THE WEARABLES REPORT 2016: REVIEWING A FAST-CHANGING MARKET

- The wearable technology market will be worth $28.7 billion in 2016, and the number of units shipped will climb 18.4%, to 275 million, according to estimates by the market-measurement firm Gartner.

- In the first quarter of 2016, the top-selling wearables brands were Fitbit (with 4.8 million units shipped), Xiaomi (3.7 million) and Apple (1.5 million), according to market-measurement firm International Data Corporation (IDC).

- We see two major trends underpinning the continued growth of the wearables market. First, the emergence of “wearables 2.0” will shift the category from stand-alone devices to lifestyle-enhancing systems tying together multiple connected devices and cloud services. Second, the clothing and sportswear categories are likely to see a jump in wearables offerings, with mass-market brands such as Google, Levi’s and Nike launching new products.

- Innovation and change are rife in the wearables market. A large number of startups—fueled by access to cheap components, 3D printing and willing crowd funders—have emerged, and some have been further funded or acquired by venture capital firms or corporate buyers.
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EXECUTIVE SUMMARY

The Shape of the Market

In 2016, the global wearable technology market will be worth $28.7 billion, and brands in this market will ship 275 million units, up 18.4% from 2015 levels, according to market-measurement firm Gartner; these figures include a substantial contribution from borderline subcategories such as Bluetooth headphones. Gartner forecasts that total wearable units shipped will grow at a CAGR of 17.9% between 2015 and 2017, with the wrist-worn wearables segment growing the fastest, at a CAGR of 30%.

![Wearable Technology Image](Source: Shutterstock)

According to market-measurement firm IDC, in the first quarter of 2016, the top wearables brands were:

- Fitbit, with 4.8 million units shipped.
- Xiaomi, with 3.7 million units shipped.
- Apple, with 1.5 million units shipped.
- Garmin, with 0.9 million units shipped.
- Samsung and BBK, which each shipped 0.7 million units.

The market’s rapid advance is reflected by developments at top brands:

- In May 2016, Project Jacquard, a partnership between Google and Levi’s, unveiled a connected jacket designed for urban cyclists. The jacket has functionality similar to that of a smartphone; wearers can control their music and answer calls using technology embedded in the sleeve.
- In the same month, news websites reported that Jawbone had slowed manufacturing of its UP range of wristbands and was forced to sell its remaining inventory to a third-party reseller in order to raise funds. However, Jawbone said it remains committed to the consumer wearables category.
Prospects and Investments

Our view is that the wearables market will continue to grow in the coming years, but that a slowdown is possible before the release of “wearables 2.0,” a second generation of products offering improved autonomy and use cases. Wearables 1.0 are effectively just another screen for smartphones. We expect the second generation of wearables to consist of smart devices that act in conjunction and integrate with the Internet of Things (IoT) autonomously.

Venture capital (VC) firms have invested nearly $2.6 billion in wearables companies since 2008, according to our analysis of CrunchBase data. Some $1.5 billion of that was invested in 2014 and 2015 alone.

Wearables are naturally converging with the IoT, and a number of companies have focused on creating software ecosystems for wellness and personal healthcare monitoring. Sportswear companies and IT giants such as Google and Apple are also developing software that connects devices.

Segmentation of the Market

In this report, we have divided wearables into categories based on the part of the body on which they are worn: head, body or wrist.

- Wearables for the head comprise a reasonably mature segment; headphones alone are worth about $10 billion per year, and Bluetooth headphones account for about 55% of that total. Other devices in the category include virtual reality (VR) and augmented-reality (AR) headsets.
- Wearables for the body include smart T-shirts, body cameras, high-visibility jackets, socks, shoes, bras and chest straps. Sportswear companies are highly active in this segment and are working on connecting fitness- and wellness-tracking devices with health-related software ecosystems.
- Wrist wearables is a segment that has experienced massive growth, partly thanks to Apple, which shipped nearly 12 million Apple Watches in 2015, according to IDC, despite launching only in April of that year. Apple’s entry in the premium watch segment has even spurred some luxury watchmakers to create their own smartwatches. Another notable maker of wrist wearables is Fitbit, which sold close to $2 billion worth of fitness bands and other products in 2015.
A MARKET SET FOR DOUBLE-DIGIT GROWTH

The wearables category is one of the hottest consumer goods markets, and very strong growth is expected in terms of units shipped and retail sales in 2016 and the coming years. This report offers our latest overview of the market, bringing together market data and forecasts, company and subcategory profiles, and our wrap-up of the latest developments and product launches by subcategory. We begin with a summary of key data on the size of the market and the distribution of market share.

Market Continues to Grow Apace

Market-measurement companies have offered various forecasts for the wearable technology market—the one thing they agree on is that the market is growing fast. In January, Gartner forecast that the total number of wearable units shipped globally will grow by 18.4% year over year, from 232 million in 2015 to 275 million in 2016. The firm expects unit shipments to grow by 17.5% in 2017, to 323 million worldwide. Gartner values the 2016 market at $28.7 billion, and forecasts that:

- Wrist wearables will experience the highest growth within the wearables segment; smartwatches and fitness bands are forecast to grow at CAGR of 30.0% between 2015 and 2017.
- Wearables worn on the head, including VR/AR devices, earwear and Bluetooth headsets, will grow much more slowly, at a CAGR of 7.6%, largely due to the maturity of the headphones market.
- Wearables for the body, including apparel, sportswear and body cameras, are forecast to grow at a CAGR of 11.8%.

Other market-measurement firms have estimated more conservative figures, likely due to definitional reasons, such as whether Bluetooth headsets are considered wearables. IDC, for instance, estimates that around 110 million wearable devices will be shipped in 2016, up 38.2% year over year. The firm forecasts that 100 million smartwatch and wristband units will be shipped this year, along with 9.8 million units spread across clothing, eyewear and “hearables” (hi-tech in-ear devices). In 2017, total wearable shipments will grow by 26.1%, reaching 137.8 million units, IDC forecasts.
Fitbit Leads by Unit-Volume Market Share

IDC said the top wearables brand owners in the first quarter of 2016, by number of units shipped, were:

- Fitbit, with 4.8 million units shipped in the quarter.
- Xiaomi, with 3.7 million units shipped.
- Apple, with 1.5 million units shipped.
- Garmin, with 0.9 million units shipped.
- Samsung and BBK, which each shipped 0.7 million units.

Across 2015, the brand rankings were broadly the same.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Units (Mil.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitbit</td>
<td>21.0</td>
</tr>
<tr>
<td>Xiaomi</td>
<td>12.0</td>
</tr>
<tr>
<td>Apple</td>
<td>11.6</td>
</tr>
<tr>
<td>Garmin</td>
<td>3.3</td>
</tr>
<tr>
<td>Samsung</td>
<td>3.1</td>
</tr>
<tr>
<td>Others</td>
<td>27.0</td>
</tr>
<tr>
<td>Total</td>
<td>78.1</td>
</tr>
</tbody>
</table>

Source: IDC

It is worth reiterating that IDC’s definitions exclude some borderline wearables categories, including Bluetooth headsets, that some other firms such as Gartner include in their market totals. IDC’s market research focuses on fitness bands, smartwatches, apparel and hearables.

Outlook: Connected Systems Will Form Wearables 2.0

Our view is that the wearables market will continue to grow in the coming years, but that a slowdown is possible before the release of “wearables 2.0,” a second generation of products offering improved autonomy and use cases. We expect wearables 2.0 to incorporate multiple connected devices and cloud services that, together, offer more meaningful enhancements to users’ lifestyles.

Wearables 1.0 are effectively just another screen for smartphones: the devices include technology that is easily copied, and they have limited functionality and normally require a connection via a smartphone. The second generation of wearables will consist of smart devices that act in conjunction and integrate with the IoT autonomously. One example of this type of product is Sony’s Experia system, which combines wearables and the IoT in order to function as a personal assistant. Another is connected garments from SensorKit, which rely on multiple sensors to detect the wearer’s activities. The sensors then communicate the data to a software platform that interprets and measures the wearer’s movements.

INVESTMENT ACTIVITY

VC firms have invested nearly $2.6 billion in wearables companies since 2008, according to our analysis of CrunchBase data. Over half of that total
($1.6 billion) has gone into California-based startups, and some $1.5 billion of the total was invested in 2014 and 2015 alone.

We summarize some of the major M&A activity by market segment later in this report.

Figure 3. VC Funding for Wearables Companies (USD Mil.)

VC firms have invested nearly $2.6 billion in wearables companies since 2008, according to our analysis of CrunchBase data.

Source: CrunchBase

**FUNG GLOBAL RETAIL & TECHNOLOGY’S MARKET MATRIX**

The wearables market is seeing new segments develop and existing ones merge. Fitness trackers are overlapping with smartwatches and with software/cloud solutions that connect to multiple devices and to the IoT; headphones embedded with smart sensors are converging with the hearing-aid market; and autonomous products such as Nike’s self-lacing shoes are being launched, further blurring the boundaries of wearables.

Below is our matrix of companies active in key wearables segments, followed by a discussion of the key uses for the devices (such as fitness and wellness), and a review of product developments and market growth.

Figure 4. Wearables Market Segmentation

<table>
<thead>
<tr>
<th>Fitness and Wellness</th>
<th>Head (e.g., Bluetooth headsets)</th>
<th>Wrist (e.g., smartwatches)</th>
<th>Body (e.g., body cameras)</th>
<th>IoT (connected systems)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Earin</td>
<td>Fitbit</td>
<td>Lechal</td>
<td>Under Armour</td>
</tr>
<tr>
<td></td>
<td>Spree Wearables</td>
<td>Jawbone</td>
<td>Athos</td>
<td>Polar</td>
</tr>
<tr>
<td></td>
<td>FreeWavz</td>
<td>Xiaomi</td>
<td>Leo</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Muse</td>
<td>Suunto</td>
<td>Oxstren</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>OMSignal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ReTiSense</td>
<td></td>
</tr>
<tr>
<td>Healthcare</td>
<td>Sonova</td>
<td>BodyCap</td>
<td>Withings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Siemens</td>
<td>MediWiSe</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GN Resound</td>
<td>Monica Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Eargo</td>
<td>Omron</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Hexoskin</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bionik Laboratories</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MC10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Jabra</td>
<td>Apple</td>
<td>Nike</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sennheiser</td>
<td>Samsung Gear</td>
<td>Belty</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: CrunchBase

*Note: The IoT column includes connected systems, such as the Under Armour Racer.”
### Wearables by Purpose

Although we categorize wearable devices by the part of the body on which they are worn, the core means of segmenting wearable technology is by its primary use. As shown in the first column in the matrix above, we identify four core use cases: fitness and wellness, healthcare, lifestyle, and gaming and entertainment.

#### Fitness and Wellness

Fitness and wellness wearable devices are designed to sense and track data points such as body temperature, workout time, distance covered and heart rate. Most of these are worn on the wrist, but there are also a number of clip-ons, chest bands, leg bands, smart garments and ear-worn devices on the market. Numerous software applications are included with these, from very basic measuring and mapping of running routes to more advanced offerings, such as coaching, analysis and daily recommendations for optimizing one’s fitness and wellness.

#### Healthcare

Healthcare usage in wearables covers both consumer and patient applications. Consumer healthcare products are noninvasive and can be purchased over the counter without a prescription. If sold as a healthcare product, these wearables may be more heavily regulated. Patient healthcare products (medical devices) are strictly regulated by the US Food and Drug Administration and the European Commission, among other agencies. Healthcare wearables include hearing aids and sensors that monitor heart rate, blood pressure and glucose. The segment also includes “lifestyle medical” cloud software applications that can collect data from various wearables.

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Some companies are active in several categories. For simplicity, we have organized them by the main area of activity related to wearables.

*The IoT segment does not consist of individual wearables, but of ecosystems where multiple wearables and/or other IoT-connected devices form a group of products that work together. For example, Polar combines its fitness software cloud with a wrist tracker and a smart scale.

Source: Company websites/Fung Global Retail & Technology

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<table>
<thead>
<tr>
<th>Gaming and Entertainment</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Oculus Rift</td>
<td>Sony</td>
</tr>
<tr>
<td>Google Glass</td>
<td>GoPro</td>
</tr>
<tr>
<td>HTC Vive</td>
<td>Narrative</td>
</tr>
<tr>
<td>HoloLens</td>
<td>Thalmic Labs</td>
</tr>
<tr>
<td>PlayStation VR</td>
<td></td>
</tr>
<tr>
<td>Lumus Optical</td>
<td></td>
</tr>
<tr>
<td>Magic Leap</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Devices</th>
<th>Purpose</th>
<th>Devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fitness and Wellness</td>
<td>Plantronics, BlueAnt, Sony, Bose, Interaxon, Doppler Labs, Motorola, Bragi</td>
<td>Healthcare</td>
<td>Pebble, Garmin, Asus, Tag Heuer, Lenovo, Sma Watch, WiseWear</td>
</tr>
<tr>
<td>Gaming and Entertainment</td>
<td>Thinx, Victoria’s Secret, Ralph Lauren, Under Armour, Thalmic Labs</td>
<td>Lifestyle</td>
<td>Sony, GoPro, Narrative, Thalmic Labs</td>
</tr>
</tbody>
</table>

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*Healthcare usage in wearables covers both consumer and patient applications. Consumer healthcare products are noninvasive and can be purchased over the counter without a prescription.*
In 2015, Apple started trials for its HealthKit cloud solution with a number of US hospitals. In March 2016, the company released CareKit, described as “a new software framework designed to help developers enable people to actively manage their own medical conditions.” The idea behind these personal health record systems is to help patients manage their own conditions and assist physicians in treating patients.

**Lifestyle**

We characterize lifestyle wearables as products whose design is key to their sale. This segment is effectively a subset of the broader lifestyle brands segment, which spans apparel, technology and other categories such as home goods. We see Apple as a core lifestyle brand and its Apple Watch as a core lifestyle wearable; arguably, the main driver of Apple Watch purchases is the value of the brand and design. We believe Nike’s soon-to-be-launched HyperAdapt self-lacing shoe is also a lifestyle item, given Nike’s brand strength.

**Gaming and Entertainment**

The gaming and entertainment segment overlaps significantly with wearables designed for industrial and enterprise applications. For example, most AR wearables that are currently available target industrial and enterprise use cases, while VR devices are almost exclusively targeted to consumers via gaming and entertainment applications. However, only a limited range of games and software are designed to incorporate VR, so developers are still exploring various use cases for VR devices. It also remains to be seen to what extent enterprises will be willing to pay for AR wearables.

**WEARABLES BY TYPE**

We segment the wearable device universe by the part of the body on which the devices are worn. Below, we detail recent activity from major brands, along with market estimates and forecasts, broken out by the part of the body on which the devices are worn: head, body or wrist.

**Consumer Preferences**

In a 2014 study by Forrester, some 16,200 consumers across the US and Europe were asked about their preference for wearing a sensor device. Overall, US consumers reacted more positively to the idea than did their European counterparts. But more than one-third of all consumers polled...
responded positively to the idea of using a sensor device on their wrist. The wrist also proved the most popular location for a wearable device among those surveyed.

Figure 5. Percent of US and European Internet Users Responding Favorably to “How Interested Would You Be in Wearing/Using a Sensor Device, Assuming It Was from a Brand You Trust or Offered a Service that Interests You?” (2014)

Source: Smart Watch Review

<table>
<thead>
<tr>
<th>Location</th>
<th>US</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Wrist</td>
<td>42%</td>
<td>36%</td>
</tr>
<tr>
<td>Clipped onto Clothing</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Embedded in Clothing</td>
<td>19%</td>
<td>15%</td>
</tr>
<tr>
<td>On Glasses</td>
<td>18%</td>
<td>12%</td>
</tr>
<tr>
<td>In Earphones/Headphones</td>
<td>21%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Base: 4,556 US Internet users aged 18+; 11,647 EU Internet users aged 18+
Source: Forrester

1. HEAD

The head wearables category includes Bluetooth earphones and AR and VR headsets. Some market-measurement firms do not incorporate any or all of these in their data for the wearable tech market, but we include these within our discussion of the broader universe of wearables.
Earwear

The earwear segment is mature and there is intense competition in the category from established audio brands such as Sennheiser and Bose. Amazon.co.uk listed more than 1,000 SKUs for Bluetooth headsets in April 2016, and about 500 of them were earbuds. Market intelligence firm ABI Research estimated that Bluetooth headset retail revenues totaled about $5.5 billion in 2014 (including stereo and mono headsets) and that the combined wired and Bluetooth headset market was worth more than $10 billion that year. ABI forecast that growth of Bluetooth headset sales would outpace that of wired headset sales between 2014 and 2019, with a CAGR of 18.7%.

Most of the larger consumer electronics companies offer earwear. These products are highly influenced by celebrity endorsements and fashionable designs, and include products from Beats by Dre (which has been acquired by Apple) and 50 Cent’s SMS Audio (which has partnered with Intel). According to news website 9to5Mac.com, Apple is gearing up to launch a branded headphone called AirPods with the new iPhone 7.

Continued product miniaturization and noise-cancelling and audio innovations could lead the earwear segment to converge with the hearing-aid market in the near future. The global hearing-aid market was worth $6.2 billion in 2015, according to Research and Markets. Bone-conducting hearing aids, which transmit sounds to a user’s ears through vibrations on his or her skull, have been around for a while, but they have only recently become available for consumers. Damson, AfterShokz and Panasonic are among the brands offering bone-conducting devices.

Earbud products have also proved popular on crowdfunding sites:

- RippleBuds raised $750,000 by the end of April in its crowdfunding campaign on Kickstarter.
- Earin raised $1.4 million on Kickstarter in June 2014. The Earin product, which does not include any sensors or a microphone, was shipped to preorder customers in October 2015 and now retails at $249.
Bragi raised $3.4 million on Kickstarter for its Dash earbuds, which include 27 sensors and retail at $299.

Source: Earin.com

Source: Bragi.com

AR Devices
AR applications have clearly defined industrial and business-to-business use cases. But hardware and software prices are likely to remain too high to ensure mass consumer uptake in the immediate future, and it is still unknown if even industry will be willing to invest in AR at current prices.

Goldman Sachs lists four main players in AR: Google Glass, Microsoft HoloLens, ODG Smartglasses and Atheer. The AR consumer segment may well open up in gaming and entertainment, but it could ultimately converge with the lifestyle eyewear market, in particular the high-end segment. Lifestyle eyewear is worth about $90 billion per year, according to 2015 data from Euromonitor International.

In 2015, Intel partnered with Italian eyewear manufacturer Luxottica and its Oakley brand to fuse premium, luxury and sports eyewear with smart technology. According to tech news website Slashgear.com, Luxottica has collaborated with Google as well. In 2015, Intel acquired Recon Instruments, an AR headset manufacturer, further enhancing its position in the consumer smart-glasses category.

VR Devices
The VR market has opened up with the introduction of “smartphone VR sets,” which are mostly priced from $10–$150. Essentially a box with two holes to see through, such devices can be connected to a smartphone in
order to convert it into a VR set. Google Cardboard is one of the cheapest versions on the market, and the boxes are produced by a variety of suppliers.

“Proper” VR headsets include a built-in screen, an accelerometer and other advanced electronics. Examples of these include the Oculus Rift, released in April 2016 with a selling price of $600; the Sony PlayStation VR, to be released in the fourth quarter of 2016 with a price of about $400; and the HTC Vive, which began shipping in April 2016 with a price of around $799.

Smartphone VR Holders

Other Headwear

Spree Wearables offers various headwear products, including the SmartCap and the Spree Headband fitness monitor, as well as a fitness app. The SmartCap was launched in 2014 and Sports Illustrated awarded it “Best in Show” at the CES trade show that year. Amazon.com lists the SmartCap for $185, including delivery. Also in 2014, Archos, which produces a range of smartphones, tablets and IoT gear, launched the Archos Music Beany. This hat is currently available from the Archos website for about $40.
2. BODY

Smart Garments

A number of clothing brands have produced apparel with built-in technology. However, the longevity and appeal of some of these garments has been limited, in some cases apparently due to opportunistic marketing and a lack of strategic foresight. For example, toward the end of 2014, Victoria’s Secret launched a $75 heart-monitoring bra based on technology from Clothing+, but the product appeared to have been discontinued when we searched for it in June 2016.

Project Jacquard jacket cuff
Source: Google.com

A wearable tech partnership that has recently borne fruit is Project Jacquard, which Google and Levi’s launched in 2015 to develop products that use conductive textiles and machine learning to interpret motions. In May 2016, the two companies unveiled a connected jacket designed for urban cyclists. The jacket has smartphone-connected functionality that allows users to control their music and answer calls using technology embedded in the jacket’s sleeve.
A number of smaller companies are producing safety wear for cyclists and workers in the building trades. Visijax and Lumo are two UK-based manufacturers of garments with built-in, battery-powered LEDs. Fhoss Technology creates similar, high-visibility clothing that is targeted to customers in the construction industry. The company had revenues of about $120,000 in 2014. A company called Infi-tex produces a conductive ink that can be applied to garments pre- or postproduction, making it possible to create flexible electrical circuits on top of garments. The company says it has experienced an increase in inquiries over the last 12 months.

**Smart Garments: Sportswear and the IoT**

*Source: Company websites*

Clockwise from top left: Clothing from Fhoss Technology, Lumo and Visijax

Nike will release its HyperAdapt 1.0 self-lacing shoe in the fourth quarter of 2016, initially only to users of the Nike+ app. The shoe will enable the wearer to get just the right fit and tightness as it “adapts” to the wearer’s foot.

*Source: Nike.com*
Since 2013, Adidas, Under Armour and Asics have spent a combined $1 billion acquiring companies that develop fitness and health software applications. Nike dropped its fitness-tracking-band division in 2014, but has since developed the Nike+ fitness-tracking software application, which is featured on the Apple Watch. Underscoring the importance of software applications to the sportswear market, in January 2016, Under Armour partnered with IBM Watson to ensure that UA Record software users receive notifications that help them optimize their daily fitness, wellness and sleep rhythms.

There has been other activity in this segment, too:

- Under Armour has been partnering with HTC since 2015 to develop wearables and IoT gear.
- Adidas is licensing and developing hardware technology in-house.
- Asics is offering Sony’s Smart B-Trainer on its website in combination with the My Asics activity-tracking and coaching software application.
- Nike has allowed most fitness and activity hardware trackers and gear to connect to its Nike+ coaching and personalized fitness and health software platform, and the company is focusing its efforts on functional wear powered by mechatronics (a mixture of electronics and mechanics) in order to attract users to its platform.
- Nike will release its HyperAdapt 1.0 self-lacing shoe in the fourth quarter of 2016, initially only to users of the Nike+ app. It will be the first mass-produced self-lacing shoe and will rely on a mixture of mechanical and electronic engineering for its functionality, enabling the wearer to get just the right fit and tightness as the shoe “adapts” to the wearer’s foot. The price and release date have not yet been announced.
- Under Armour launched its HealthBox in January. For $400, customers get a scale, fitness wristband and a chest-strap heart-rate monitor. The set includes a subscription to apps such as MapMyRun, MyFitnessPal, Endomondo and UA Record.
- In February, Under Armour launched its UA Record–equipped SpeedForm Gemini 2 smart shoes, which retail for $150. The shoes...
include an auto-sleep fitness sensor that activates the tracking functionality when the wearer is working out. The shoes can record five runs’ worth of details before the runner needs to download the information to a computer or smartphone.

• In January, New Balance announced that it was launching a Digital Sport division to develop wearable, embedded and analytic technology. The company also revealed that it was partnering with Intel on developing a sports watch for runners.

Adidas was an early mover in wearable technology. In 2008, it acquired Textronics, a spin-off from DuPont Textiles & Interiors that was backed by Physic Ventures. The company developed wearable sensors for use in fitness and health monitoring, and Stacey Burr, its CEO, moved to Adidas as VP of Wearable Sports Electronics. In 2015, Adidas acquired fitness and health applications developer Runtastic. Adidas produces a range of wearable fitness technology under the miCoach brand, which is a key line for the company and includes fitness and health software developed by Exos and hardware from Mio. In April 2016, Adidas.com listed nine miCoach products ranging in price from $30–$420.
## Smart Sports: Summary Profiles

### Figure 7. Nike (2015)

<table>
<thead>
<tr>
<th>Category % of Revenues</th>
<th>Footwear</th>
<th>Apparel:</th>
<th>Equipment:</th>
<th>Converse:</th>
<th>Global Brands: 0.4%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wearables</th>
<th>HyperAdapt</th>
<th>FuelBand (discontinued)</th>
<th>1.0</th>
<th>(shoes)</th>
</tr>
</thead>
</table>

**Software App:** Nike+

*Source: Company reports/Fung Global Retail & Technology*

### Figure 8. Adidas (2015)

<table>
<thead>
<tr>
<th>Category % of Revenues</th>
<th>Footwear</th>
<th>Apparel:</th>
<th>Hardware:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wearables</th>
<th>Fit Smart (fitness wristband), Smart Run (smartwatch), Smart Ball (soccer ball), X-Cell (chest-strap heart-rate monitor), Speed Cell (fitness clip for shoes), Heart Rate Monitor</th>
</tr>
</thead>
</table>

**Software App:** miCoach

*Source: Company reports/Fung Global Retail & Technology*

### Figure 9. Under Armour (2014)

<table>
<thead>
<tr>
<th>Category % of Revenues</th>
<th>Footwear:</th>
<th>Apparel:</th>
<th>Accessories:</th>
<th>Licensing:</th>
<th>Connected Fitness: 1.7%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Wearables</th>
<th>UA HealthBox (set of products), UA Band (fitness tracker), UA Scale, UA Heart Rate (chest strap), UA Headphones (Bluetooth), Gemini SpeedForm 2 (shoes)</th>
</tr>
</thead>
</table>

**Software App:** UA Record, MapMyFitness, MyFitnessPal, Endomondo

*Source: Company reports/Fung Global Retail & Technology*

Asics had revenues of about $4 billion (¥428 billion) in 2015, but the company does not break down sales by category.

### Other Body-Worn Fitness Monitors

Some fitness monitors include clips or other types of fasteners for attaching them to the body. Gartner has forecast that the number of chest-strap and other body-worn devices will remain stagnant, at about 33 million units shipped per year. However, the firm predicts that this...
segment’s share of the overall wearables market will drop from 15% in 2015 to just over 10% in 2017.

Under Armour launched its HealthBox in January 2016. For $400, customers get a scale, a fitness wristband and a chest-strap heart-rate monitor. The set includes a subscription to apps such as MapMyRun, MyFitnessPal, Endomondo and UA Record.

![UA Heart Rate chest strap, which is included in the UA HealthBox](Source: Underarmour.com)

**Body Cameras**

In the body cameras segment, new entrants, smartphone manufacturers and traditional camera makers are fighting for market share. GoPro is the leader in the segment, with 2015 revenues of $1.6 billion. Its cameras start at about $130 and prices go up to about $580 for premium cameras. Sony and Panasonic are also active in the segment, but they have elected to create cameras for general use and to offer attachments that can be worn on the chest or head (or by dogs) rather than to create cameras that are specifically designed to be worn on the body.

The segment is crowded with numerous generic brands and various types of “spy cameras” in the $20–$70 range, which are providing tough competition for the more established brands:

- iON and Xiaomi are two brands fighting it out in the sub-$100 range of wearable cameras.
- The midrange, where cameras run from about $150–$400, is populated by brands such as Narrative, Polaroid and Viewv.
- GoPro has established itself at the medium-to-high end of the market.
- Nikon joined the high end in 2016 when it launched its KeyMission 360 wearable camera, which is priced just below $600. The product competes directly with GoPro’s Hero4 camera.
A recent study by Gartner estimates that 170,000 body cameras will be shipped in 2016 and 1.05 million in 2017. However, we believe the market may have matured faster than these estimates suggest, and that 2016 could see closer to 1 million units shipped. We base our own estimate on GoPro’s total revenues for 2015: assuming all the company’s cameras cost $600 and that 10% of all the cameras it sold last year were body cameras, GoPro would have sold 270,000 body cameras in 2015, we estimate.

OMG Life was one of the first companies to produce a wearable camera. However, in 2014, the company recognized the unaffordable marketing spend required to build a consumer brand for its Autographer range of wearable cameras. In its most recent annual accounts (for fiscal year 2014), the company announced it would drop its consumer range and switch to licensing its intellectual property to consumer technology manufacturers.

3. WRIST

**Fitness Wristbands**

Shipments of activity-tracking wristbands will reach 44.1 million units in 2017, up from 30.2 million in 2015, according to Gartner estimates. However, this 46% forecast growth is less than half of the 120%-plus growth expected for smartwatches.

The prospect of such growth has heightened competition, which has, in turn, prompted makers of fitness wristbands to respond with closures, acquisitions and launches:

- In May 2016, website Tech Insider reported that Jawbone had ceased manufacturing its UP range of wristbands and was forced to sell its remaining inventory to a third-party reseller in order to raise funds. However, Jawbone was quick to deny these reports, and said it remains committed to the consumer wearables category. Tech Insider subsequently revised its story to report that Jawbone had slowed
production of its devices, but stood by its claims that the company had offloaded its inventory.

- Following Apple’s 2014 announcement that it would launch a smartwatch, and the runaway success of Fitbit, Nike decided to close its own fitness tracker division.
- In the same year, Intel acquired Basis Science, a maker of fitness wristbands.
- In 2015, Fossil acquired fitness band maker Misfit for $260 million.
- Swatch launched Touch Zero One, a smartwatch targeting beach volleyball players, in 2015.

Figure 11. Selected Fitness-Tracking Wristbands: Original Price and Price on Amazon.com as of April 2016 (USD)

<table>
<thead>
<tr>
<th>Product</th>
<th>Original Price</th>
<th>Amazon.com Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polar A360</td>
<td>199.95</td>
<td>190.00</td>
</tr>
<tr>
<td>Microsoft Band 2</td>
<td>249.99</td>
<td>174.99</td>
</tr>
<tr>
<td>Garmin Vivosmart</td>
<td>149.99</td>
<td>149.99</td>
</tr>
<tr>
<td>Basis Peak</td>
<td>199.99</td>
<td>149.99</td>
</tr>
<tr>
<td>Adidas miCoach Fit Smart</td>
<td>199.99</td>
<td>136.30</td>
</tr>
<tr>
<td>Polar A300</td>
<td>159.95</td>
<td>130.00</td>
</tr>
<tr>
<td>Fitbit Charge HR</td>
<td>149.95</td>
<td>129.99</td>
</tr>
<tr>
<td>Fitbit Alta</td>
<td>129.00</td>
<td>129.00</td>
</tr>
<tr>
<td>Samsung Gear Fit</td>
<td>149.99</td>
<td>119.00</td>
</tr>
<tr>
<td>Misfit Shine 2</td>
<td>99.99</td>
<td>99.99</td>
</tr>
<tr>
<td>Garmin Vivofit 3</td>
<td>99.90</td>
<td>99.90</td>
</tr>
<tr>
<td>Jawbone UP2</td>
<td>99.90</td>
<td>74.30</td>
</tr>
<tr>
<td>Fitbit Flex</td>
<td>99.95</td>
<td>68.99</td>
</tr>
<tr>
<td>Garmin Vivofit</td>
<td>129.99</td>
<td>49.99</td>
</tr>
<tr>
<td>Sony SmartBand SWR10</td>
<td>99.99</td>
<td>30.99</td>
</tr>
<tr>
<td>Xiaomi Mi</td>
<td>23.98</td>
<td>23.98</td>
</tr>
<tr>
<td>Misfit Flash</td>
<td>29.99</td>
<td>19.99</td>
</tr>
</tbody>
</table>

Does not include smartwatches.
Source: Amazon.com

Fitness wristbands vary in price from about $20–$200, with most branded products falling in the $100–$200 range. However, we think the $100-plus segment will see further price pressures and that prices are likely to drop, especially as the market for lower-priced smartwatches grows.
Smartwatches

Source: Apple.com

Market forecasts for unit sales of smartwatches have ranged from enthusiastic to very optimistic, but a lack of data on Apple Watch shipments has added uncertainty to estimates. IDC estimates that 28.3 million smartwatches will be shipped in 2016, with Apple Watches accounting for 14 million of these. By 2020, some 82.5 million smartwatch units will be shipped annually, IDC forecasts.

Market analysis firm Canalys estimates that Apple shipped 4.2 million Apple Watches in the second quarter of 2015, following its April release that year. Canalys further estimates that the Apple Watch accounted for two-thirds of the smartwatch market in 2015, with about 12 million units shipped.

Despite its growth, the smartwatch market has experienced downward price pressure from manufacturers of cheaper models, such as Airsspu, Yuntab, Vcall and U Watch.

Signs that the market may be cooling surfaced in March, when smartwatch brand Pebble announced it would lay off 25% of its workforce and Apple dropped its entry price for the Apple Watch Sport from $349 to $299.

Cheaper generic smartwatches now start at about $20 and go up to $100, while branded smartwatches start at about $100 and go up to $17,000 for the Apple Watch Edition 18-Karat. High-end nonluxury smartwatches range from about $250–$600. Apple’s least expensive smartwatch starts at $299.

The Smartwatch Group, an independent research company, estimated that the number of smartwatch suppliers more than doubled from 2013 to 2014, from about 40 to about 90, and forecast that there would be closer to 300 in 2016.
Luxury Smartwatches

The response to the growing smartwatch market from luxury watch manufacturers has been muted to date. However, according to Creative Strategies, the traditional wristwatch market reached $62 billion and 1.2 billion units shipped in 2015, so perhaps luxury watchmakers’ hesitation to launch new product lines is understandable.

Apple has released two watch ranges in the luxury segment, the Apple Watch Hermès (starting at $1,100) and the Apple Watch Edition 18-Karat (which retails for up to $17,000). Breitling, Bulgari, Montblanc and Tag Heuer have also released smartwatches.
The future of the wearable technology market looks like it will be marked by new products in existing categories, strong market growth and diversification, with brands offering ecosystems of connected devices. Already, some companies are starting to ideate concepts rather than individual products. Notable examples include:

- **Under Armour’s HealthBox**, which comes with a UA Scale, a UA Band and a UA Heart Rate chest strap, all of which connect to UA Record, the company’s fitness and health software application. Customers are keen to measure various aspects of their health, fitness and wellness, and their interest has given rise to the notion of the “quantified self.”

- **Fitbit, Polar and Withings**, which are all diversifying from their core products and offering smart scales, among other items.

- **Sony**, which has extended its Xperia smartphone brand. The company now also offers a smart headset, a smart camera and a smart projector. The headset can assist the wearer with directions, weather, and updates from social media and email. The Sony PlayStation Eye (camera) is voice activated but can also film automatically. The company’s projector will be able to beam interactive content onto a wall or table. The central theme is that the company will incorporate machine learning in the range, allowing for a more user-centric experience, with the technology acting as the user’s own personal assistant.

As the market matures, we expect to see the emergence of more ecosystem offerings that mix wearables and cloud applications.

**KEY TAKEAWAYS**

Innovation and change are rife in the wearables market. A large number of startups—fueled by access to cheap components, 3D printing and willing crowdfunders—have emerged, and some have been further funded or acquired by VC firms or corporate buyers.

The market is characterized by a number of key trends:

- The wearables market is merging and overlapping with other markets, such as medical devices.
• Larger companies appear to be developing wearables with a more strategic approach; the collaboration between Levi’s and Google is one example of this. In the past, a number of companies launched items such as smart shirts, bras or socks, but these efforts seemed to be mainly for PR value.

• Fitness is becoming synonymous with wellness and personal health. The trend is being driven by the sportswear giants and by IT companies such as Google and Apple, which are developing wellness data clouds that allow people to measure, track and analyze more of their daily activities.

More significantly, we see two major trends underpinning the continued growth of the wearables market:

• The emergence of “wearables 2.0” will shift the category from stand-alone devices to lifestyle-enhancing systems tying together multiple connected devices and cloud services. Brands such as Under Armour are currently leading the way in offering bundles of connected products and services.

• Wristwear has dominated product launches and driven market growth so far, but the clothing and sportswear categories look set to expand in terms of wearables offerings. In May 2016, Google and Levi’s launched their first product collaboration, a smart jacket, and products scheduled to launch later in 2016 include Nike’s self-lacing shoes.
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