

Status of the MEMS Industry

TECHNOLOGY & MARKET REPORT – JULY 2012

*Fueled by consumer applications, MEMS market keeps growing
and MEMS company acquisition values are climbing!*

Based on 20 years' experience in MEMS market analysis, Yole Développement analysts present the 2012 edition of "Status of the MEMS Industry" ("MIS"), including MEMS device markets, key players strategies, key industry changes and MEMS financial analysis. It also includes major MEMS manufacturing evolutions as well as an update on the "emerging" MEMS device markets.

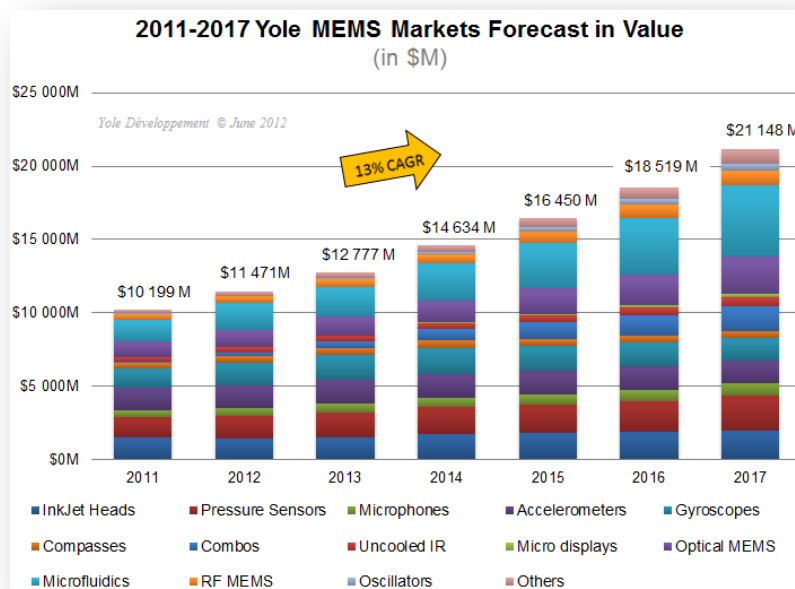


Figure 1: 2011-2017 MEMS markets in US\$M value.
Depending on the type of device, CAGRs range from 1% to more than 90%!

A COMPLETE DESCRIPTION OF THE DIFFERENT MEMS MARKETS

MEMS will continue to see steady, sustainable double digit growth for the next six years, with 20% compound average annual growth in units and 13% growth in revenues, to become a \$21 billion market by 2017 (Figure 1). We expect continued strong growth in motion sensing and microfluidics as those sectors will increasingly come to dominate the MEMS market totals, making up almost half of the overall market in 2017, with accelerometers, gyros, magnetometers and combos accounting for about 25% of the total, and microfluidics for 23%. To better track important developments in inertial, we have broken out a separate category for combo sensors in our market data and forecasts this year. We believe that the market for discrete inertial sensors will begin to decline, but the growth for inertial combo solutions will be huge. Though currently less than \$100 million niche, we expect combos to be a \$1.7 billion opportunity by 2017.

Almost all MEMS players had a growth in sales in 2011 compared to 2010. Companies involved in inertial sensors and microphones are growing the most.

STRATEGIC MEMS BUSINESS MODELS ANALYSIS

In MIS 2012, we analyze the different MEMS players' business model. A focus is made on STM and Bosch case studies. STM is currently becoming a leader in the MEMS market, hardly challenged by Robert Bosch. STM has been able to diversify its MEMS offer with a wide range of MEMS devices and 90% of its IDM business done with 2 devices only (accelerometers, gyroscopes). It has anticipated the growth with early investment in high-volume manufacturing infrastructure with an 8" production line. Today, STM has entered into diverse partnerships to speed time to market and enlarge product offering. On the other hand, Bosch benefits from the fab infrastructure primarily dedicated to automotive applications to decrease cost.

NEW MEMS DEVICES ARE COMING WITH CAGR > 90% FOR SOME OF THEM!

Every year brings new business in the MEMS landscape. Today, combo sensors are reshuffling the cards in the competitive landscape. But the MEMS market is still very fragmented, with a number of high volume MEMS applications still limited today. However, a whole range of new MEMS devices now reaches the market and new “emerging MEMS” devices are coming as well (Figure 2). Some of them have the possibility to ramp up to large volumes quickly: especially those that can be applied to mobile devices (RF MEMS switches, oscillators, auto-focus...).

- New sensors (humidity, touchscreen,...) and actuators (switches, energy harvesting...) are driving future growth
- In addition to those emerging MEMS, growth of the MEMS market will also come from existing sensors that are expanding into new market spaces, sometimes using new types of integration (e.g. pressure sensors).

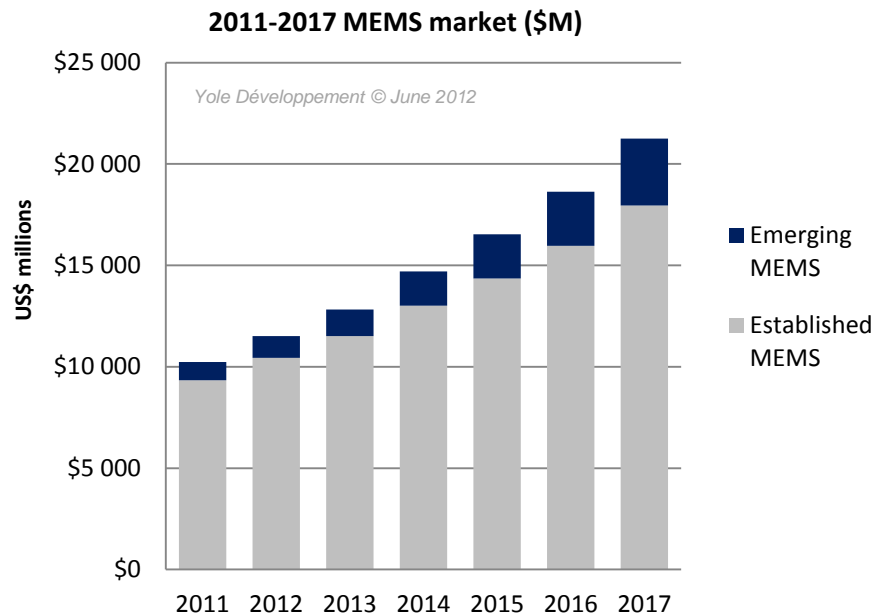


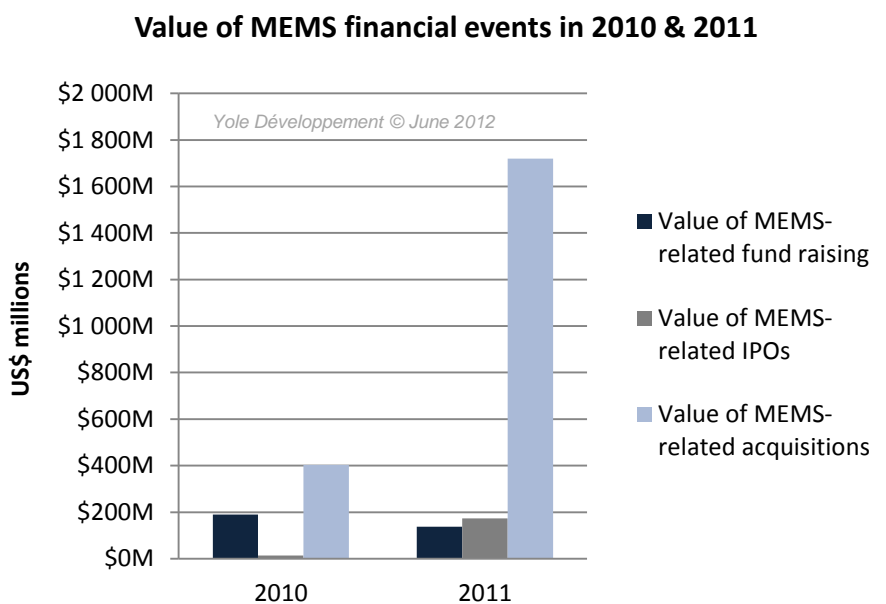
Figure 2: the contribution of new MEMS devices to the market will grow

MEMS ACQUISITIONS HAVE SKYROCKETED IN 2011

In 2011, both the number and values of MEMS transactions have boomed. A total of \$1.7B MEMS acquisition value has been realized in 2011 (Figure 3).

Early stage MEMS companies are acquired at high prices (e.g. SensorDynamics, Pixtronics...) because there are a limited number of candidates which are private and have a solid technology, which make them increasingly attractive given the expansion of the MEMS market and the willingness of many large companies to enter this area.

Figure 3: the number of MEMS acquisitions have skyrocketed in 2011 with > 300% increase



OBJECTIVES OF THE REPORT

- An analysis of the evolution of the business models, of the industry structural changes
- MEMS cost structures
- A description of the factors affecting the MEMS business
- Provide 2011-2017 market forecasts for MEMS devices in \$M, units, wafer start for more than 12 MEMS devices used in 200+ applications
- A ranking of the major MEMS players & foundries
- What are the major key technological manufacturing evolution
- STM and Bosch case studies
- MEMS Financial update

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WHO SHOULD BUY THIS REPORT ?

- The executives of MEMS companies to look at the complete MEMS business and the major evolution that could impact the industry in the long term
- The technology team of MEMS companies to learn from the development of the other parts of the MEMS industry
- The end users to understand the evolution of the MEMS industry & find data on each application and who is doing what
- The marketing and technology team of equipment and materials manufacturers, looking to have a complete picture of MEMS world and the key metrics of the industry

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BIOS OF THE AUTHOR



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