

## **MRAM scaling-down challenges**

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In the last five years, there has been a buzz around magnetic random access memory (MRAM) as the future universal memory for computing and mobile applications. For example, in 2004, Infineon and IBM have presented at the VLSI conference the world's first 16 Mbit MRAM, the highest density reported to date. In 2005, Cypress sampled fully functional MRAM to several key OEM customers.

Nevertheless, despite over a decade of work by some of the world's most prominent semiconductor companies, the year 2005 has seen several major component manufacturers withdraw from the MRAM race.

Starting with the initial motivations for MRAM, ranging from speed, low power consumption and non-volatility, we will then present the several hurdles that appeared during the race, leading to the development of the 2nd generation of MRAM. We will conclude our talk by some options now evaluated by research labs which could lead to the development of the 3rd generation of MRAM.