



# Mobile World Congress 2016 Selected Highlights

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# Mobile World Congress 2016

## Key trends and insights:



- 1. Virtual Reality: The next big thing?** VR devices are omnipresent and electrify industry leaders; Mark Zuckerberg joins Samsung to promote Oculus.



- 2. Internet of Things: New solutions based on new standards.** Mobile operators and vendors showcase demonstrations of LPWA technology in licensed spectrum.



- 3. Connected Car: Incremental innovations are market ready.** Volvo, Seat, and Mercedes present key-free future; Ford triples investment in self-driving cars.



- 4. Devices: Lack of innovation haunts vendors.** Wearable devices proliferate with eSIM, smartphones barely differentiate, vendors competitive struggle intensifies.



- 5. Smart Home: New gateways and UI concepts.** Renaissance of gateways thanks to blue-chips' (Sony, Amazon, Google, etc.) battle over customer touchpoints at home.

# Virtual Reality: The next big thing?

## VR devices are omnipresent and electrify the industry leaders.



### VR Headsets: from niche to mainstream



Major smart device OEMs (HTC, Samsung, LG, etc.) claim first mover advantage by paving the way for virtual reality in the mass market and offering VR headset bundles with smartphones. Expanding also into the low price segment.

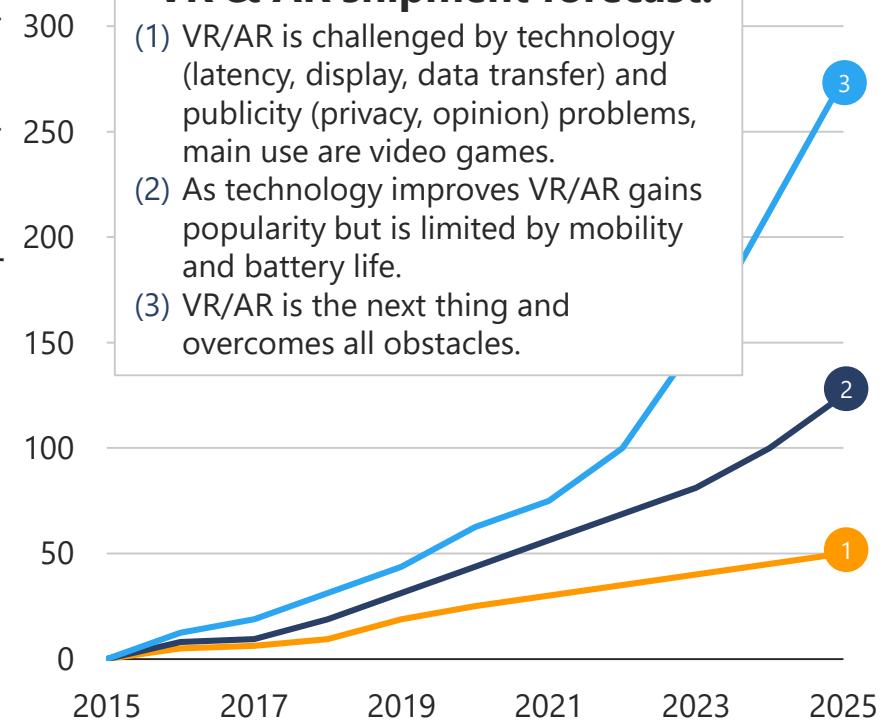
### VR Content: Recording was never easier



Consumer focused recording devices lower the barrier to produce VR content. Samsung and LG released & showcased 360° recorder that are both affordable and easy to use. Enabling easy recording and sharing of 360° experiences on social media platforms.

### VR & AR shipment forecast:

- (1) VR/AR is challenged by technology (latency, display, data transfer) and publicity (privacy, opinion) problems, main use are video games.
- (2) As technology improves VR/AR gains popularity but is limited by mobility and battery life.
- (3) VR/AR is the next thing and overcomes all obstacles.



**Shipping out  
2mn**

Number of Google Cardboard head-mounted displays distributed since launch.

**Selling out  
45 hours**

Time it took until Samsung VR Gear was sold out on Amazon & BestBuy.

**Content coming  
100**

Number of VR games that will be available in 2016, according to Oculus.

Source: Goldman Sachs, Virtual & Augmented Reality Report, January 2016



# Virtual Reality: The next big thing?

Besides gaming and entertainment a plurality of new use case scenarios arise.

## Social Media & Life Events



Facebook, YouTube & Google already incorporated easy-to-use 360° functions into their services. The vision of Mark Zuckerberg is that VR will be the next evolution of sharing and interacting on Facebook. But the money is in another market. Samsung showcased a VR rollercoaster – a hint to a probably huge potential use case. Furthermore, VR livestreams of events enable everyone to sit in the first row. A use case CNN already tested with the first democratic presidential debate.



## VR market-segment potential:

Videogames  
\$ 11,6bn  
215mn

Live Events  
\$ 4,1bn  
95mn

Video  
\$ 3,2bn  
79mn

Retail  
\$ 1,6bn  
32mn

Education  
\$ 0,7bn  
15mn

Engineering  
\$ 4,7bn  
3,2mn

Source: Goldman Sachs, Virtual & Augmented Reality Report, January 2016

## Entertainment & Gaming

Gaming and entertainment dominate existing VR use cases, building a solid base for future use cases. Gaming companies pushed in the market early and already make money of VR. Full gaming VR experience requires often extra hard- and software, a potential barrier. Cinematic VR entertainment seems to be closer to leverage the potential of VR – especially when being able to deliver it mobile. A potentially big market. The adult entertainment industry already generates money from VR content and sees the technology as a game changer.



# IoT: New solutions based on new standards

Internet of Things fits perfectly to MWC's 'mobile is everything' tagline.



## Connectivity & 5G



Ultra narrowband IoT as an connectivity standard. **Sigfox** showcases applications like connected temperature sensors, tracking devices, wind-speed gauges, fire hydrant valves, home security systems, smart trash cans and even smart beehives.



5G is seen as future IoT network. With higher capacities and lower latencies, it will enable a lot of use cases. **Deutsche Telekom** partners up with **Huawei**, **Samsung** and **Stanford's SoftRan Initiative** to showcase an E2E system for 5G.



**Vodafone** cooperates with network suppliers **Intel** and **Qualcomm** to release its own 5G network by 2020. It predicts speeds of up to 10Gbit/s.

## Alliances



**OPEN  
CONNECTIVITY  
FOUNDATION™**

**ngeña**

**Amazon Web Services** and **Ericsson** cooperate to support businesses with a fast and easy rollout or expansion of their IoT solutions. With this move Ericsson enters the agile world of web services.

**Intel**, **Microsoft**, **Samsung** and other tech companies form the Open Connectivity Foundation (OCF). The goal is to unify IoT standards so that companies and developers can create IoT solutions and devices that work seamlessly together.

Leading international telecommunication companies (**Deutsche Telekom**, **CenturyLink**, **Reliance** and over 20 additional service providers) are forming the Next Generation Enterprise Network Alliance. In the future this alliance will provide business customers with a global network.

# IoT: New solutions based on new standards

Mobile Operators & Vendors showcase demonstrations of LPWA technology in licensed spectrum.



## Low power wide area powering mobile IoT

Low power wide area (LPWA) is the generic term for the technology standards of Narrow Band IoT, Extended Coverage EGPRS and LTE Machine Type communication. The technology enables use cases with the need of low cost and low energy consumption. There are already a number of commercial trials and pilots of LPWA solutions around the world. The GSMA Mobile IoT initiative predicts that the number of connected devices will be around 5 billion by 2022 .

### B2C Use Cases



**Pet tracking:** Huawei and Vodafone showcased a connected collar that keeps beloved pets safe and sound.



Huawei, Neul, Vodafone and u-blox demonstrated the benefit of NB-IoT technology by providing real time usage information and fault management. Vodafone's proof of concept in Valencia, Spain, enables users and producers to **track water consumption**.



Sierra Wireless demonstrated as part of the innovation city how LTE-M is used to connect **wearable fitness devices**, **healthcare devices** and smart meter.

### B2B Use Cases



**Smart agriculture and livestock tracking:** Ericsson, Orange and AT&T showcased applications that addressed challenges of extending coverage to difficult to reach locations.



Intel, Nokia and Ericsson showcased an NB-IoT technology for a **bike tracking** solution that is able of tracking bikes in environments with low signal levels.



**Smart grid monitoring and fleet tracking** applications are supported by the standards extended coverage in underground or rural areas.

# IoT: New solutions based on new standards

## Many use cases emerge within a fully connected world.



### B2C Use Cases

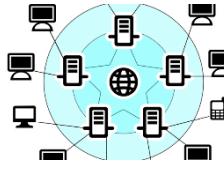


With an universal device and app **InsulClock** revolutionizes documentation and timing of insulin administration for diabetic patients. The device attaches to the insulin pen and tracks amount, time and type of injection. The app reminds the patient regularly and documents all relevant parameters.



**Acer** showcased a telemedicine use case: A tablet on a robot combined with Bluetooth enabled medicine devices alarms a doctor if there are deviations from the optimum conditions.

### B2B Use Cases



**Acer** developed an IoT solution for the smart retail management sector. It works with existing IP cameras and analyzes the areas of highest customer interest.

**Fujitsu** showcases cash terminals with integrated vein scanners to upgrade security. These terminals are being tested in Japan in a pilot scheme.

**Vayyar** designed a 3D imaging sensor that "breaks" barriers. This enables use cases where abnormalities need to be detected inside of objects.

### Government Investments



European  
Platforms  
Initiative

With 50 million euros in funding the **IoT European Platform Initiative** aims to build an European IoT ecosystem and - standard. The initiative includes the startup and business accelerator **European Innovation Hub**. The hub funds digital and web startups for an eight month period.

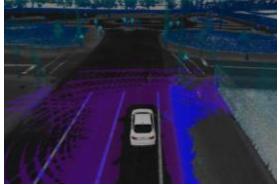


# Connected Car: Incremental innovations market ready

Volvo, Seat, and Mercedes present key-free future; Ford triples investment in self-driving cars.



## Ford: Autonomous driving & SYNC 3



Ford for the next five years triples its investment into self-driving car engineering. The goal is to build an autonomous car for the masses.



SYNC 3: an improved voice-control communication and entertainment system incl. smartphone apps and search assistance (e.g. "gas station")

## SAP Vehicles Network



SAP, Samsung & Seat partnered up to showcase a network that helps the driver finding free parking spots, paying for them and for gas. The platform is scalable and open to other developers as well.

## Smartphone as car key



Volvo and Seat introduce smartphones as car keys. Further, Volvo is thinking about to enable car owners to rent out their car. Mercedes has a similar idea: their self-driving concept car might act as taxi for others (and generate money) if the owner does not need it.

## In-car payment



Visa, Honda & ParkWhiz showcased Visa Token and Visa Checkout services in everyday situations. The user is able to pay from inside the car by one-click payment, e.g., gas stations or parking.

# Connected Car: Incremental innovations market ready

## Connectivity and integrated networks become standardized.



### BMW: Vehicular CrowdCell



BMW shows a concept that uses a micro cell to boost mobile network connection in and outside its cars. An equipped car sharing fleet could help boost phone connection in cities. The picocell activates if users enter the area while using data heavy services.

### Accenture: Connected driver



Car status



Dealer

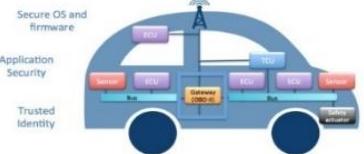


Manual

Connected car as a service: In cooperation with Seat, Accenture presents an application to connect cars, service providers, smart homes and drivers. The app shares important information among all stakeholders.

### IBM, G&D: Connected car security

Variety of Sensors and Electronic Control Units need Security



A secure gateway will prevent the hacking of connected cars. The system secures cars against manipulation and external influence. Both companies see a wide span for improvement in the current situation.

### Porsche: Service on demand



Porsche thinks about a power-on-demand feature. The customer could enable restricted power by purchasing it over the air. Porsche partnered up with AT&T for their connected car features in the US.



# Devices: Lack of innovation haunts vendors

Wearable devices proliferate with eSIM, smartphones barely differentiate, vendors competitive struggle intensifies.

## Samsung Galaxy S7: Refinement to a proven design



The S7 & S7 Edge flagships reintroduce expandable memory and water resistance.

## LG G5: The modular smartphone



LGs newest release features a modular system to add extensions and an exchangeable battery.

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## Wearables: Personal verbal assistant



**SONY**



Sony's Xperia Ear connects to a phone. Dial by Telekom is a standalone voice controlled assistant.

## Smartwatches: eSim and prices on the decline



**SAMSUNG**



**Haier**

Samsungs Gear S2 Classic 3G introduces the eSIM standard, Haier attacks the low price segment with its watch.

## 2in1: Smartphone replaces laptop



HP Elite x3 is a business phone running Windows 10 and replaces a full size laptop or desktop.

## Huawei MateBook: Competition for the Surface



A new Windows Surface competitor with similar extensions and building specifications.



# Smart Home: New gateways and UI concepts

Renaissance of gateways thanks to blue-chips' (Sony, Amazon, Google, etc.) battle over customer touchpoints at home.

## Xperia Agent & Projector



Sony's *Xperia Projector* turns any flat and white surface into a "touch-display". It can be controlled by gestures or voice commands. To enable the user to fully interact with the content it also recognizes touch commands on the projection.

The *Xperia Agent* is a small desktop robot that awaits voice commands and gestures. Like the *Xperia Projector*, the Agent will be able to project images onto surfaces. The robot will learn your way of doing things and adapt to your voice. It can also be used for video conferences: the camera at the top will track the speaking person to always keep him in the frame.



## DECT-ULE for Smart Home



AVM announced updates for its routers to support DECT Ultra Low Energy. AVM tries to implement this frequency as connection standard for Smart Home communications as it is not overcrowded.

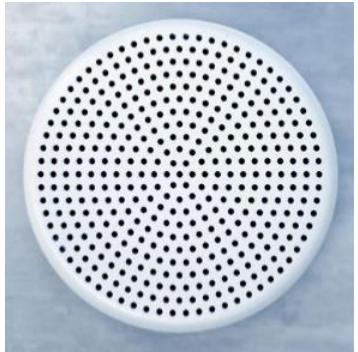
The biggest challenge so far: not many smart home products come with the DECT radio standard. To change this, AVM opens up for collaboration.



# Smart Home: New gateways and UI concepts

Startups show to-the-point solutions for smart home use cases.

## Startup minut



With its product **Point** the smart home Startup **minut** listens to everything that happens in the house. Sounds trigger specific events which allow users to surveil their home when absent.

## Startup comfylight



**Comfylight** came up with a LED-Light solution that tracks movement. The light bulbs connect to an app. It turns light on, off or dims if someone enters or leaves a room. It also acts as a security system and warns the users if it detects movement in their absence.

## Startup bwarelt



**Bwarelt** produces a small device that can be attached to water faucets. It tracks usage, temperature and displays this information. Additionally, the data is sent to an app and an online service. The aim is to reduce water consumption by raising awareness.

## Startup ecozy



**Ecozy** wants to revolutionize heating. An algorithm learns heating patterns and adapts the optimal temperature on its own. Heating can be remotely controlled by an app. The overall goal is to save energy while making life more comfortable.

# Key Announcements

- **Lenovo is moving into the Network market** – Lenovo plans to become a mobile virtual network operator specializing on data plans for roaming purposes.
- **RIP SMS?** Google and the world's biggest TelCos, including Vodafone, Deutsche Telekom and America Movil, have announced a joint initiative to bring "Rich Communications Services" to life.
- **Facebook sniffs at slow telcos, launches own Telecom Infrastructure Project.** Founding members of the infrastructure club include Deutsche Telekom, EE, Globe Telecom, Intel, Nokia and SK Telecom.
- **Android brings its OS to the PC** – Remix OS is the attempt by Android to establish its mobile operating system competence on desktop computers.
- **Paypal shifts on its NFC stance with two initiatives:** an upgrade to its app with NFC support and an alliance with Vodafone for contactless payments.
- **SK Telecom kicks off 5G open trial initiative** with the objective to deliver an extendable platform for 5G pilot activity around the world (in cooperation with KT, NT Docomo and Verizon).
- **Mobile Industry to add 1B unique subs by 2020** – global total of mobile subscriber will reach 5.6 billion (72% of world population) in the next 5 years.
- **Global 4G connections double to 1B in 2015** – number doubled last year and is on track to account for a third of all mobile connections by 2020.
- **One code to rule them all** – huge news in the EMM and app development world, with the formation of the new AppConfig by industry's biggest EMM giants: VMware AirWatch, IBM, JAMF Software, MaaS360, and MobileIron.

# 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

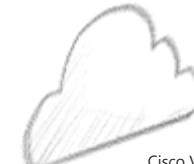
*Over half of the world's Internet traffic will come from Wi-Fi connections*

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

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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2001



Sources:

GSMA Intelligence – Global Mobile Economy Report, 2015  
Cisco Visual Networking Index: Forecast and Methodology 2014-2019, 2015  
Cisco Visual Networking Index: Global Mobile Data Traffic Forecast Update 2014-2019, 2015

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