

# NEWS RELEASE

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## **Toshiba's NAND Flash Deprivation Experiment Enters the Front Office**

With the Clock Ticking and an Important Conference Call About to Begin – Could you Conduct Business Without NAND Flash?

**IRVINE, Calif., August 8, 2012** — Picture it: it's a typical Tuesday morning, you enter your office and are immediately accosted by two strangers wearing lab coats. Pointing to a bin, they instruct you to deposit all devices containing NAND flash memory into it. Having been stripped of your smartphone and tablet, you enter your office, which now looks nothing like it did just yesterday.

“What is this circular thing with the small blue and white papers sticking out of it? Oh, it's a Rolodex – haven't seen one of these in years.” These and other questions spring to mind, as you spot a post-it note stating that an important conference call that requires your attendance will be starting – in two minutes. But wait! You don't have the dial-in number! Thinking quickly, you press the play button on the old school voicemail machine that sits in front of you – only to have it eat the tape before you can listen to the message that contained the call details.

What else could go wrong? This is a scenario explored by [Toshiba America Electronic Components, Inc.](#), (TAEC)\*, a committed leader that collaborates with technology companies to create breakthrough designs, in the latest in a series of NAND Flash Deprivation Experiment videos. Toshiba invented NAND flash technology 25 years ago, and the video series take a humorous look at what life might be like without the technology - and all of the everyday devices that are enabled by it - a cruel experiment, indeed! [Click here](#) to see our test subject, Tony, as he attempts to navigate a day at the office without NAND flash technology. Thanks to NAND flash, the once simple cell phone now functions as an office-on-the-go. Ask yourself: could YOU function without it?

## Did You Know?

- A recent Citrix survey found that, globally, employees who were allowed to use personal devices for business purposes reported productivity gains of 36 percent. In the United States specifically, 53 percent of businesses reported increases in productivity of more than 10 percent while 16 percent reported gains in productivity of 30 percent or more.
- The list of things in an office setting that have been obsoleted by NAND flash is a long one: Rolodexes, wall calendars, phone books, pagers ...the list goes on.

## Supporting Quote

["This technology has grown faster than any semiconductor market in history, displacing other technologies as well as camera film, floppy disks, CDs, videotapes, and maps."](#) – Jim Handy, Director, Objective Analysis

## Toshiba NAND Flash Milestones

- [1987 – NAND Flash Memory invented by Toshiba. The first NAND-type flash memory technology was presented by Toshiba at IEEE International Electron Devices Meeting \(IEDM\).](#)
- 1991 – Toshiba developed the world's first 4-megabit (Mb) NAND-type Electrically Erasable and Programmable Read-only Memory (EEPROM).
- 1995 – 40MB flash memory cards introduced.
- 1999 – SD memory card introduced by Matsushita, SanDisk and Toshiba.
- 2001 – World's first commercial 1Gb MLC NAND flash chip introduced.
- 2005 – Worldwide NAND revenues reach \$10B and exceed DRAM GB shipments.
- 2007 – 128GB MLC SATA Solid State Drive (SSD) introduced.
- 2009 – Toshiba's 3-bit-per-cell 32-gigabit (Gb) chip represented the industry's smallest die-size yet achieved.
- 2010 – Industry's largest embedded NAND Flash memory modules introduced. A stack of sixteen 64Gb NAND chips are used in Toshiba's 128GB e-MMC module.
- 2011 - Toshiba launches 19nm process NAND flash memory - the world's finest process yet achieved yields single chips with a 64 Gb capacity.

- 2012 - Toshiba develops, manufactures 19nm generation NAND Flash Memory with world's largest density and smallest die size - 128 Gb capacity in a 3-bit-per-cell chip on a 170mm<sup>2</sup> die.

### **Tags/Keywords**

NAND flash, flash memory, smartphones, music players, tablets, data storage, consumer electronics, SSDs, digital cameras, cloud computing, eReaders, mobile devices, semiconductor memory

### **\*About Toshiba Corp. and TAEC**

Through proven commitment, lasting relationships and advanced, reliable electronic components, Toshiba enables its customers to create market-leading designs. Toshiba is the heartbeat within product breakthroughs from OEMs, ODMs, CMs, VARs, distributors and fabless chip companies worldwide. A committed electronic components leader, Toshiba designs and manufactures high-quality flash memory-based storage solutions, solid state drives (SSDs), hard disk drives (HDDs), discrete devices, advanced materials, medical tubes, custom SoCs/ASICs, imaging products, microcontrollers and wireless components that make possible today's leading smartphones, tablets, MP3 players, cameras, medical devices, automotive electronics, enterprise solutions and more.

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