

OUR THINKING &gt; &gt; INTERNET OF THINGS MEETS...&gt; &gt;

## INTERNET OF THINGS MEETS...

## WHAT IS THE INTERNET OF THINGS?

SEP 2014

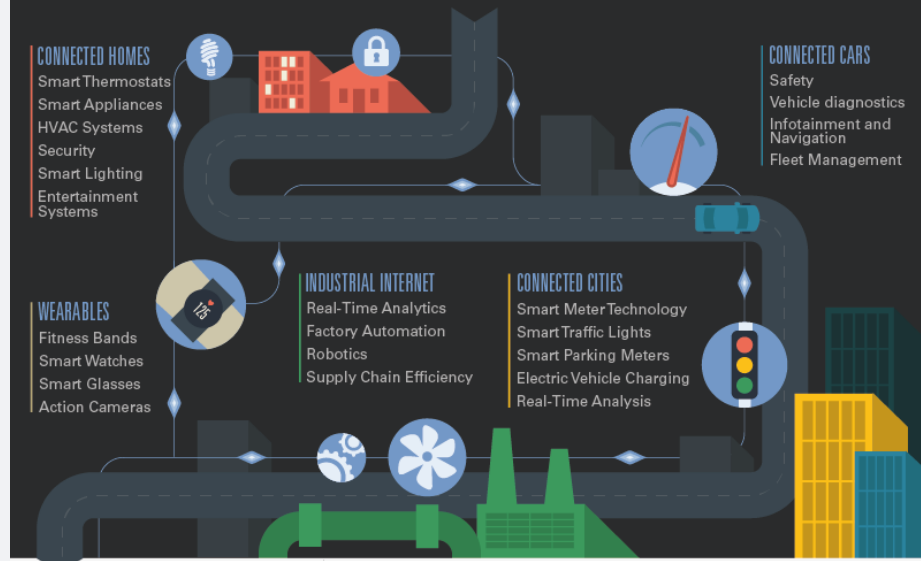


## IoT THE INTERNET OF THINGS

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## WHAT IS THE INTERNET OF THINGS?

The Internet of Things connects devices such as everyday consumer objects and industrial equipment onto the network, enabling information gathering and management of these devices via software to increase efficiency, enable new services, or achieve other health, safety, or environmental benefits.



## HOW DID WE GET HERE?

With key obstacles gone, the cost of connectivity has declined at the same time that new ways to analyze mountains of data have developed.

## COST OF SENSORS

\$1.30  
AVG. COST  
↓  
**.60**  
over the past 10 years.

## COST OF BANDWIDTH

↓  
**40x**  
over the past 10 years.

## COST OF PROCESSING

↓  
**60x**  
over the past 10 years.



## SMARTPHONES

Smartphones are now becoming the personal gateway to the IoT.



## WI-FI

With Wi-Fi coverage now ubiquitous, wireless connectivity is available for free or at a very low cost.

## BIG DATA

As the IoT will by definition generate voluminous amounts of unstructured data, the availability of big data analytics is a key enabler.

## SCALABILITY OF IPV6

IPv6 =  $3.4 \times 10^{38}$   
IP addresses

Internet Protocol (IP) addresses are the identification and location system for every computer on a network. IPv4, the fourth version of this protocol, allows for 4.3 billion addresses. **IPv6, the newest version, allows for an almost limitless amount.**

## WHAT IS DRIVING GROWTH?

The IoT value proposition – a driver of new product cycles and another leg of cost efficiencies

### REVENUE GENERATION

Companies are focused on the IoT as a driver of incremental revenue streams based on new products and services.

### PRODUCTIVITY AND COST SAVINGS

Businesses are also embracing the IoT to improve productivity and save costs.

**Consumer demand** is also driving IoT adoption as they embrace new technology to improve health, energy savings and safety.

## WHAT IS THE FUTURE?

The Internet of Things (IoT) is emerging as the third wave in the development of the Internet. Personal lives, workplace productivity and consumption will all change. Plus there will be a string of new businesses, from those that will expand the Internet "pipes", to those that will analyze the reams of data, to those that will make new things we haven't even thought of yet.

### DEVICES CONNECTED TO THE INTERNET

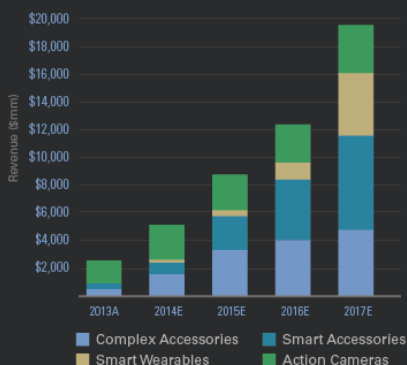
Source: IDC



## WEARABLES

Source: IDC, Goldman Sachs Investment Research

Connected wearable devices include categories such as fitness bands, smart watches, smart glasses and action cameras.

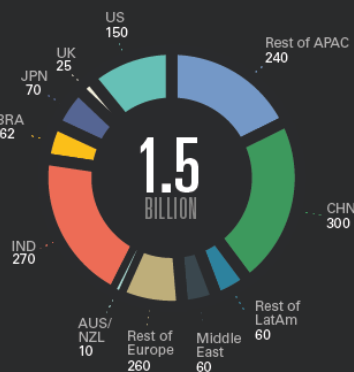


Wearable devices to reach about \$20bn by 2017, growing at over **60% CAGR**

## CITIES

Source: Company data, Goldman Sachs Investment Research

Smart meters, which monitor water, gas and electric usage, play a key role in helping cities analyze data, create efficiency and connect to the IoT.



Approximate estimate of smart meter opportunity by geography, in millions

## HOMES

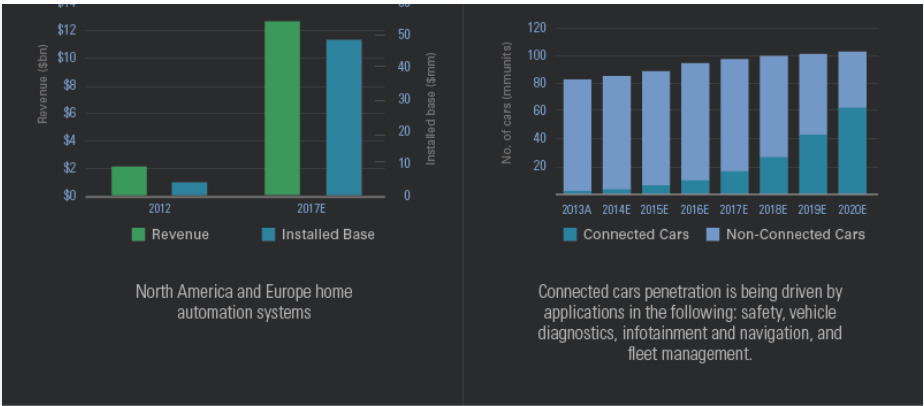
Source: Berg Insight

Connected homes include connecting household appliances to the network, with resulting advantages including improved security, remote management of devices, and energy management.

## CARS

Source: Gartner (March 2014), Company data, Goldman Sachs Investment Research

Connected cars are vehicles that connect to the internet and may also feature the ability to communicate with other vehicles and infrastructure, such as traffic lights.



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