2007 Keynote Address

ARCHIVE 2007

"THE IMPACT OF NEW APPLICATIONS AND INCREASING DEVICE COMPLEXITY ON THE FUTURE OF TESTING"

Steven R. Appleton
Chairman, CEO and President, Micron Technology

ABSTRACT

THE EMERGENCE OF CONSUMER APPLICATIONS, coupled with advances in highly integrated packages, has significantly changed both the economic equation and the technical challenges for testing new complex devices.

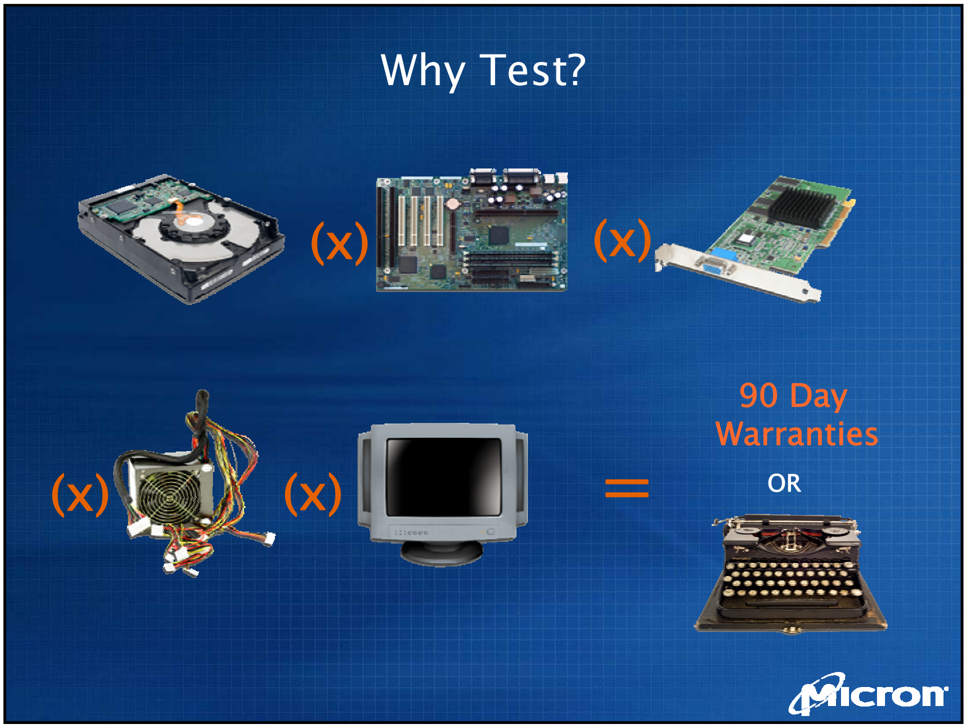
The wide variety of applications requiring various levels of quality and reliability, combined with their vastly different product life cycles, also poses a need to rethink the industry's historical perspective of "one size fits all".

We will explore these topics in light of current market trends and their impact on test costs and strategies moving forward.

Impact of New Applications and Increasing Device Complexity on the Future of Testing

Steve Appleton
Chairman, CEO, President

Burn-in and Test Socket Workshop
March, 2007



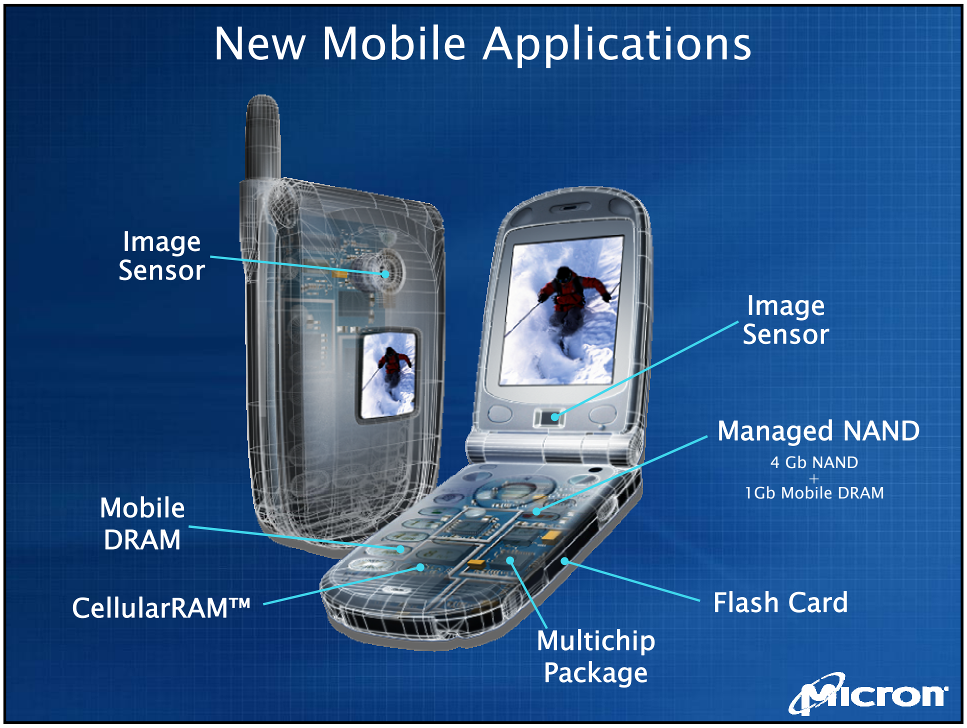
Why Test?

(x) (x)

(x) (x) =

90 Day Warranties

OR



New Mobile Applications

Image Sensor

Image Sensor

Managed NAND
4 Gb NAND
+
1Gb Mobile DRAM

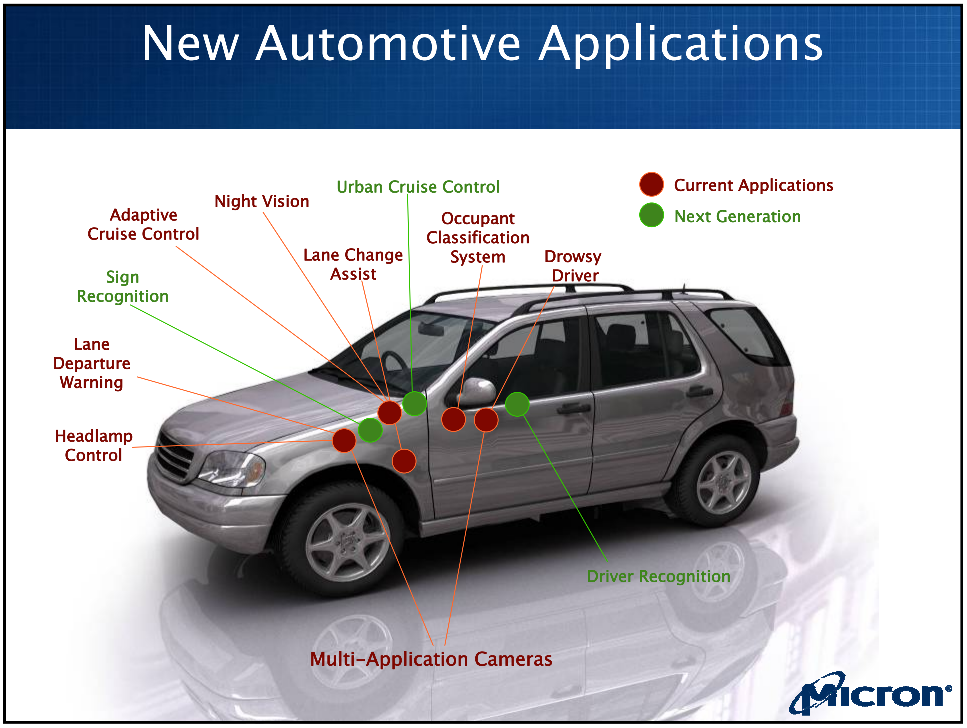
Mobile DRAM

CellularRAM™

Flash Card

Multichip Package

Micron



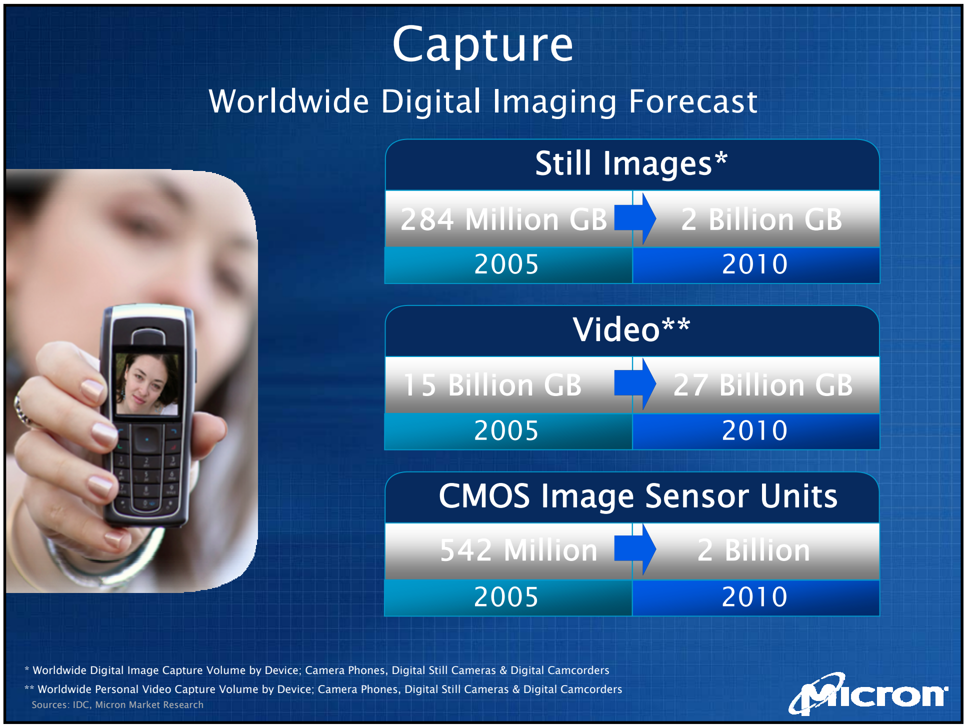
New Automotive Applications

🔴 Current Applications
🟢 Next Generation

Adaptive Cruise Control
Night Vision
Urban Cruise Control
Occupant Classification System
Lane Change Assist
Drowsy Driver
Sign Recognition
Lane Departure Warning
Headlamp Control
Driver Recognition
Multi-Application Cameras

Micron

New Medical Applications



Capture

Worldwide Digital Imaging Forecast

Still Images*	
284 Million GB	2 Billion GB
2005	2010

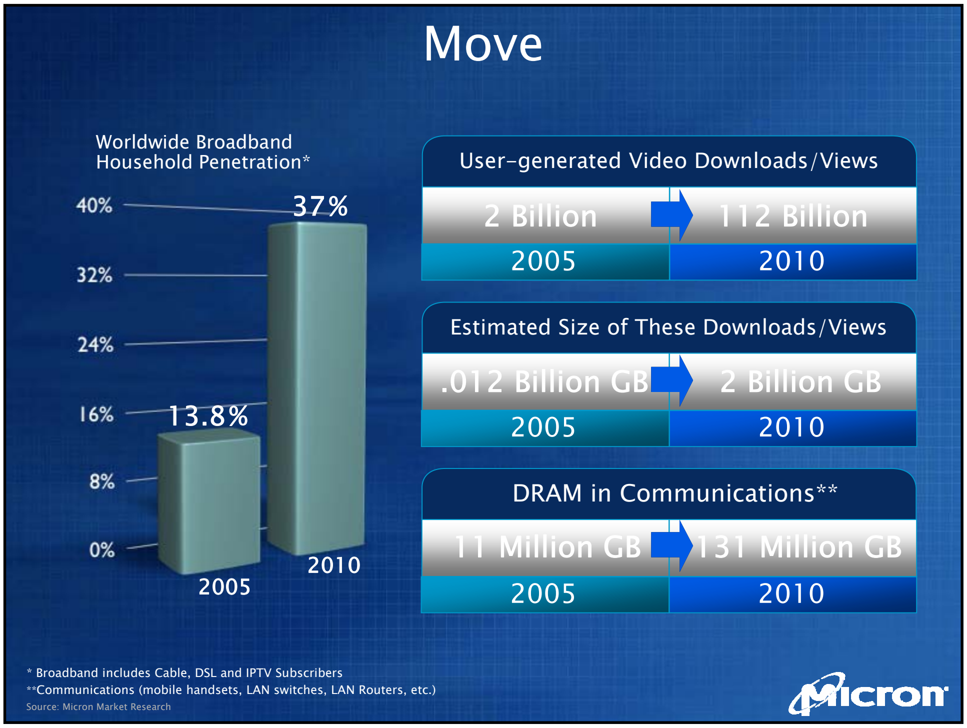
Video**	
15 Billion GB	27 Billion GB
2005	2010

CMOS Image Sensor Units	
542 Million	2 Billion
2005	2010

* Worldwide Digital Image Capture Volume by Device; Camera Phones, Digital Still Cameras & Digital Camcorders

** Worldwide Personal Video Capture Volume by Device; Camera Phones, Digital Still Cameras & Digital Camcorders

Sources: IDC, Micron Market Research



Move

Worldwide Broadband Household Penetration*

User-generated Video Downloads/Views

2005	2010
2 Billion	112 Billion

Estimated Size of These Downloads/Views

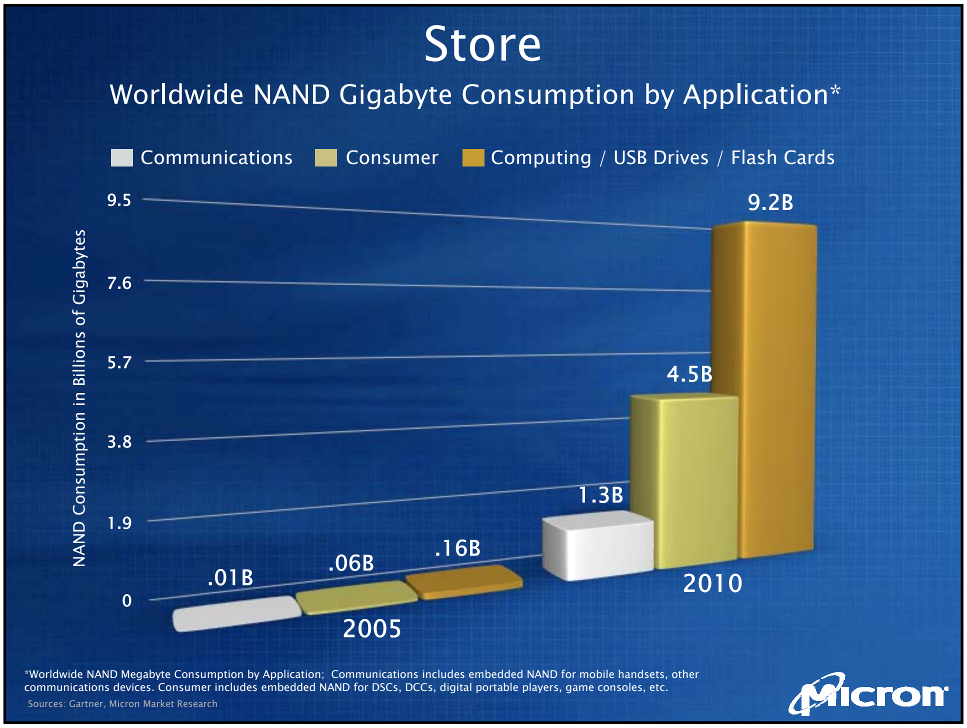
2005	2010
.012 Billion GB	2 Billion GB

DRAM in Communications**

2005	2010
11 Million GB	131 Million GB

* Broadband includes Cable, DSL and IPTV Subscribers
**Communications (mobile handsets, LAN switches, LAN Routers, etc.)
Source: Micron Market Research

Micron

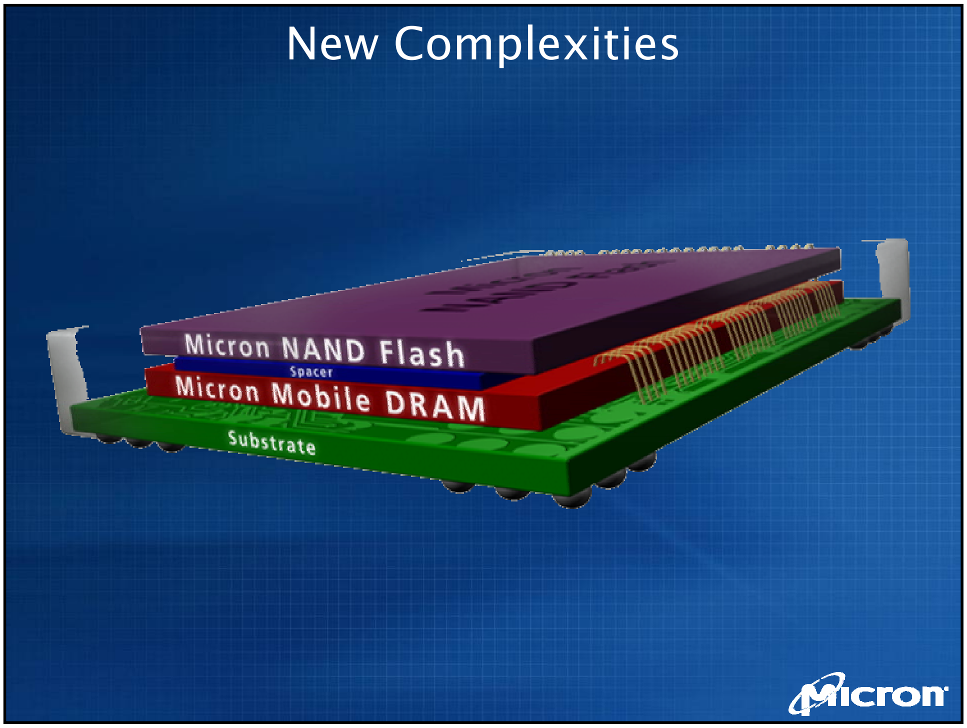


Store

Worldwide NAND Gigabyte Consumption by Application*

*Worldwide NAND Megabyte Consumption by Application; Communications includes embedded NAND for mobile handsets, other communications devices. Consumer includes embedded NAND for DSCs, DCCs, digital portable players, game consoles, etc.
Sources: Gartner, Micron Market Research

Micron

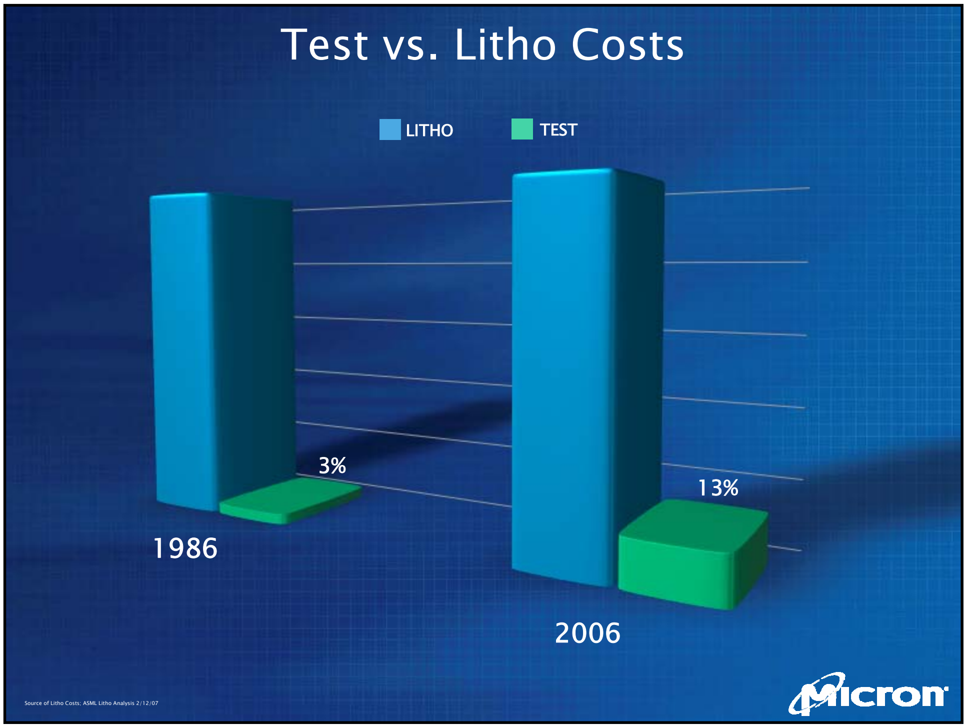


New Complexities

Wafer Sales

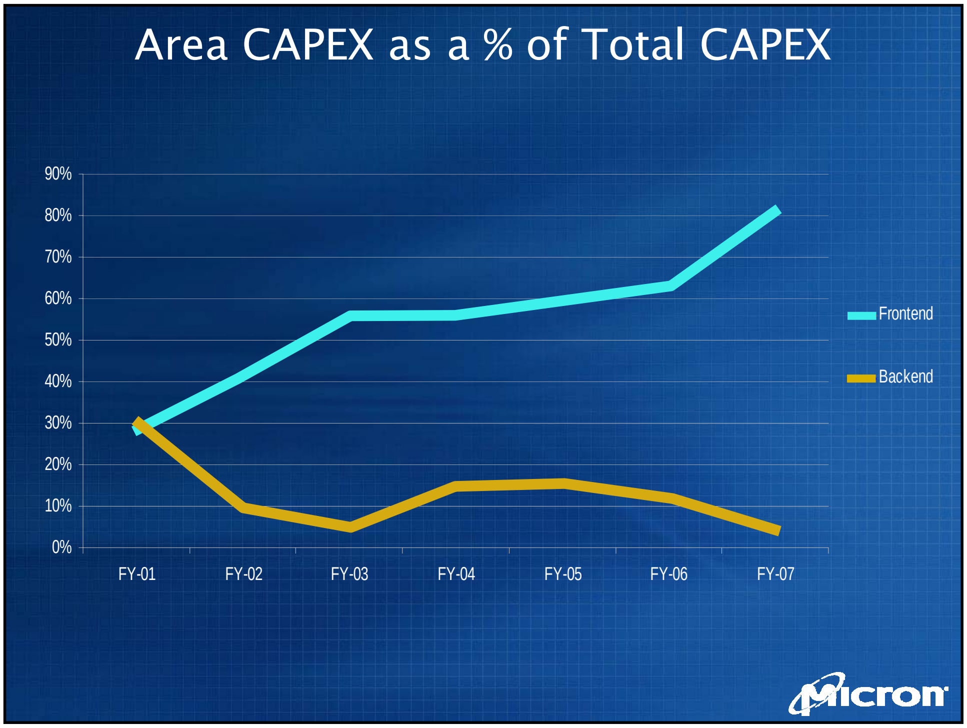
Environmental Testing

Historical Perspective

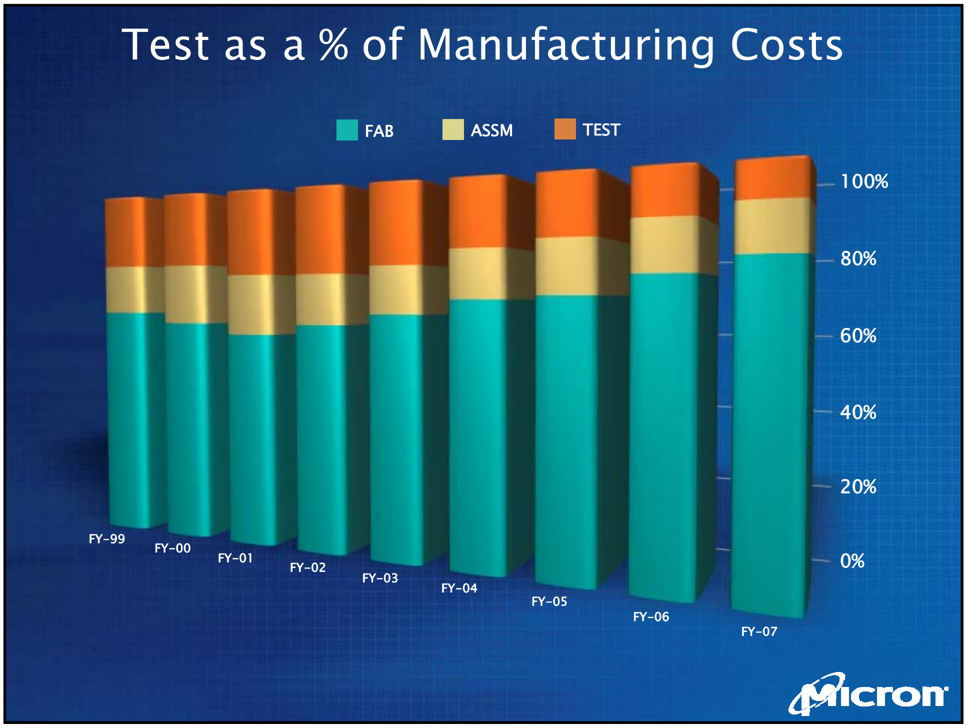


Test vs. Litho Costs

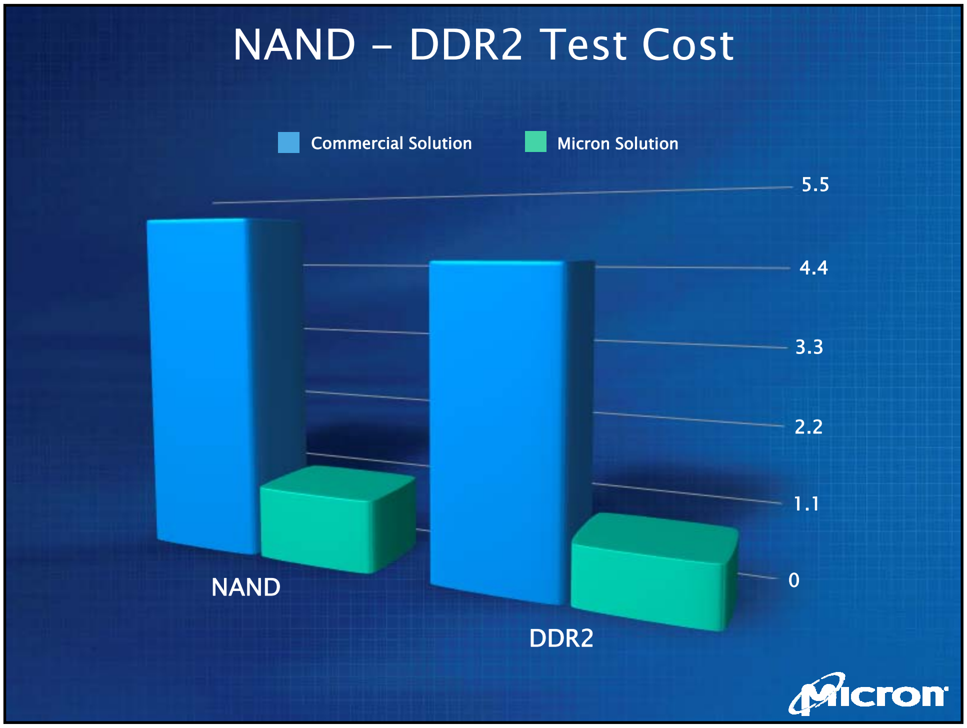
Source of Litho Costs; ASML Litho Analysis 2/12/07



Area CAPEX as a % of Total CAPEX



Test as a % of Manufacturing Costs



NAND – DDR2 Test Cost

Real-Life Testing

Summary

1. Testing today must extend beyond the lab and include real life experiences.
2. Not everything needs to last 100 years – there is a cost to ensuring this.
3. Design and manufacturing groups must be joined at the hip when developing test strategies.
4. The consumer product cycle has made everyone an expert – Get use to it.