

Mobile World Congress 2016: the twilight of consumer electronics as the driver of mobile

Introduction

From 22nd to 25th February 2016, the GSMA's annual Mobile World Congress (MWC) event took place at the Fira Gran Via in Barcelona. MWC is now firmly established as the pre-eminent showcase and gathering-place for the global mobile industry, and it continues every year to attract record numbers of attendees. MWC 2016 was the first Congress to pass the 100,000 mark, as the GSMA announced on the closing day that nearly 101,000 registered visitors had visited the event, an increase of 8.6% on the attendance figures for MWC 2015.

Internet of Things (IoT) was certainly one of the key aspects of the show, with exhibitors of all types including mobile operators, network vendors, chipset vendors and software vendors showcasing their various IoT initiatives, products, platforms and solutions.

In addition to IoT, there were some other themes that also stood out at MWC 16. In this report we will discuss some of those themes under three headings, as illustrated in Figure 1:

Smartphones & wearables

MWC saw flagship smartphone launches from several major brands, as well as a host of up-and-comers. Yet, we were left with the feeling that little substantial innovation has taken place in this space other than limited incremental improvements (eg Samsung's Galaxy S7), or featured "innovations" (eg, the clip-on accessories for LG's G5). It's becoming increasingly clear that outside Apple's world, the smartphone future belongs to affordability. Vendors such as Sony, Xiaomi, HTC and Alcatel launched smartphones at MWC 16 with specs that would have put them at the top of the range a couple of years ago, now pitched at the €150-€250 price point. Now that the smartphone industry has stopped innovating at the high end of the price range, we will see more and more customers opting instead for the increasingly good value to be found at the mid-range.

In the biggest wearables categories, fitness bands and smartwatches, there were plenty of devices on display, but few of them were new launches. One of the few, Garmin's VivoActive showed the blurring that is taking place of the division between fitness bands and smartwatches as product categories. And among the smartwatches on display, the most noticeable change from last year's products was some of them are, ironically, looking more like traditional watches. There was some evidence of an effort to push wearables beyond the wrist, such as Qualcomm's concept demo of smart clothing. Yet, we believe there is still potential to push wearables in innovative directions, or to expand their appeal much outside the health/fitness niche.

Virtual reality

Although Google Glass is attempting a comeback, the forehead wearables category has now come to be dominated by the devices manufacturers' latest effort to re-ignite the enthusiasm of the mass market: virtual reality (VR) goggles, and their associated 360° video cameras. Samsung majored on this product category at MWC 16, with its very high-profile launch of the Gear VR and Gear 360 featuring an in-person guest appearance by no less than Mark Zuckerberg. Samsung is offering the Gear VR free with pre-orders for the Galaxy S7, which should at least give the installed base a bit of a boost. Other vendors showcasing VR included HTC with a new product called Vive.

The Korean telco SK Telecom's stand featured what was arguably the most attention-grabbing exhibit of MWC 2016: a big yellow (of course) submarine which people sat in, VR goggles on head, to

experience the sights and sensations of a ride under the sea. There were big queues to get on board for the whole duration of MWC 2016, which might suggest that VR is about to ride on a wave of popular appeal to success in the mass market. But MWC is a controlled environment: you might be content to be oblivious of your surroundings for a short time on an exhibitor's stand, or in your own home, but perhaps less content in general, uncontrolled locations where anything could be happening around you while you are immersed in a virtual reality. In other words, VR goggles are not yet very *mobile*, despite the contention of MWC 16 that "mobile is everything".

5G

5G was all over last year's Mobile World Congress, as an excited realisation dawned that we were halfway through the 4G decade, and that a new generation of mobile has started deploying at the start of each decade since the 1980s. But work on 5G is at a very early stage, and although we are starting to see some ideas of what 5G networks might do and how they might do it, no standard technical specifications or even definitions for 5G exist yet, much less products that use those specifications.

There was, nevertheless, still a great deal of noise about 5G at MWC 16. Ericsson CEO Hans Vestberg, for example, set out the wish list for 5G capabilities: 10-100x connections, 5x latency, 1000x data volumes, 10x battery life, 10-100x end user data rates. And yet, so many things about 5G have yet to be determined that it is impossible at present to know whether a product is 5G ready or not, in any sense beyond the very vaguest.

Tablets and two-in-ones

Tablets and two-in-ones are starting to look more interesting as mobile devices, especially in the enterprise context catalysed by the launch of Windows 10. Some vendors eschewed smartphones altogether for their MWC product launches, and focused on these larger device types. Lenovo, owner of the Motorola brand, featured new Tab 3 Android tablets, including one optimised for business use, as well as two new convertible laptops and a two-in-one detachable tablet. More strikingly still Huawei, which used MWC 2012 to announce its arrival as a European smartphone force with the high-profile launch of its Ascend D Quad, had no new smartphones to show at MWC 16. Instead, Huawei used the event to launch a new Windows two-in-one, MateBook, a contender in the device category created by Microsoft's Surface Pro device range, and Huawei's first foray into the market for these larger device types.

Microsoft itself is still building on the momentum established by the success of its Surface Pro, following the launch of Surface Pro 4 and Surface Book, its first Windows 10 devices launched in late 2015.

Enterprise mobility

The enterprise is where an increasing amount of future growth potential in mobile is starting to concentrate. Enterprise mobility has grown stronger as a theme of MWC in recent years, and MWC 16 saw the trend continue. Mobile operators are coming to realise that they will rely increasingly on the enterprise for revenue growth in their connectivity and communications services, and in addition to those services they are also developing solutions for the increasing desire of enterprises to apply mobile in ways that can benefit, or even transform, their business. Smartphone vendors are getting interested in the enterprise too: the consumer market is saturated and is now largely a replacement proposition, but smartphone penetration in enterprises is lower (less than 60% in Europe at the end of 2015) and so there is still some greenfield opportunity there. The software and IT service vendors see big mobility opportunities, including securing devices; developing, securing and managing applications; and protecting & managing content.

MWC 16 featured two big announcements in the enterprise mobility software space:

- At the VMWare press & analyst briefing, Director of Strategy & Marketing Mimi Spier was joined on stage by IBM's Tom Mulverhill, JAMF Software's Nick Amundsen and MobileIron's Sean Ginevan to announce the formation of AppConfig, a cross-industry "community" aiming to make it easier for developers of enterprise apps to have them managed by any of the participating vendors' enterprise mobility management (EMM) platform. At present, therefore, that means the options are MobileIron, VMWare's AirWatch, IBM's Maas360 or JAMF's Casper. All of these are associated with Apple's Mobility Partner Program, and AppConfig intends to offer open XML schemata for Android and Windows apps in the future. Besides EMM vendors, other companies committed to adopting AppConfig tools and practices include Box, Cisco, Oracle and Salesforce. AppConfig supersedes VMWare's ACE (App Configuration for Enterprise) initiative, which was announced at MWC 2015.
- Soon afterwards Microsoft (a notable absentee from the AppConfig line-up) announced that it will be acquiring Xamarin, a mobile app development platform (MADP) vendor. Approaching the cross-platform idea from a different angle, Microsoft intends to use Xamarin to boost its capabilities in the area of cross-platform applications based on Xamarin's existing support for iOS, Android and Windows Phone development using .NET. Xamarin has been a partner of Microsoft's for some time, and Xamarin integration is already incorporated into Visual Studio, Azure, Office 365 and Microsoft's Enterprise Mobility Suite.

These announcements are indicative of the trend that EMM has followed in recent years away from the management of devices, and towards the management of applications.

The internet of things (IoT)

Applications of mobility in IoT were in copious supply at MWC 16, both real and conceptual. Some of them were things that would have been called machine-to-machine (m2m) a year or two ago, before the term IoT came into vogue. Others were applications which as well as using m2m connectivity, also exploited the open, interconnected nature of IoT. The technology blocks from which IoT applications are built were also widely evident at MWC 16, including chipsets designed to meet the special demands of devices used in IoT, and connectivity technologies that cater to the requirements of IoT deployments in characteristics such as provisioning, power consumption, location and cost profile.

Huawei was among those launching new IoT products at MWC 2016, in the form of Smart ONT, a smart home hub combining a Gbps optical modem with built-in IoT protocols; and Agile Access Router, an industrial network edge device with IoT edge intelligence and interfaces. Ericsson's IoT announcements centred on services rather than products in the form of IoT Transformation, a new professional services offering aimed at helping operators make the most of existing network and data assets to address IoT opportunities. Meanwhile, Nokia's CEO Rajeev Suri announced that Nokia is targeting leadership in IoT, and announced a \$350 million investment fund to help accelerate the IoT ecosystem and increase demand for connectivity. The fund will focus on Connected Enterprise, Consumer Solutions, Connected Car and Digital Health.

Another prevalent theme from software vendors in particular was IoT security. The industry has come to realise that IoT will make security an even more crucial requirement than it is in existing mobile applications. The large amount of data that some IoT applications transact, often personal and private, will need to be protected. More important still will be access control, because the consequences of a hacker gaining control of your email account pale into insignificance beside the consequences of a hacker gaining control of your car, your house, or your heart pacemaker. Without

robust and readily usable security, progress in realising much of the potential of IoT will come to a shuddering halt. Sophos is among the security companies targeting IoT, with the company's Head of Security Research James Lyne focusing his MWC 2016 keynote address on the need to beef up and standardise security in IoT applications. The company offers a free consumer malware protection service, Sophos Home, which it will use to form the basis of security offerings for connected home applications of IoT.