"IoT devices offer huge potential for component manufacturers, but this is clearly not where the value will stop"… announces Yole Développement

Technologies & Sensors for the Internet of Things report from Yole Développement

Lyon, France – June 5, 2014 – From $9.5B in 2014 to $46B in 2024, the Internet of Things (IoT) device market will represent close to 15% of all data processing."IoT devices offer huge potential for electronic component manufacturers, but this is clearly not where the value will stop. Most of the added value in IoT solutions will come from the processing of the generated data", explains Dr Eric Mounier, Senior Technology & Market Analyst at Yole Développement. "In fact, the ratio between electronic components and data processing can reach 1:50 in certain long-term cases!" he adds.

This result is easily understandable, since the main purpose of the IoT is to make sensing ubiquitous at a very low cost, resulting in extremely strong price pressure on electronic component manufacturers. Nevertheless, the next five years will be extremely fruitful for device makers; the market should reach $70B by 2018, before decreasing. This period represents a key window in which manufacturers must seize the opportunity to grab a piece of the IoT business pie.

The IoT is a multi-billion dollar market emerging from several different markets (i.e. industrial sensors, wearable electronics and home automation) which will see strong convergence in the next five years. Three industrial and service sectors will be integral to the valorization of this new market:

- The electronics industry, which will manufacture the sensing devices
- The communication and cloud data storage industry, which will handle data transmission, storage and processing
- Service companies, which will valorize the data either through processing or by selling to a third party

Some companies have already started positioning themselves in these fields: for example, Oracle and Amazon are developing their cloud computing capabilities; Bosch Connected Devices and Solutions and STMicroelectronics have teams dedicated to the IoT; and Google and Facebook are continuously developing their data processing models while looking to acquire companies linked to data gathering. Of course, not all of them will be winners.

The short-term opportunity lies in the electronics industry. Indeed, very strong price pressure is expected for IoT devices, and strong volumes are expected but at very low cost. Even though the general electronics market will experience strong growth, it will be through decreased costs, increased manufacturing capabilities and reduced margins. This trend has already been seen in the MEMS field over the past few years, and will repeat itself in the future.

The same is to be expected for the cloud computing industry. Large investments in terms of data storage will be needed, but strong price pressure is expected, and an overall low value will be attributed to the physical data. Actually, the war on price has already begun between the major cloud computing companies, which are cutting data storage prices while growing their capabilities.

Meanwhile, on the data processing side, more and more information will be available, and at low cost. The more data, the higher the value, and all of this with low overall infrastructural investment. *"Service companies will be the big winners in this field. In order to secure some of this value, hardware and cloud companies will have no choice but to try and integrate themselves vertically in order to valorize themselves and the data they'll be responsible for! As an example, we expect the overall IoT market to reach $400B in 2024, with $46B coming from hardware, $59B from the cloud and $296B from data processing",* details Dr Guillaume Girardin, Technology & Market Analyst, Yole Développement.
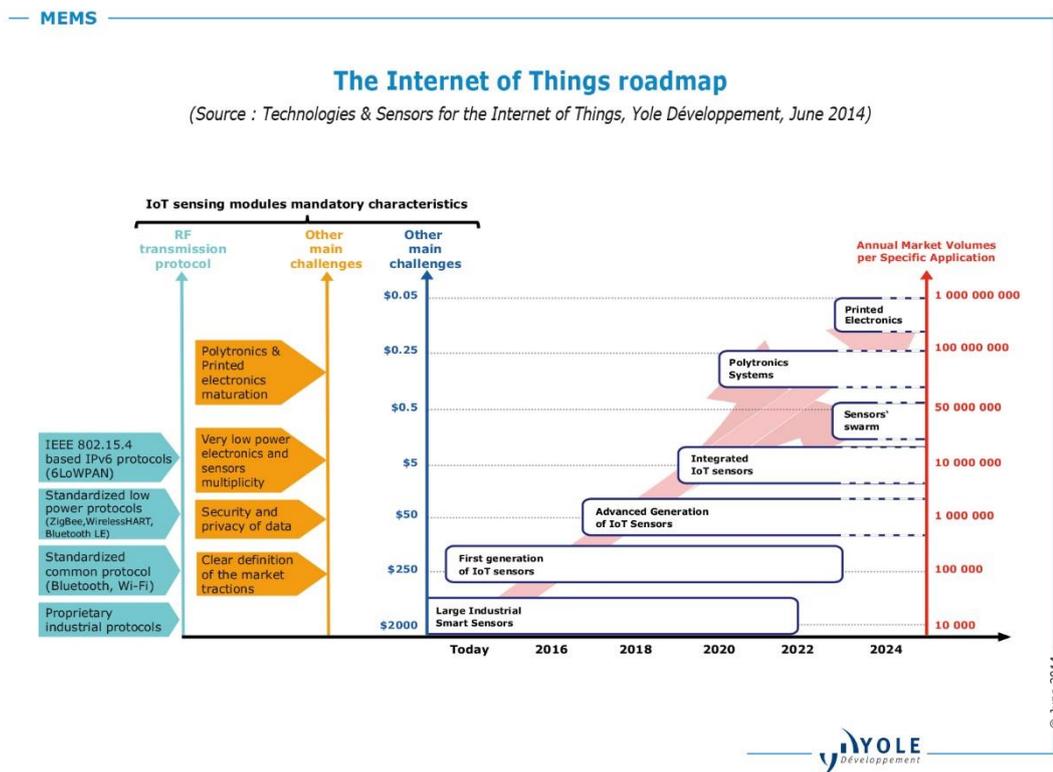
The evolution of IoT technologies is mainly focused on heterogeneous integration at device and module levels. The array of technologies available and soon to be available is immense. Nevertheless, sensing modules' evolution will follow a predefined trend that can be summarized in a series of seven product generations, including large industrial smart sensors, an advanced generation of sensors, and polytronics …

All these results are available in Yole Développement's report, "Technologies & Sensors for the Internet of Things", released today. Under this report, analysts present a deep understanding of the IoT value chain structure, application areas and related technologies.

They describe technology trends and challenges as well as IoT devices evolution in the coming years. IoT applications (building automation, transportation, healthcare, industry …) are also highlighted in this technology & market analysis. More information are available on www.i-micronews.com, MEMS reports section.

About Technologies & Sensors for the Internet of Things report

- **Authors:**

Dr. Eric Mounier has a PhD in microelectronics from the INPg in grenoble. he previously worked at CEA LETI R&D lab in grenoble, France in marketing dept. Since 1998 he is a co-founder of Yole Developpement, a market research company based in France. At Yole Developpement, Dr. Eric Mounier is in charge of market analysis for MEMS, equipment & material. he is Chief Editor of Micronews, and MEMS'Trends magazines (Magazine on MEMS Technologies & Markets).

Dr. Guillaume Girardin works as a Market & Technology Analyst for MEMS devices and technologies at Yole Développement. Guillaume holds a Ph.D. In Physics and Nanotechnology from Claude Bernard University Lyon I and a M.Sc. in Technology and Innovation Management from EM Lyon - School of Business.

Antoine Bonnabel works as market & Technology analyst for MEMS devices and technologies at Yole Développement. He holds a M.Sc. in microelectronics and microsystems from Grenoble Institute of Technologies and a M.Sc in marketing and business management from Grenoble Graduate School of Business.

- **Companies cited in the report (non-exhaustive list)**

ACOEM, AdvanticSys, Amazon, Apple, AT&T, Atmel, Ayla Networks, AVAGO Technologies, BOSCH, BLUECHIIP, Cambridge CMOS Sensors, CEA Liten, China Mobile, Cisco, DataVeyes, DG Logik, DISCERA, Enfucell, EnOcean, EPCOS, FitBit, Flutura, Fraunhofer Institute, FREESCALE Semiconductor, GE, Georgia Institute of Technology, Google, HEWLETT PACKARD, Hillcrest Labs, HITACHI, Honeywell, HTC, IBM, Infomotion Sports Technologies, ioBridge, INTEL, Intellisense.io, InterSoft, INVENSENSE, Jabra, Jasper Wireless, Jawbone, Kionix, Kistler, KNOWLES Electronics, Koubachi, KTH, KwikSet, KWJ Engineering, Lenovo, Lightning Switch, Lime Microsystems, LogBar Inc., LumoBack, M2M Cyber Security, M2Mi, MC10 Inc., Marlow Industries, MEMSIC, Micropelt, Misfit, Motorola, MURATA, MYO, Navisens, Nest, Netatmo, Newco, Nike, Nintendo, Nokia, NXP Semiconductors, OnFarm Systems, Optoi MicroElectronics, Oracle, Pebble, Purdue University, Rosemount, Samsung, SemTech, Sensaris, Sensata, Sensirion, Sensonor...

- **Catalogue price:**

One user license*: Euro 3,990 - Multi user license: Euro 5,990

* One user license means only one person at the company can use the report. Please be aware that our publication will be watermarked on each page with the name of the recipient and of the organization (the name mentioned on the PO). This watermark will also mention that the report sharing is not allowed.

Publication date: June 2014

For special offers and the price in dollars, please contact David Jourdan (jourdan@yole.fr or +33 472 83 01 90).

About Yole Développement – www.yole.fr

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media in addition to corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, Yole Développement group has expanded to include more than 50 collaborators worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Manufacturing, Nanomaterials and Power Electronics.

The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.

CONSULTING

• Market data & research, marketing analysis

• Technology analysis

• Reverse engineering & costing services

• Strategy consulting

• Patent analysis

More information on www.yole.fr

MEDIA & EVENTS

• i-Micronews.com, online disruptive technologies website

• @Micronews, weekly e-newsletter

• Technology Magazines dedicated to MEMS, Advanced Packaging, LED and Power Electronics

• Communication & webcasts services

• Events: Yole Seminars, Market Briefings

More information on www.i-micronews.com

REPORTS

• Collection of technology & market reports

• Manufacturing cost simulation tools

• Component reverse engineering & costing analysis

• Patent investigation

More information on www.i-micronews.com

FINANCIAL SERVICES

• Mergers & Acquisitions

• Due diligence

• Fundraising

• Coaching of emerging companies

• IP portfolio management & optimization

More information on www.yolefinance.com

CONTACTS

For more information about:

• Consulting Services: Jean-Christophe Eloy (eloy@yole.fr)

• Financial Services: Géraldine Andrieux-Gustin (Andrieux@yole.fr)

• Reports business: David Jourdan (jourdan@yole.fr)

• Corporate Communication: Sandrine Leroy (leroy@yole.fr)

###