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## Micron Partners With Start-Up On Flash-Memory Replacement

By Shara Tibken  
Of DOW JONES NEWSWIRES

NEW YORK (Dow Jones)--Micron Technology Inc. (MU) is forming a partnership with a Silicon Valley start-up to develop a new form of memory to replace NAND flash when it reaches its technological limitations.

NAND chips, which retain data even when electrical power is switched off, have become vital to the emerging mobile market, used in devices such as tablets and smartphones. But the technology faces an uncertain future. As companies keep shrinking circuit dimensions, many experts believe that at some point it may become impossible to boost the storage capacity of the technology any further.

Various companies--including Unity Semiconductor Corp., Micron's new joint development program partner--have been developing new technologies to replace flash. Unity, which has been working on a new type of memory called CMOx for the past eight years, says CMOx is designed to go beyond the limitations of the legacy transistor technology now used in NAND.

Unity Chief Executive David Eggleston says CMOx can store about four times the amount of data as NAND chips of the same size and record data five to 10 times faster.

"Consumers have gotten used to every year doubling the capacity in mobile devices," Eggleston said in an interview. "With some of the challenges flash faces, CMOx helps break through that and keep up with the rapid expansion of capacity users want in phones and tablets."

The company had been looking for a partner to help with development of CMOx for several years, finally reaching an agreement with Micron.

Micron, based in Boise, Idaho, is the last surviving U.S. maker of dynamic random access memory, or DRAM, which temporarily stores data in computers and other products. It also has become a major supplier of NAND flash memory, which has seen a strong rise in demand because of the increase in mobile products.

The partnership with Unity isn't Micron's only effort to move beyond NAND. The company last year bought Numonyx Holdings BV, which, along with making a different type of flash called NOR, has been developing a new technology called phase-change memory, or PCM. PCM, considered a potential successor to both varieties of flash, records data by causing material to change from a crystalline state, or phase, to a disordered state.

A Micron spokesman said the company is investigating different memory technologies as part of its normal research and development operations.

"CMOx is certainly one of those we're looking at when it comes to the future of non-volatile [memory]," he said.

Other candidates to succeed today's memory chips include technology that uses magnetic charges rather than electric charges to store data and technology based on carbon nanotubes, materials that can be fabricated in ultra-small dimensions.

Unity plans to license its technology--based on ions instead of electrons and using no transistors--to other memory companies once it has been fully developed, Eggleston said. He sees the products first being used in mobile devices and enterprise storage.

In the meantime, he said the agreement with Micron, lasting two years, puts some restrictions on Unity working with other memory makers.

The technology development itself should be completed within the next couple years, with the first products based on CMOx likely to appear in 2013 or 2014, Eggleston said. He added it typically takes chip makers 12 to 18 months to develop a product after licensing the technology.

Meanwhile, it's still unclear when NAND will reach its limitations. Problems tend to surface as circuit dimensions keep getting smaller and make it more difficult to hold the electrical charges needed to retain data. Flash-memory maker SanDisk Corp. (SNDK) told The Wall Street Journal earlier this month that engineers will keep making breakthroughs necessary to break the 20-nanometer threshold.

Micron said it's currently running at 25 nanometers.

"We're not one of the guys predicting the end of NAND flash," Eggleston said. "There's so much focus on this market as a critical component for consumer electronics and solid-state drives that we expect NAND is going to continue to scale for several more generations.... We think the two will coexist."

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