Key Application and Market Drivers for Flash

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During our meeting today we will be making forward-looking statements. Any statement that refers to expectations, projections or other characterizations of future events or circumstances is a forward-looking statement, including those relating to revenue, pricing, market share, market growth, product sales, industry trends, expenses, gross margin, production capacity and technology transitions and future products. Actual results may differ materially from those expressed in these forward-looking statements including due to the factors detailed under the caption “Risk Factors” and elsewhere in the documents we file from time-to-time with the SEC. We undertake no obligation to update these forward-looking statements, which speak only as of the date hereof.
Past, Present, & Future NAND Flash
Demand Drivers - Gartner

Note: NAND flash consumption includes both in-system and removable storage such as flash cards.
Source: Gartner Dataquest, May 2007
Drastic Decline in NAND Flash Prices
- Driving both current and new applications

WW NAND projection 2006-2011

- Costs Decreasing ~50% / GB / Year
- Density Increasing 2X per Year

Source: Gartner 1Q07
Transition to Multi-level Cell Technology is Essential

- **MLC Technology Adoption**
  -- By 2007, vendors must leverage MLC technology to stay competitive in mainstream consumer markets (0.8 probability).*

- **SLC Technology**
  -- By 2010, SLC technology will be relegated to only industrial and high end niche segments (0.8 probability).*

Market Challenges of MLC NAND

Meeting the Market Needs

Market Requirements

Performance, Endurance, Reliability

Raw Memory Capabilities

(Smaller Geometries & Increased Bits / Cell)

System-level Approach
&
Increased Parallelism Required

Card Interface
Memory Management
Back-End Interface
MLC
MLC
MLC
MLC

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Digital Imaging – Still growing after all these years

- IDC forecast raised from 114M to over 122M units in 2007
- Mega-pixels & Movie-mode driving card capacities
- DLSRs driving performance
  - High, mega-pixel capture rate

Digital Camera Shipment Forecast

<table>
<thead>
<tr>
<th>Year</th>
<th>5MP</th>
<th>10MP</th>
<th>15MP</th>
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<tbody>
<tr>
<td>2006</td>
<td>5.7M</td>
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<tr>
<td>2007</td>
<td>6.5M</td>
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<td>2008</td>
<td>7.4M</td>
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<td>2009</td>
<td>8.2M</td>
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<tr>
<td>2010</td>
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<tr>
<td>2011</td>
<td>10M</td>
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Source: IDC & iSuppli

Mega Pixels
- Consumer: $2 – 9K
- Enthusiast: $700 – 2K
- Professional: $20 – 40K
- High End: $350 – 699

Frame Rates & Movie Function
- Consumer: 20 – 40K
- High End: 120

High End Features
- Cropping/Magnification
- Improved Interpolation

High End Pro Requirements

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Flash Card Trends

Smaller form-factors

Professional Imaging  Consumer Imaging  Mobile Handsets

Higher Performance

New Markets

Professional Video
SSD - From Fighter Jets to Laptops
PC Storage Market Trends

Gartner Inc., Dataquest Insight
Expect PCs to Impact the NAND Flash Market after 2008
by J. Unsworth, 12.15.2006.

Total Units in Millions

HDD Capacity Growth

% of Capacity Used

Movies
Photos
Music

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NAND Flash in PC Solutions & Challenges

**Hybrid-HDD**
- HDD business model
- Extreme cost sensitivities
- Long-term reliability

**Market Challenges**
- Caching solution only
- Driver dependent
- Standardization (NVMHCI)

**SSD**
- Capacity & cost vs. HDD
- OEM adoption

**Add-on Windows Vista® Performance (ReadyBoost)**
- Limited performance gains in newer systems
  - Vista PCs shipping with 1-2GB DRAM
SSD Benefits: Improved User Experience

- Less down time and failures = **improved TCO**
- **Faster boot time** and application launch = improved productivity
- **Better performance** → up to 100X faster than Hard Drives (on random searches) Measurably improved productivity and usability
- **Longer battery life** = improved usability

Running Vista, SSD is nearly 40% Faster¹

¹ Source: SanDisk Testing
Projected SSD Penetration in Notebooks by 2010

- SSD penetration in ~20% of the notebook market = 32M units
- Penetration driven by elasticity and MLC adoption
- 1,200 PB of NAND flash to be used in SSDs or about 11% of NAND output
- TAM >$3B in 2010 $100/system ASP

## Expected 2010 SSD Adoption by Market Segment

<table>
<thead>
<tr>
<th></th>
<th>Consumer Laptop</th>
<th>Enterprise Laptop</th>
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<tr>
<td></td>
<td>Average User</td>
<td>Student</td>
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<td>Summary</td>
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- Green: SSD excellent fit
- Yellow: SSD good fit
- Red: SSD minimal fit

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Concluding Thoughts

• NAND Strength continues across all categories
  – DSC Imaging, Mobile Handset, Audio MP3 Players, UFD, etc..
• Expect falling pricing will drive new markets and applications
  – Professional Video & PC, etc..
• MLC challenges are an opportunity for major players
  – Barriers to entry
  – System-level solutions vs. “Raw NAND”
• Today’s new “hot markets” were not on the RADAR 12-18 month ago
• What’s next ??