



## **IDEMA Asia Pacific Traveling Symposium 2008**

### **“HDD vs. SSD: Which gaps are closing?”**

The battle for storage supremacy continues, perhaps even more ardently than before. In the midst of all the shouting, some truths are emerging - about how HDD and SSD differ, and how both are changing rapidly with the implementation of new technologies. For example, one recent headline reflected an opinion in its title: [“IDF: Full speed ahead for SSDs”](#) Yet another article, appearing just one day after the one above, stated emphatically in its title: [SSDs not ready for 'storage-class' apps](#). Within the same week that these articles were published, others appeared asking: [Can solid state disks wear out?](#) and [Will SSD spark a new format war?](#). These are but a sampling of the controversies spinning around the HDD vs. SSD debate. Without considering the need to sell magazines and as nearly as we might approach the question logically, what is the truth? We will have our panel of experts explore this fascinating topic as well as other high priority issues faced by the HDD industry. Think it has been tough the last few quarters? Maybe we haven't seen anything yet.

# IDEMA<sup>®</sup>

**IDEMA Asia Pacific Traveling Symposium 2008**

**“HDD vs. SSD: Which gaps are closing?”**

**Friday, 17 October 2008**

**XiangMei International Hotel 香梅大酒店**

No 588, Xinhua Road,  
Meicun Town, New district,  
Wuxi, China



**Monday, 20 October 2008**

**Impact Exhibition & Convention Center**

Jupiter 4-7, Challenger Hall  
99 Popular Road, Sub-district, Pakkred District  
Nonthaburi 11120, Thailand  
<http://www.impact.co.th>



**Mark the dates in your diary!**

*For more information on our symposium or on sponsorship opportunities available, please contact KK Lim at [kklim@idema.org](mailto:kklim@idema.org) or (60)12 4002239; EK Choo at [ekchoo@idema.org](mailto:ekchoo@idema.org) or (65) 64810448.*



# CONFERENCE SCHEDULE

( W u x i - 1 7 O c t o b e r 2 0 0 8 )

- 0830 - 0900 Guest sign in / Registration
- 0900 - 0905 Opening Remarks, **KF Chong**, Chairman, IDEMA North China Management Committee
- 0905 - 0910 Welcome, **Joel Weiss**, President, IDEMA
- 0910 - 0940 Keynote Speaker – **Dr. Dave Mosley**, Senior Vice President, Global Disc Storage Operations, Seagate Technology

**“New Market Trends in Asia”**

*“Seagate Technology is the worldwide leader in the design, manufacture and marketing of hard disc drives and storage solutions, providing products for a wide-range of applications, including Enterprise, Desktop, Mobile Computing, Consumer Electronics and Branded Solutions.*

*In this session, our speaker from Seagate Technology will share new markets trends and opportunities in the HDD industry.”*

- 0940 - 1010 **Joel Weiss**, President, IDEMA

**“The Past, Present, and Future of Hard Disk Drive Storage”**

*” The creation of the disk drive industry and its technology may be one of the most interesting, challenging, and remarkable endeavors undertaken by mankind. It draws upon virtually every aspect of science and engineering. On a day to day basis, it is difficult not only for its technology but also for its financial health. Every so often it makes sense to pause and look back at the tremendous progress this industry has made. Comparing the technology to the semiconductor industry, progress has been significantly faster than **Moore’s Law** (which states that the number of transistors that can be inexpensively placed on an integrated circuit doubles approximately every two years).*

*In this presentation, I will take a brief look backwards at the historical progress, try to capture the current industry status, and look forward to the new technologies that are required to sustain its great progress.”*

- 1010 - 1040 *Coffee Break / Tour Table-top Exhibition*

## Session I - Market Analysis: Challenges and Opportunities

1040 - 1105 **John Rydning**, Research Director, IDC

### **“Where Our Digital Future Will Reside: A Reality Check”**

*” The variety and type of mobile devices keeps growing, ranging from mobile phones and MP3 players to portable PCs and now ULPCs or “netbooks”. Each device has its own requirements when it comes to storing data either locally on the device, or in the ‘cloud’. Whether stored locally or in the ‘cloud’, storage requirements are pushing storage technologies to new boundaries to satisfy a wide range of needs.*

*In the end, we expect to have information wherever and whenever we want it.*

*In this presentation, Mr. Rydning will go beyond the claims made by HDD and SSD companies to provide a reality check about the future for HDD and solid state storage in mobile and enterprise applications. Market trends and dynamics affecting mobile and enterprise applications will be explored, and IDC will reveal how real world environments have an impact various data storage technologies. Finally, IDC will share its outlook for both HDD and SSD storage for mobile and enterprise applications in the context of these ever changing dynamics.”*

1105 - 1130 **John Kim**, Vice President, TRENDFOCUS

### **“SSD Threat: Hype or Reality”**

*” Continued developments in NAND flash and SSD controller technologies are beginning to produce SSDs that provide a compelling replacement for HDDs in some applications. While the near-term impact on the HDD market as whole is limited, both the enterprise and mobile HDD markets are exposed to long-term erosion from the onslaught of solid-state solutions. Opportunities and challenges facing SSD penetration of key HDD segments will be assessed.”*

1130 - 1155 **Matt Bryson**, Managing Director, Avian Securities, LLC

### **“HDDs and SSDs – Strategies For Maximizing Returns”**

*“The nascent Solid State Drive market represents an incremental opportunity for hard drive vendors as well as a threat to their traditional market. Leaders in the Hard Drive space should look to historic means of value creation in their own industry as guidelines for successfully engaging the SSD market. Strong parallels between the HDD and SSD markets suggest strategies and catalysts that have delivered profitability and capital appreciation in HDD can also be applied to the emerging SSD opportunity.”*

1155 - 1225 Panel Discussion and Q&A  
Chairperson: **Dr. Joel Weiss**

1225 - 1335 *Lunch / Tour Table-top Exhibition*

## Session II – Advanced Technologies & Enterprise Storage

1335 - 1400 **David James**, Vice President, Fujitsu Computer Products of America, Inc.

### **“Disk Drive Interfaces – Principles, Evolution, and Markets”**

*“The presentation is a technical and market assessment of disk drive interfaces of the past, present and future. It examines industry needs, architectural capabilities and commercial realities.”*

1400 - 1425 **Dr. Jon Elerath**, Sr. Systems Reliability Engineer, NetApp

### **“Impact of Drive Reliability in RAID Systems”**

*“In the past, I have written papers or presented data on the reliability of hard disk drives (HDDs) that were used in a redundant array of inexpensive disks (RAID). These presentations focus primarily on the HDD itself, looking at the time-to-failure distributions and the impact of vintage, technology change, particle contamination, error recovery, and data reporting and analysis processes. While we talk about RAID, perhaps you have never heard a good description of the RAID architecture or how HDD failures impact RAID reliability.*

*In this presentation, I discuss the concepts of RAID, beginning with a basic description of the several RAID configurations (RAID-0, RAID-1, RAID-4, RAID-5 and RAID-6). Then, I summarize HDD failure modes and mechanisms, and explain how various failures and operational features impact the reliability of the RAID system. The benefits of RAID-6 will also be presented from a system architecture perspective.*

*The goal of this talk is to tie the HDD failure events, with which you are familiar, to the impact on a system that your customer uses, thereby giving you a better understanding of how HDD design and manufacturing affect the end users that employ redundant architectures.”*

1425 - 1450 **Manoj V.**, Country Sales Manager, Finisar Corporation

### **“Successful Test Equipment Use: What You Need to Know at 6 Gb/s and Beyond”**

*“As serial storage product vendors gear up for 6Gb/s SAS/SATA product developments, they often overlooked the difficulties of using test equipment at these higher data rates. At these speeds, companies can no longer think of test equipment as a plug-and-play proposition. When a company's success depends upon timely debugging of high-speed serial products, a small amount of knowledge regarding test equipment best-practices and protocol goes a long way.*

*This discussion focuses on what companies need to know about high speed serial test equipment and the basics of how to successfully utilize it at these higher data rates.”*

1450 - 1520 **Coffee Break / Tour Table-top Exhibition**

## Session III – Metrology & Contamination Control

1520 - 1545 **Dr. Ryan (Young-kook) Yoo**, Global Sales & Marketing Director, Park Systems

### **“Dimensional Nanometrology with Atomic Force Microscopy (AFM)”**

*“Partnering with Seagate Technology, critical inline AFM solutions have been developed and successfully adopted for the slider characterization of perpendicular magnetic recording. Designed and optimized for metrology consideration, the new AFM is a significant departure from a piezotube-based AFM which suffers from poor repeatability and accuracy due to the intrinsic background curvature and destructive scan mode therein. The new automated AFM has a highly orthogonal and flat scan, providing adequate repeatability and accuracy for precision nanometrology. The high speed z scanner with minimized drive mass provides a fast z servo response, making true non-contact AFM practical, hence significantly extending the tip life and measurement reliability. In addition, the design concept of the second generation AFM was utilized to measure undercut structures by intentionally changing the angle of the z scanner. The new 3D AFM has enabled the sidewall roughness measurement for the first time in AFM history.”*

1545 - 1610 **Peter Maguire**, Vice President, Lighthouse Worldwide Solutions.

### **“Particle Counting Standards and Their Impact on the Use of Particle Counters in the HDD Industry”**

*“Recently a series of International Standards for particle counting have been developed. These standards are designed to maximize the reproducibility and repeatability of particle count measurements made with any vendor's optical particle counter instrument. With the creation and release of these new standards for particle counting, there is now a calibration procedure and verification method for particle counters, to help minimize the inaccuracy in the measurement result by a particle counter, as well as the differences in the results measured by different instruments. A common problem for both air and liquid particle counting has been obtaining reliable particle count data from different instruments that are used to qualify equipment, facilities or component. This presentation will address the new standards and their impact on the design and application of particle counting instruments in the HDD industry.”*

1610 - 1635 **Dr. Weerachai Banchorndhevakul**, Senior Manager, Magnecomp Precision Technology

### **“Metrology Challenges in Contamination Control”**

*“As areal density has increased, along with the demand for higher reliability, the HDD industry has mandated lower contamination levels for incoming components. This trend has resulted in the use of highly sophisticated and costly testing in the supply chain. This paper will discuss the various methods used to measure contamination on HDD mechanical components, and how the lack of industry standards impacts progress in this area.”*

1635 - 1650 **Closing Remarks**

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1425 - 1450 **Dr. William Cain**, Vice President of Technology, Western Digital  
Presented by **Philip Bernard Saram**, Vice President of Asia Engineering, Western Digital

### **“The Incredible Shrinking Bit - Exploring the Technology of Magnetic Disk Storage”**

*“Magnetic hard disk drive areal density has increased more the 100 million folds over the past 52 years. The most recent enabling technology, perpendicular magnetic recording (PMR), has allowed a rapid increase from 130 to 400 Gb/in<sup>2</sup> in just under three years. As PMR technology moves up the “S” curve of maturity, the industry is focused on the next set of technologies that will continue to spark future areal density growth. This talk will explore requirements and potential enablers needed to write and read the ever-shrinking magnetic data bits essential to meet the continued strong growth in storage demand.”*

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