

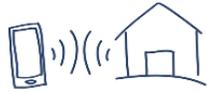


CES Highlights 2016

mm1

CES Highlights 2016

Key trends and insights



Smart Home & Appliances: Most established brands presented only smaller innovations, whilst new players were taking over niches. The trend towards devices and gateways with multiple protocol support is continuing.



Virtual Reality & SmartTV: Virtual Reality headsets have been riding a years-long hype train, and have yet to break through to the mainstream. Expected technical improvements for SmartTVs.



Electric & Connected Cars: Three key trends dominated the CES: Electric mobility, connectivity and autonomous cars.



Smartphones & Tablets: Further evolution – overall little innovation for mobile terminals in this field, which have mainly been presented by new market players.



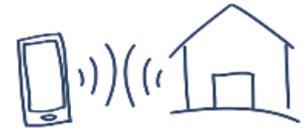
Health & Wearables: The trend for smartwatches and fitness trackers continues, but especially smart health is rising in the wearables market. Niches such as smart baby accessories or more professional, mobile devices are becoming popular.



Drones: Drones take a flight at this year's CES. Last year only 4, now 33 drone companies were in Vegas demonstrating applications also in commercial fields such as retail or people transportation.

Smart Home

Further players have joined the Smart Home market, offering new platforms and standards or joining forces



Alarm.com



- Alarm.com is a cloud-based Smart Home platform with firm grip on home security and surveillance
- Supporting mostly proprietary products, Alarm.com does now support Apple TV, Apple Homekit and Amazon Echo
- Voice command will be enabled via Siri and Alexa

WiFi HaLow



- The WiFi Alliance introduced a new WiFi standard based on 802.11ah
- It operates in the 900Mhz spectrum (in Europe expected to be 868Mhz) and therefore offers a wider range at reduced energy consumption
- Based on WiFi, HaLow will adopt most of today's existing protocols

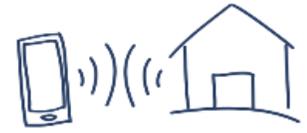
Telefonica O2



- In 2015, O2 UK announced to corporate with AT&T Digital Life for a Smart Home platform
- The British operator will now offer central heating, home security and energy management to their 25m customers
- AT&T will provide the software behind the full system, whilst the smart thermostat maker Tado as well as other hardware manufacturers have confirmed to support the new platform
- Similar to most other Smart Home systems, the O2 version will comprise a hub, accessories, a cloud backend and a mobile app to control the ecosystem
- "Smart" products such as the thermostat will learn from the user's habits and optimize their behavior

Smart Home

White Goods have been improved hardware-wise, but with little development in features and connectivity



Samsung Family Hub



- The Family Hub refrigerator utilizes Samsung's Tizen OS and fits in Samsung's ecosystem
- It comes with a 21.5" screen and speakers to interact with all members of a family
- A calendar helps managing appointments, apps can be used for surfing, shopping or recipes
- An in-built camera helps to keep overview about the content of the fridge

LG LDT8786ST



- LG's new dishwasher is not always online, but can be connected to other devices
- It can be maintained and monitored through apps for troubleshooting or cleaning
- Target is to increase customer satisfaction and avoid unnecessary support calls
- Other features deliver a better cleaning experience or water savings

Smarter Fridge Accessories



The Smarter Fridge products, a camera, a mat and a sensor, keep track of the content of a fridge and recognise when a product has been taken out.

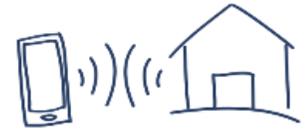
Whirlpool



Whirlpool has integrated Amazon's Dash Buttons in their latest products to allow the customers to order household products with one touch.

Smart Home

The trend towards hubs with multiple protocol support continues, whilst established players drive innovation



Asus



- The first Smart Home bridge based on Google's Brillo
- It works with all Asus Smart Home products and can be set up with a mobile application
- Further products based on Brillo have been announced for 2016

SmartThings Extend

- Samsung SmartThings announced a USB dongle, the Extend, that can be plugged into Samsung's UHD TVs and will enable all Samsung UHD TV's for the full SmartThings product range
- The User Interface will be integrated in all new TVs and optimized for this experience to trigger additional routines from the TV
- The USB dongle supports Zigbee and Z-Wave, whilst WiFi products will be supported by any router
- Samsung announced, that the dongle will be given to customers for free with the purchase a new TV in 2016 – making it the first free TV hub on the market

LG SmartThinQ hub

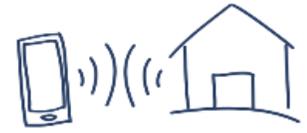


- LG announced an own hub that will be working with the SmartThinQ products
- The hub comes with a 3,5" display on top, an integrated speaker and supports WiFi, Bluetooth and Zigbee
- LG's SmartThinQ ecosystem will be compatible with the AllJoyn framework



Smart Home

The rising number of “smart” devices leads to a demand for intuitive control variants



Sevenhugs SmartRemote

- SmartRemote is a “point and control” device, that can be used to control different smart solutions at home
- By triangulation and integrated sensors, the Smart Remote knows where it is pointed at and will automatically adapt its display to the product
- Open APIs, communities and customizable scenarios are planned as well
- Sevenhugs offers further Smart Home products, such as a sleep analyzer for the family



Senic Nuimo



- Nuimo is a wireless controller for a range of smart products such as Philips hue, Sonos or Apple TV
- The LED display on the top indicates the product or scenario it is connected to, and by clicking, swiping or rotating, the customer can initiate different actions

NEEO Remote



- NEEO is a smart remote device with a high resolution touch display on the front
- It works with an app that can be downloaded to the user’s phone
- NEEO Remote supports WiFi-based products and is enabled for Zigbee and Thread

Smart Home

New players are filling niches with innovative appliances for the Smart Home, apart from established ecosystems



Doorbird



Doorbird comes with built-in speakers and a HD camera that can either be used for interaction with the person at the door or for facial recognition for the system.

Haiku Fan



The smart fan can be controlled by an app, but it also can be connected to the Nest thermostat to automatically switch on or off.

Cujo



Cujo is a Smart Home hardware firewall, that comes with an app. Once connected to a router, the device screens all incoming and outgoing data streams for possible threats.

Smart Vent



Keen Home's Smart Vent retrofits to existing vent systems and can be controlled wirelessly by other devices.

Sensorsphere



A modular sphere, that consists of different, exchangeable sensors and actors such as a thermometer, a CO2 sensor, speakers, a camera and more.

hiku



hiku is a smart shopping tool that allows you to scan and use voice commands to instantly add items to your grocery list.

Virtual Reality & SmartTV

Smart TV: few new features, only expected technical improvements - bigger, brighter, thinner, smarter



Over-The-Top Services

Netflix launches in 130 new countries, including India but not China. These new markets take Netflix, which claims 70 million customers, to more than 190 countries worldwide. OTT services in general have conquered more devices, but no new services have been announced.



Cameras

More and more companies presented 4k camcorders. Prices are going down and products are richer on features.

Year of high resolutions

TVs become bigger, crisper, and get higher resolutions. 2016 is the year of 4k, nearly all manufacturer present 4k TVs. Even more and more 8k TV's are presented. Content quality is also catching up (Netflix and Amazon are already streaming their content in 4k resolution), 3D seems to be dead.



LG pushes OLED

LG believes in paper-thin, flexible OLED Displays and invests more than 1.5bn € in OLED technology.



HDR

High Dynamic Range provides better dynamics, colors and contrast. Last year only Samsung, this year most brands offer HDR – but content is still lacking.



Virtual Reality & SmartTV

Virtual Reality headsets have been riding a years-long hype train, and have yet to break through to the mainstream



HTC Vive



HTC unveiled its a new power-packed VR headset HTC Vive.

Available from: April 2016
Price: Probably above Oculus
Customer focus: High-End Gamer

Oculus Rift



Oculus Rift is the virtual reality headset that started the current hysteria, available to order now.

Available from: March 2016
Price: 700€
Customer focus: (High-End) Gamer

PlayStation VR



Sony announced a launch date for its PlayStation VR and is working on more than 100 titles.

Available from: First half of 2016
Price: Not announced yet
Customer focus: Gamer

Samsung Gear

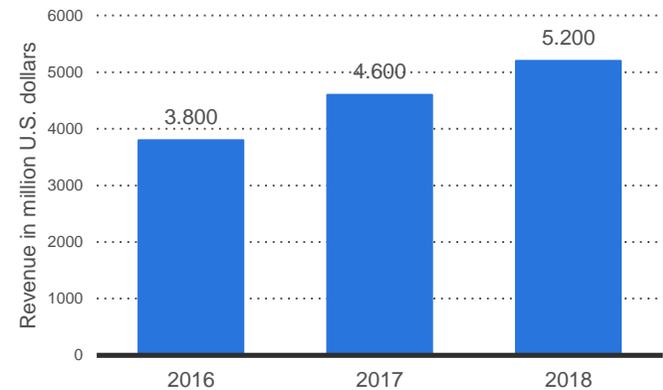


The Gear VR is like a smartphone accessories. It uses the display of smartphones to watch movies or play games.

Available from: Already available
Price: Around 100€
Customer focus: Smartphone Users

Market Outlook

Forecasted revenue for virtual reality products worldwide



Source: Statista 2016

- At this years CES Virtual Reality is seeing another leap toward being something consumer can afford and actually use.
- Virtual Reality will break out of the geek realm in 2016, however, thanks to smart devices like the Samsung Gear Virtual Reality and finally, Oculus Rift. With a PlayStation VR headset in the works, this tech can go mainstream fast.

Electric and Connected Cars

Trend 1: Further automotive brands are presenting cars specialised in electric mobility



BMW



BMW showed at the CES a convertible version of its hybrid i8 – the i8 Spyder, which is an optimized version of the already well connected i8.

GM



The forthcoming Chevy Bolt can be the first mass-market electric vehicle with a reasonable range and price. It will be sold for less than 30,000\$.

Volkswagen



VW is pushing into the connected, electric new mobility era and presented the BUDD-e electric minivan, that harked back to the glory days of VW's iconic Camper.



Faraday Future

- Faraday Future, which is backed by the Chinese internet TV provider LeTV, unveiled its Batmobile-like concept electric hypercar: a one driver race car with 1,000HP
- They have pledged to invest more than 1bn\$ in the plant and eventually employ more than 4,500 workers.
- FFZERO1 interior will support personalized driving based on the driver's body as well as smartphone data.

Electric and Connected Cars

Trend 2: Connectivity in cars puts more and bigger screens into focus of consumers



It is all about screens

Bosch

Bosch's show car is demonstrating a new dimension of human-machine interaction. The dashboard and central console have been transformed into an electronic display with haptic feedback, which can be used for video conferencing or working. Furthermore, Bosch integrated Smart Home control features in their car, allowing customers to control lights, heating and other features on the go.



Volvo

Volvo unveiled a concept car with a giant video screen which flips up from the dashboard for the driver to enjoy TV and films while the car's computer takes over the driving.



Audi

Customers can virtually configure and experience different Audi models with the help of VR headsets.



BMW AirTouch

BMW revealed a gesture control system that utilizes a 3D sensor in the roof of a car to read hand movements made in front of the dashboard.



BMW Helmet

BMW also presented a head-up display for motorcyclists, integrated in a helmet.



Electric and Connected Cars

Big players are partnering to innovate together in the automotive industry



Volvo and Microsoft



Microsoft has teamed up with Volvo to bring some vehicle function controls to its Band 2 fitness wearable. Consumers will be able to set navigation, lock doors, turn on the heat, flash the lights, or sound the horn through the wearable and its companion app.

Ford and Amazon

Despite first speculations, Ford didn't announce a partnership with Google at CES. However, they announced a tie-up with Amazon using its voice-activated speaker Echo to enhance communication between cars and homes – allowing consumers to open their garage before they arrive home, or turn the lights off from the car. The connected systems could allow a driver to use voice commands activated by a button on the steering wheel.

Microsoft and Harman



Microsoft partners with Harman to inject a dose of Office 365 and the Cortana virtual assistant into car infotainment. Without compromising safety, Cortana enables consumers to hear and respond to emails, schedule meetings, join conference calls without manually inputting phone numbers, and manage tasks throughout the day.



Electric and Connected Cars

Trend 3: Self driving cars are no longer a thing of the future



Mercedes

The new Mercedes E-Class can manage to drive almost autonomous on highways. Regulators have given Mercedes-Benz a license to test the new E-Class "standard-production" cars in autonomous mode.



Volvo

The Swedish car manufacturer introduced the Volvo S90 with the Pilot Assist feature as the first US car to boast semi-autonomous tech as standard.

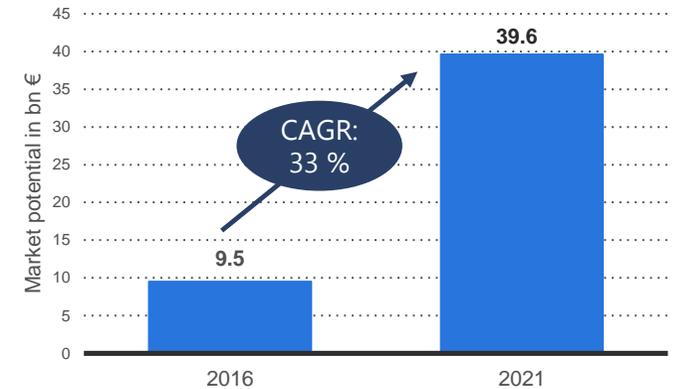


GM

General Motors just announced a partnership with Uber competitor Lyft to develop driverless cars.

Market Outlook

Market potential autonomous driving worldwide



Source: Statista 2016

- The race to evolve autonomous cars to the next level changed with several announcements of automotive OEMs at CES 2016 in Las Vegas
- Technology is not the biggest issue, the main challenge of getting autonomous cars onto the road is about changing people's cultural perception about cars, the way they operate and who owns them

Wearables

Fitness trackers and Smartwatches are still popular in 2016, following the first steps from previous years



Smartwatches



Samsung Gear S2

Gear S2 will run on Tizen rather than Android and will be compatible with iOS as well. It comes in several colors and design variants by different designers and has some hardware updates such as longer battery lifetime, additional buttons and stronger CPU/RAM.



Casio WSD-F10

The first smartwatch by Casio is based on the experience of the G-Shock. It is designed to stand against more extreme outdoor situations: the watch is waterproof to 50 meters and carries a mil-spec 810G rating for protection from shock, vibration, temperature extremes, humidity and more. It also has several sensors, meters and a compass inside.



Fitbit Blaze

Fitbit Blaze automatically recognises and monitors training sessions and shows tips during workout. The inbuilt GPS tracks runs and bike rides, but the watch can also be used to control the smartphone or manage incoming messages.

Activity



Misfit Ray

Misfit's new fitness tracker that can be worn as a bracelet or necklace. It tracks the user's activity and sleep cycles and is waterproof to up to 50m.



HTC Under Armour

HTC partners with Under Armour to create a smart band and a scale to monitor activities with an app and health platform.



Withings Go

Withings Go is a budget fitness tracker with E-Ink display, that will last up to 8 months on a single battery.

Connected Health

Wearables have become more than just watches and fitness tracker, putting health into focus



Withings Thermo



A smart thermometer that is connected to an app and tracks the temperature. It comes with 16 infrared sensors, letting it measure from the body surface.



Philips Lumify

A portable, app-based ultrasound device that can be connected to any compatible smart device to perform ultrasound diagnosis.



Mocacare Mocaheart

This tracker measures the heart beat and blood pressure through the user's thumb. Once measured, it sends the data continuously to an app on the user's smartphone.

Blood Pressure Monitor



Two different kind of light weighted blood pressure monitors than can be connected to an app.



Pacif-i

A smart pacifier that measures the baby's temperature. Parents can also manage medications or track the pacifier with the corresponding app.

Reliefband

A device for drug-free treatment of nausea and vomiting associated with pregnancy or motion sickness through impulses.



Smart Accessories

Innovation in niches has been growing over the last year, attracting new players



Security

Presence



A smart outdoor security camera with a flood light, that can automatically tell the difference between people, vehicles and animals.

Macate Gatca Elite



A high security phone with AES encryption, fingerprint sensor and face recognition. The "Geolock" feature keeps data locked except in specific locations and it locks itself when a SIM has been changed.

Roost



Roost is a smart 9V battery that can be plugged into normal smoke detectors to make them smart by informing the owner on the smartphone, if an alarm goes off.

Clothing

Owlet



Baby socks, that can monitor the baby's heart rate and oxygen level and will automatically alarm the parents in case of unusual behavior.

Digitsole



A "smart" shoe that works as a step counter, warms the feet and automatically adjusts to feet size.

Samsung Welt



The Samsung Welt is a healthcare belt that tracks the customers behavior through different sensors.

Smartphones

A hygiene field with little innovation by established brands, but by new players mainly from China



LeTV Le Max Pro

New player



The world's first Smartphone with Snapdragon 820, which supports ultrasonic fingerprint scans, 802.11ad with Gigabit WiFi and Quick Charge 2.0.

ZUK Z1

New player



Low priced product with 5,5", 2,5Ghz Quad-Core, 3GB RAM, 64GB internal memory, 13MP cam, 4.100mAh and Cynogen, an Android-based OS. Shortly announced before CES.

ASUS ZenFone Zoom



The ZenFone Zoom comes with a 3x optical zoom for its 13MP camera and similar to ASUS's ZenFone 2, it has a 5.5" screen, 5MP front camera and Android 5.

Huawei Mate 8



6" display with Octa Core technology, new Mali T880 graphics chip, 4.000mAh battery and dual SIM support.

LG K Series



The K series is an average spec'd smartphone product line with focus on midrange phablets (5.0" and more). The devices come with curved screens.

YEZZ Sfera



A midrange smartphone with a 360° camera, that can take photos and videos for 3D or Virtual Reality goggles and helmets.

Tablets

Convertibles and premium hardware are the key trends



HP Spectre x360



Two high-end variants with up to 15,6" display, 4k display and Intel i7 Core. The convertible comes with Bang & Olufsen audio and up to 512GB SSD.

Samsung Galaxy Tab Pro S



Samsung's first product with Windows 10 is a 12" convertible tablet with keyboard, Super AMOLED Display and 10h battery duration. Furthermore, with 6.3mm thickness is the Tab Pro S significantly thinner than Apple's iPad Pro or Surface Tabs.

Lenovo ThinkPad X1



A Windows 10 tablet that can be modified by the customer, for example with additional batteries, a 3D camera or a projector, similar to Lenovo's Yoga Tab 3.

Huawei Mediapad M2 10.0



Huawei announced a high-end tablet with 10" Full HD display, Octa Core technology, 13MP camera, 4 speakers and Harman Kardon's Clari-Fi audio software. On top, the M2 has a fingerprint sensor for advanced security.

Drones

Drones are no longer toys anymore, being designed as sports accessories, retail logistic or even people transport



EHang 184



The first passenger drone concept called EHang 184, which is a human-sized drone built by the Chinese UAV company EHang. It is an autonomous drone that will be able to carry a single passenger for 23 minutes at a speed of 60mph.

Parrot Disco



Parrot unveiled an entirely new model that can take off, steer, and land all on its own. It's meant to make starting with a drone easier for amateurs and can be easily controlled via Wi-Fi through the company's FreeFlight smartphone and tablet app.

DJI Phantom 3



DJI, announced the DJI Phantom 3, an affordable 4k drone. DJI will also intensify its activities in commercial applications.

Lily Camera



Lily Camera is more a flying camera than a drone. you throw it in the air – it will then fly and record a video of you.

GoPro Karma



GoPro will launch its disruptive 360 degree flying drone camera called Karma this year.

mm1 – the Consultancy for Connected Business

Key facts and origins

- Founded in 1997 by experienced McKinsey consultants
- 50 consultants with more than 300+ successful consulting projects
- Expertise in IoT business models, new product development, improving customer experience, optimizing processes and organizational capabilities

There will be 4bn mobile subscriptions worldwide

2016

Global data volume reaches 88,000,000,000 terabytes

Over half of the world's Internet traffic will come from Wi-Fi connections

Ubiquitous networked connections between people and things offer new business opportunities and challenges. We help organizations to facilitate the development, implementation, and marketing of new products and services that cater to an increasingly digital world.

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