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Emerging Non Volatile Memory
technological choices are about to be
made ... STTMRAM or MRAM?

LYON, France – January 26, 2015 – “The technological choice between STTMRAM/MRAM and RRAM will be made in the next two years”, announces the “More Than Moore” market research, technology and strategy consulting company, Yole Développement (Yole). Yole releases this week a new technology and market analysis dedicated to the Emerging Non Volatile Memory (NVM): Emerging Non Volatile Memory (NVM) Technology & Market Trends Report. The technological choice between STTMRAM and RRAM will be made in the next two years: what is the best solution for data centers and embedded MCU applications?

Yole’s analysis describes why and how emerging NVM technologies will be increasingly used in various markets including industrial & transportation; enterprise storage; wearable; mobiles devices; mass storage; and MCU smart card ... “Emerging NVM (ie MRAM, RRAM) sales are still moderate at $65M in 2014 and limited to niche markets due to the limited density available but new high density chips will be introduced in the next two years what will open new opportunities specially in the enterprise storage field ”, announces Yann de Charentenay, Senior, Technology & Market Analyst, Yole Développement.

Yole presents an overview of the semiconductor memory market including NAND, DRAM, embedded MCU and mobile CPU ... The consulting company details the emerging NVM current and future applications and emerging NVM market forecasts, provides technical roadmap of each memory, and recent developments of both dominant embedded and stand-alone memory players like Micron, Samsung, SK Hynix, Renesas, Qualcomm, ST Microelectronics... and startups like Everspin, Crossbar, Crocus Technologies, Adesto...

In 2014, Micron, the main phase-change memory (PCM) promoter for stand-alone memory, stopped actively selling PCM chips following the collapse of sales targeting the shrinking entry-level mobile phone market.

At the same time, Micron developed a resistive random access memory (RRAM or ReRAM) chip with Sony, part of a technology class
that includes conductive bridge RAM (CBRAM). At 16 Gb the Micron-Sony RRAM has the highest density commercialized among emerging NVM technologies. Thus, Yole believes that PCM is now out of the race for stand-alone memory.

For embedded microcontroller unit (MCU) applications 2015 will be a key year as STMicroelectronics, the main PCM promoter in this market, will choose if PCM will remain in its roadmap.

The new emerging NVM report is thus focused on the two most promising technologies: RRAM and magnetoresistive RAM (MRAM). The most attractive category of MRAM is spin-transfer torque magnetoresistive RAM (STTMRAM) that provides higher scalability/density. A main selection criterion for memory is the scalability/density of the chips, as this impacts both performance and cost. The Yole report provides a precise memory roadmap in terms of technological nodes, chip density and pricing.

STTMRAM/MRAM and RRAM have different features and positioning. Nevertheless, they will compete in 2015 and 2016 in some standalone markets, with storage class memory for enterprise storage being the biggest one. They will also compete in embedded MCU markets in the wearable, smart card and other markets. Micron has already selected RRAM for 2015 and other key stand-alone players like Samsung and SK Hynix should react quickly. In the embedded memory space, only Panasonic has selected RRAM and many key players have not yet made their choice. There is still high uncertainty over what will be the best technology to adopt. The next two years will therefore be critical for the future. There are multiple selection criteria, including scalability, retention, speed, endurance and cost. Making the right choice is not an easy task. And Yole, in its report, provides insights about the main market drivers for each type of memory in each application.

In the long term, STTMRAM is sure to be the only candidate to substitute DRAM thanks to its high endurance. RRAM is sure to substitute NAND thanks to its high scalability/low cost.

Yole’s analysis provides a market forecast for each technology by application, in units, in Gbit, revenues and also number of wafers. It also presents a precise review of all the latest technical developments.
by the main players to understand the status of the technology and the main technical challenges.
About Emerging Non Volatile Memory (NVM) Technology & Market Trends Report

- Author: Yann de Charentenay, Senior, Technology & Market Analyst, has worked for Yole Développement in the field of MEMS, materials and compound semiconductors since 2003. He has contributed to more than 60 marketing & technological analysis.
- Companies cited in the report: A*STAR, Adesto, Aeroflex, Altis, Apple, Atmel, Avalanche, Buffalo, Cisco, CNE, Crocus, Crossbar, Cypress, Dell, Ebay, EMC, Evaderis, Everspin, Facebook, Freescale, Fujitsu, Fusion IO, Gemalto, Giesecke&Devrient, Global Foundries, Google, Honeywell, HP, HP, IBM, IBM, IBM, IBM, Imec, Infineon, Innovative silicon, Intel, Lapis, Macronix, Maxim, Microchip, Micron- Eipida, Morpho, Nanya, NEC, NetApp, Nike, Nokia, Numonyx, NXP, Oberthur, Panasonic, Qualcomm, Quantum, Rambus- Unity, Renesas, Samsung, Sandisk, SGI, SK Hynix, Skyera, Smart modular technologies, SMIC, Sony, Spansion, Spin Transfer technology, STMicroelectronics, STEC, Sun, Symetrix, TDK, TMS, Toshiba, Towerjazz, TSMC, UMC, Violin Memory, Winbond and more ...
- Rates: Euros 5,390.00 (Full report - Multi user license)

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 / www.i-micronews.com

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.

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