

# CONNECTED MEDICAL DEVICES MARKET AND BUSINESS MODELS 2017

Market & Technology report - September 2017

*The Internet of Medical Things (IoMT) powers industry momentum in digital health and reinvents healthcare organization*

## KEY FEATURES OF THE REPORT

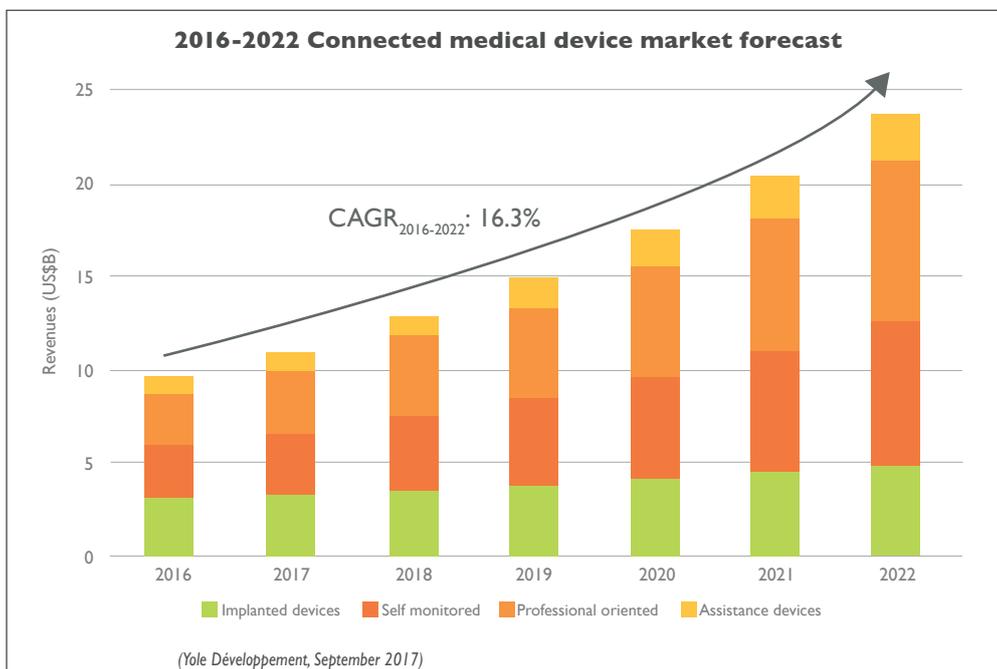
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- Overview of clinically certified connected medical devices and devices for people's assistance
- Definition of connected devices, IoMT in the context of digital health
- Introduction and trends for connectivity and typical architecture for an IoMT project
- Description of the drivers for the adoption of connected medical devices and devices for assistance
- Segmentation of connected medical devices and assistance devices in four categories: Implanted devices; self-monitoring devices; professionally oriented devices; and assistance devices for people lacking autonomy
- Market forecast for major connected medical devices, assistance devices and associated MEMS sensors
- Technology drivers for connected medical devices
- Example of new business models induced by IoMT: Who pays? Who prescribes?
- The major players, supply and value chain in IoMT
- Regulations and security aspects for connected medical devices

## CONNECTED MEDICAL DEVICES: THE DIGITAL HEALTH REVOLUTION HAS STARTED

Healthcare is facing one of its most major turning points in decades. After penetrating the consumer market, the digital revolution and its related concept of the Internet of Things (IoT) is rapidly changing health models. There are many reasons for this transformation. The population is growing and aging, and chronic diseases are exploding. More than 415 million people are living with diabetes worldwide and there are more than 1.5 billion people at risk of cardiovascular diseases. The number of doctors and nurses has stayed consistently flat, as health budgets are shrinking in many regions. Fortunately, connected devices and smartphones are now widespread. People are managing their lives through apps and clouds, and now can do the same with their health, from

hospital to home or even just walking in the street. This report analyzes the dynamics of the connected medical devices market and how its current \$9B revenues will grow at a rate of 16% year-over-year through to 2022 to reach more than \$23B. Healthcare is shifting to a patient-centric model with nearly 20% growth over the period to 2022 for the segment of self-quantified devices. This compares to single-digit growth for connected implantable devices, which face serious security issues. Preventive and predictive medicine and even participative medicine are on the way to supplement evidence-based approaches, using the large volumes of data generated by these connected medical devices.



## INNOVATIVE MODELS AND NEW PLAYERS ARE RESHAPING HEALTHCARE ORGANIZATION

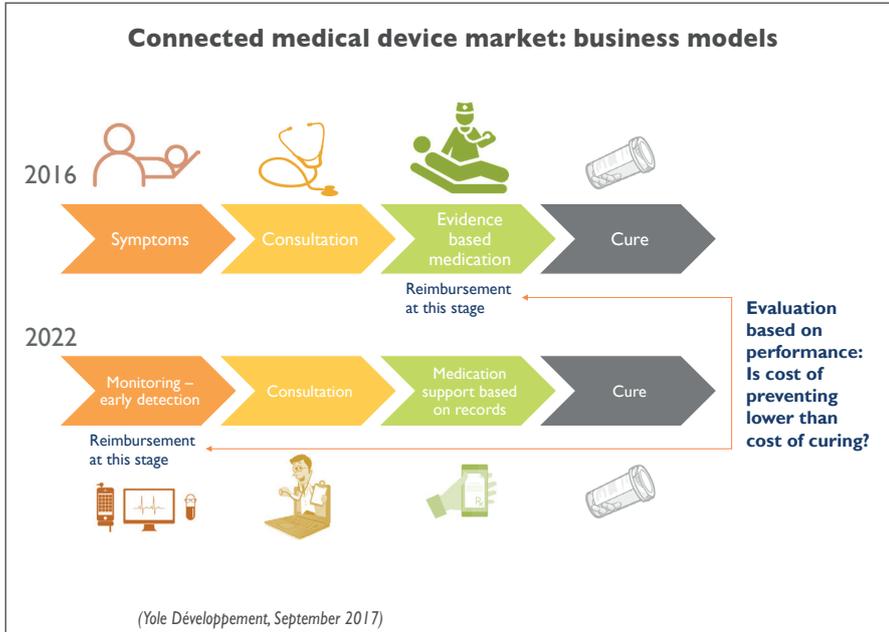
Current changes in healthcare require innovative business models to be created, involving new players from different fields. The performance of these new models needs to be evaluated. The Internet of Medical Things is at the crossroads of medical devices, telecommunications and Information Technology (IT).

A whole infrastructure has to be set up, involving new players in the medical area. Patients receive data from their inhalers or insulin pens to manage their medication, doses and alerts. Physicians are able to follow their patients' records and could see them only when needed, saving visit costs. Health insurance now pays for

prescribed medication after a doctor’s diagnosis. Hospitalization costs to insurance companies are increasing year-over-year due to lack of monitoring or low patient adherence. Connected medical devices could allow “self-quantified” monitoring and could send alerts before patient crises or accidents. But demonstrating that better self-management of chronic disease and better medication adherence will cost less to insurance companies is not an easy task.

It means that when insurance companies reimburse connected medical devices they must include the cost of infrastructure including telecommunication and mobile apps. Prescribers and payers are also taking the IoMT opportunity with inventive new models. Additionally, the IoMT represents a huge opportunity for new players such as IBM and its Watson Augmented Intelligence system to enter the healthcare market and to bring computing power for predictive medicine, as well as the relevant infrastructure to operate connected devices from home, hospitals or anywhere data needs to be shared. Qualcomm Life’s 2net and Capsule Tech solutions are likewise dedicated to IoMT applications. These and several other examples are described in this report.

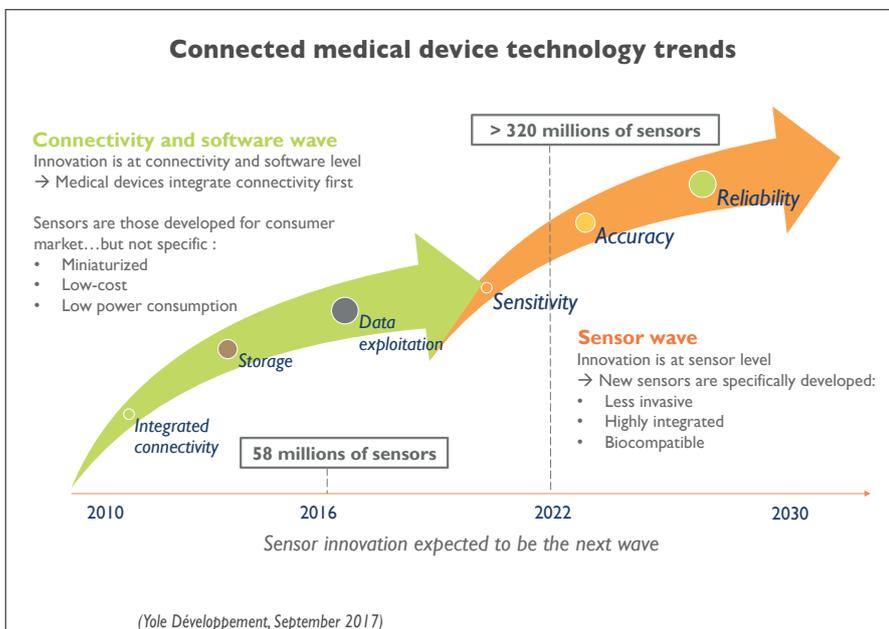
And what about Google, Apple and the other giants? The medical device market is far from their field of interest due to its low volumes, strict regulations, and long development time. Yes, the limits of consumer healthcare are well enough established today to escape the strong restrictions on medical data. But with monetization of data being key for giant companies, regulations on medical data are still more constraining compared to consumers’ private data. This situation creates opportunities for start-up companies to develop connected medical devices. Consolidation of the market and of the supply chain will occur later with series of mergers and acquisitions aiming to gather together the most innovative products and regroup solutions with high levels of synergy.



## TECHNOLOGY OVERVIEW: FROM REUSING SENSOR INNOVATION TO DEDICATED DEVICES

Sensors are at the heart of connected medical devices to measure phenomena such as heart rate, blood glucose level and detection of people’s falls. This report covers the MEMS-based sensor market and trends within it. Portable, wearable and implantable connected medical devices are not dedicated to hospital and physician use any more.

They now need to be adapted to patient use with the smallest size possible, ease of use and the minimum number of constraints. The first step for medical device manufacturers is to connect their products to the telecommunication infrastructure and to patients’ smartphones and tablets. Significant efforts have been made at the software level to make systems safe and protect data. The hardware part represents 5%-10% of connected devices’ value when using sensors that are existing components taken from other applications, enabling smooth innovation. Connected consumer devices have largely contributed to the miniaturization of electronics using MEMS technologies and successful component design decreasing power consumption requirements. Dedicated sensors with high levels of accuracy and reliability should be the next wave of the IoMT innovation. Strong efforts will be made to provide vital medical grade measurements with less invasive devices. For example, thanks to the development of microneedle arrays, patches or smartwatches should replace painful glucometers. We expect the IoMT sensor wave to come after 2022 and increase the global value share that sensors will claim in hardware. Healthcare is a market changing slowly with regards to innovation and needs to use available approved devices. Technology descriptions and current developments will be the focus of a future report.



**REPORT OBJECTIVES**

- This report introduces the concept of IoMT and related medical devices in an increasingly connected world.
- It describes how the health organization is changing with new business models to create, and new value creation from generated data.
- It evaluates the market of connected devices, gives penetration rates compared to non-connected devices and analyzes the dynamics.
- It identifies the medical device and assistance device main players, giving an overview of the main products and developments.
- The report gives a selected list of technology drivers and trends.
- It informs readers about regulations, connectivity protocols and security for data exchanges.

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**AUTHORS**

**Jérôme Mouly** serves as a Technology & Market Analyst specialized in microtechnologies for biomedical & medical imaging applications at Yole Développement, the "More than Moore" market research and strategy consulting company. Since 2000, Jérôme has participated in more than 100 marketing and technological analyses for industrial groups, start-ups and institutes related to semiconductor & medical technologies industry. Jérôme holds a Master of Physics from the University of Lyon.



**Sébastien Clerc** is a Medical Technologies Analyst at Yole Développement, the "More than Moore" market research and strategy consulting company. After graduating from Grenoble INP with a Biomedical Technologies Master degree, he completed his training with a Master degree in Innovation and Technology Management, during which he oversaw strategy and marketing.



As a Technology & Market Analyst in the Medical Technologies (MedTech) business unit at Yole Développement (Yole), **Asma Siari** is involved in the development of technology & market reports as well as the production of custom consulting projects. After a Master's degree in Biotechnologies, Diagnostic Therapeutics & Management, Asma serves as Research Assistant at the Moores Cancer Center (San Diego, CA). She is a coauthor in two scientific publications published in the Molecular Cancer Research Journal. In addition to her mission at Yole, Asma prepares today her Advanced Master's degree in International Strategy & Marketing BtoB (EM Lyon Business School, France).



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- North America - Steve Laferriere: +13106 008 267  
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#### CONTACTS

- For more information about :
- Consulting Services: Jean-Christophe Eloy ([eloy@yole.fr](mailto:eloy@yole.fr))
  - Financial Services: Jean-Christophe Eloy ([eloy@yole.fr](mailto:eloy@yole.fr))
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Any notices under these Terms and Conditions shall be given in writing. They shall be effective upon receipt by the other Party. The Seller may, from time to time, update these Terms and Conditions and the Buyer, is deemed to have accepted the latest version of these terms and conditions, provided they have been communicated to him in due time.

## 9. GOVERNING LAW AND JURISDICTION

- 9.1 Any dispute arising out or linked to these Terms and Conditions or to any contract (orders) entered into in application of these Terms and Conditions shall be settled by the French Commercial Courts of Lyon, which shall have exclusive jurisdiction upon such issues.
- 9.2 French law shall govern the relation between the Buyer and the Seller, in accordance with these Terms and Conditions.