mostly refinements of previously existing designs, or explorations of new use cases rather than adding new capabilities to robots' arsenals at this point. Several of these robots are simply mobile extensions of voice assistants, most commonly Alexa or the vendor's own assistant.
- **Sony** refreshed its Aibo robot dog, with more realistic movement, more capabilities and a revised pricing scheme.
- Extending its customer service robots, **LG** showcased the CLOi range, offering enterprise models designed to provide customer service and object-carrying capabilities for the hospitality and retail industries.
- **Honda** announced a range of four '3E' robots to cater to different use cases, from transporting goods in the 3E-C18 to an autonomous off-road 3E-D18 vehicle, the 3E-B18, designed to carry people and the 3E-A18 customer service robot design.

Related Research: Consumer Robotics: Investment, Disruptors & Future Prospects 2017-2021

Related PR: "Robots to Reside in more than 1 in 10 American Households by 2020"

Smart Toys

Aflac Duck



Smartgurlz



- Insurer **Aflac** introduced the Aflac Duck as a robotic toy to comfort children undergoing cancer treatment. The duck responds to touch through sensors and will perform emotive actions through RFID emoticons and the scanning panel on its chest, to help children unable to express themselves. The toy is being provided free by Aflac to a range of children's cancer clinics across the US.
- The trend of teaching children to code using toys continues, this time with the **Smartgurlz** range of dolls, which can be programmed with a range of commands.
- Also in this kind of toy, following in the footsteps of Lego, **TACO** released the Robobrix and Playbrix ranges, which respectively teach children to code and provide a multimodal interface for educational experiences.
- One of the few stand-out ideas in the AR space was from **Merge**, who followed up the Holo Cube with the Merge Blaster, a toy gun that mounts smartphone AR on a toy gun for AR laser tag.

TACO



Related Research: [Smart Toys 2015-2020](#)

Related PR : [“Smart Toy Revenues to Hit \\$2.8bn in 2015, Driven by Black Friday & Christmas Holiday Sales”](#)

Smartwatches

Misfit Path



Garmin Forerunner 645 Music



Blocks Smartwatch



- A small range of smartwatch vendors debuted new products at CES 2018; the Path from **Misfit**, a device refresh from **Nokia**, and **Fossil** expanding its display smartwatch range through its licenced brands.
- Of particular note was the **Blocks** Smartwatch. In development since 2013, the device sports a modular design to allow easy replacement of parts as they wear out and addition of new capabilities as the user feels need of them.
- **Garmin** released the Forerunner 645 Music, the first smartwatch from the company to provide offline music capabilities, although this has been available on other devices for some time.
- With many smartwatches now the preserve of watch brands, CES has ceded its leadership in the smartwatch market to Baselworld and IFA, with relatively few smaller and non-technology brands being part of the event.

Related Research: [Smartwatches: Trends, Vendor Strategies & Forecasts 2018-2022](#)

Related PR: [“Hybrid Smartwatches to Make Up Over 50% of Smartwatch Shipments by 2022, as Fashion Beats Function”](#)

Smart Clothing

Xenoma



Under Armor



E-vone



- Smart clothing at CES provided newer version of sports apparel showing similar capabilities to those previously released, from similar vendors, with smart shoes particularly in the spotlight.
 - a) **Sensoria** announced some fresh biometric shoes for barefoot athletes, in partnership with **Vivobarefoot**.
 - b) **Under Armour** has announced its third generation of smart shoes with the Hovr Phantom and Sonic ranges, providing a battery life that is claimed to be as long as the shoe's own lifespan.
- For non-sports use cases, however, there were some new appearances.
 - a) **E-vone** is a smart shoe that can detect falls, intended for use by those with reduced mobility.
 - b) **Xenoma** showcased a whole variety of smart apparel that used sensors to track movement and biometrics; use cases ranged from game control to sleep tracking.

Related Research: Smart Wearables: Vendor Strategies, Opportunities & Forecasts 2017-2021

Related PR : "Smart Clothing Boosted by Pro Sports Sector, Igniting \$10 Billion Fitness Wearables Market by 2020"

Phase III Developments

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Smart Homes

Kohler Verdera



HiMirror Mini



Whirlpool



- **Amazon's** Alexa and **Google** Assistant were present in many devices at CES 2018, with many companies showcasing compatible devices, from white goods to toilets.
- Smart Mirrors are starting to gain pace, with **Kohler Verdera** and **HiMirror** both providing Alexa integration in a mirror; the latter also providing insights into the impact of any ongoing facial treatments through facial recognition technology.
- Some vendors provided multi-assistant devices at the show, most notably **Whirlpool**, with the Smart Front-Control Range. Meanwhile, **GE** announced a Kitchen Hub device and showcased their range of lightbulbs that support The Assistant and Alexa.
- Google's booth at CES showcased a huge range of devices that can connect via Google Assistant, although the company has some way to go to catch Amazon in terms of its ecosystem, with fewer hardware and software partners onboard Google's ecosystem at this stage.

Related Research: Smart Home Appliances: Hardware & eCommerce Opportunities 2016-2021

Related PR: "Connected Appliance Shipments to Pass 200m Per Annum by 2021 as Vendors Develop eCommerce Strategies"

Virtual Reality

Black Box



Lenovo



HTC



- **HTC** announced the Vive Pro, a fully wireless PC VR headset. This is a game-changer in terms of the user experience, although it does not make the technology any more accessible. It is enabled by a WiGig receiver from **Intel**.
- **Lenovo** announced a new wireless Daydream headset and was the only notable vendor to do so. Also showcasing new products were **Zeiss**, **Pimax** and **Emagin**.
- The last of these was focused on display components rather than purely headsets. Also showing off parts rather than hardware was **DisplayLink**, with a multi-user wireless VR capability.
- Several companies showcased VR content this year. Some of the most prominent included **Black Box**, with a VR gym experience, and **Looxid Labs**, using an eye-tracking headset with a linked array of EEG sensors to provide VR therapies.

Related Research: Virtual Reality Markets: Hardware, Content & Accessories 2017-2022

Related PR: “Wireless VR Set to Strain Data Networks, Generating an Additional 21,000 Petabytes of Traffic by 2021”

Health & Fitness Wearables

Omron



Motiv



Phillips



- This year several iterations of health and fitness wearables were shown, with **Garmin** and **Omron** releasing designs with several new features:
 - a) Omron showcased Project Zero watch, giving medical-grade blood pressure tracking.
 - b) Garmin Forerunner 645 Music, the first smartwatch released by the company to offer offline music provision and the ability to track stress levels.
- **Motiv's** software was revamped, providing more insights into sleep tracking, added Apple Health integration and support of Android by the end of H1 2018.
- **Phillips** released an ear-mounted sleep tracking device, with the latter providing the facility to play music to take users back into deep sleep, if the device senses the wearer coming out of it without a full sleep cycle

Related Research: Health & Fitness Wearables: Business Models, Forecasts & Vendor Share 2017-2021

Related PR: "More Than 1 in 5 Americans to Use Activity Trackers by 2021, as Market Pivots from Fitness to Health"

Hearables

NuHeara



- Following the winding down of Doppler Labs, **Nuheara** is now the leading light of hearables.
 - a) The company announced 3 new hearables; a refresh of its IQbuds, a LiveIQ device with active noise cancellation and IQbuds Boost which offers automatic hearing threshold calibration.
- Alongside a software refresh that enables a host of its older headphones access to Google Assistant, **Sony** unveiled some new true wireless noise-cancelling headphones and more wireless fitness-focused earphones.
- Although there was little in the way of hardware, hearing-aid manufacturer **Oticon** showcased a refresh of its software in the form of the HearingFitness app

Oticon



Related Research: Future Hearables: Strategies, Opportunities & Forecasts 2017-2022

Related PR: "Hearable Devices In-use to Exceed 285M Globally by 2022, Thanks to 3.5mm Jack Retirement"

Phase IV & V Developments

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Smartphones, Tablets & Laptops

Razer



Vivo



Acer Swift 7



- **Vivo** beat Apple to the punch by producing a smartphone that has a fingerprint sensor under the screen. The sensor can reportedly penetrate glass, aluminium and OLED.
- In what seems to be an emerging trend on its stand, **Razer** showcased a more experimental concept than we are currently used to. Razer's Project Linda has expanded on the ground broken by Asus with the Padfone range, and produced the first smartphone-based laptop. The smartphone in question acts as a touchpad and processing power for the laptop.
- **Acer** has produced the Swift 7, the world's first laptop that is less than 1 cm thick.
- Alexa is coming to a range of Windows PCs, from **Acer**, **Asus**, **HP** and **Lenovo**. This has interesting implications for **Microsoft's** Cortana, which had a small presence at the show.

TV Technologies

Samsung



NVIDIA



While CES is always the home of many new TVs, this year was no exception, with several new display technologies and blends of hardware and software that place TVs in the smart home.

- **LG** showcased a 65-inch 4K TV that can be rolled up into a tube for easy portability. It also integrated Google Assistant into a remote.
- **Samsung's** TVs showcased a new MicroLED technology which allows the building of modular TVs, on any size up to a wall. The company also announced that all new Samsung TVs will come with Bixby, Samsung's voice assistant, onboard. The company also announced 65-inch 8K TVs.
- **Sony** expanded the size of its Acoustic Surface TVs, as well as upping the size of its range of OLED TVs.
- A newcomer to the TV scene, **NVIDIA** showcased a 65-inch HDR monitor with integrated Shield console. While not technically a TV, it uses a lot of the same technologies.

Related Research: [Digital TV & Video: Networks & OTT Strategies 2017-2022](#)

Related PR: ["OTT TV Revenues to Surge, Approaching \\$120 billion by 2022"](#)

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