

The Optical Disc Industry - where are we going?



High definition media
– sharper than reality

Roland Lacher

**Member of the Board of
MEDIA-TECH Association**

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Long Beach, USA



MEDIA-TECH
Serving the media industry

Agenda

Part 1

Where are we coming from?

- The Success Stories of CD and DVD

Part 2

Where are we today?

- At the Transition Point to 3rd Generation

Part 3

Where are we going?

- The New Opportunities and Challenges

OPTICAL MEDIA/ The Storage Market

- ⇒ Semiconductor Chips DRAM, MRAM, Flash Memory
- ⇒ Semiconductor - Storage Media ATM Cards, Multimedia Cards
Chip Cards, Memory Cards, etc.

- ⇒ Magnetic Storage Media Tapes, Floppy Discs, etc.
- ⇒ Magnetic Discs Hard Discs for PCs

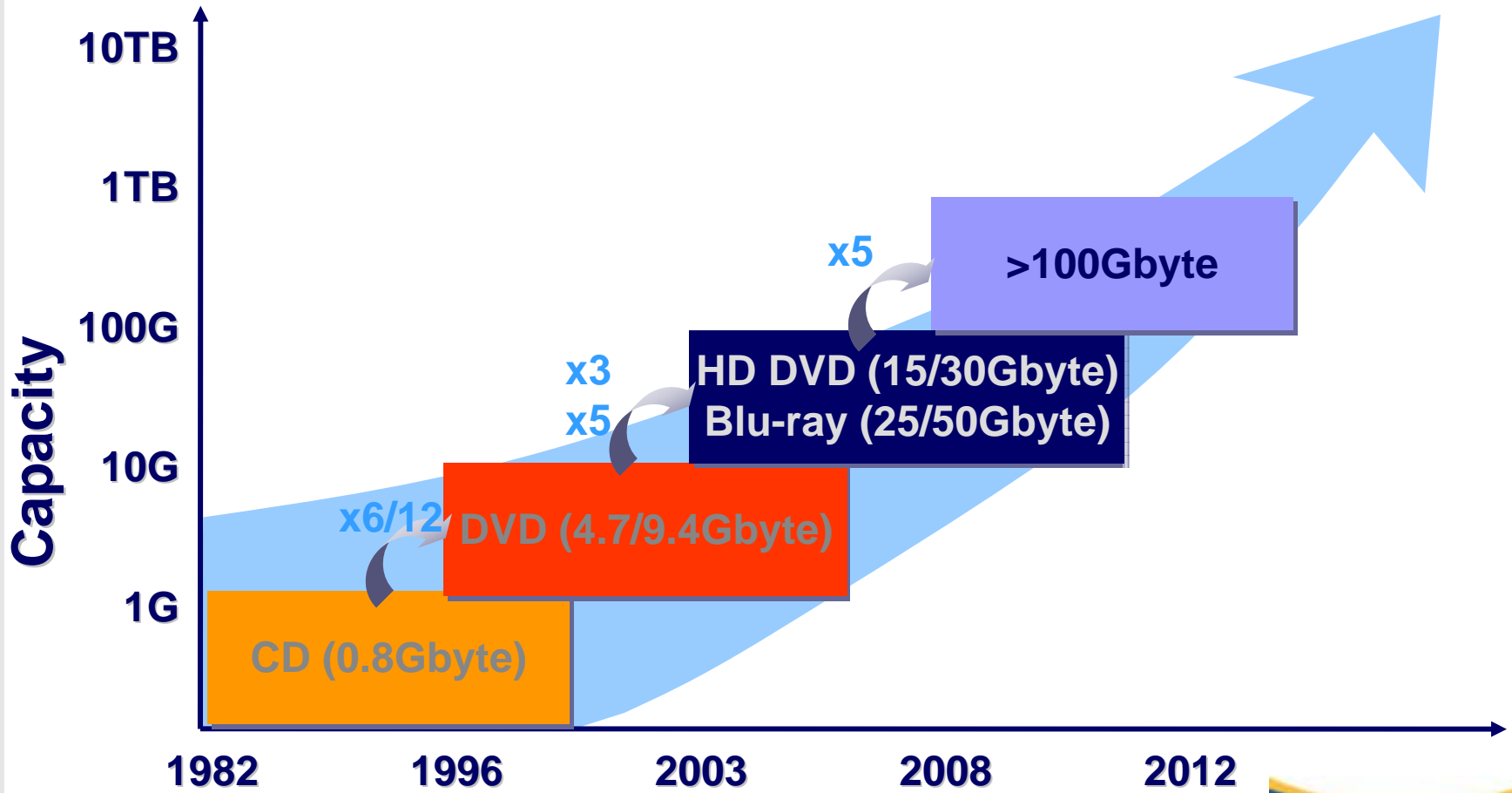
Optical Media

- ⇒ Compact Discs (1. Generation) CD, CD-ROM, CD-CARD,
CD-R, CD-RW
- ⇒ Digital Versatile Discs (2. Generation) DVD 5, DVD 10 and DVD 9 for Video,
Audio and Software
DVD-R, DVD±RW/DVD-RAM
- ⇒ HD DVD + Blu-ray (3. Generation)
- ⇒ Magneto Optical Discs MOs for PCs, Mini Disc

- Until now our industry is focused on Optical Discs only

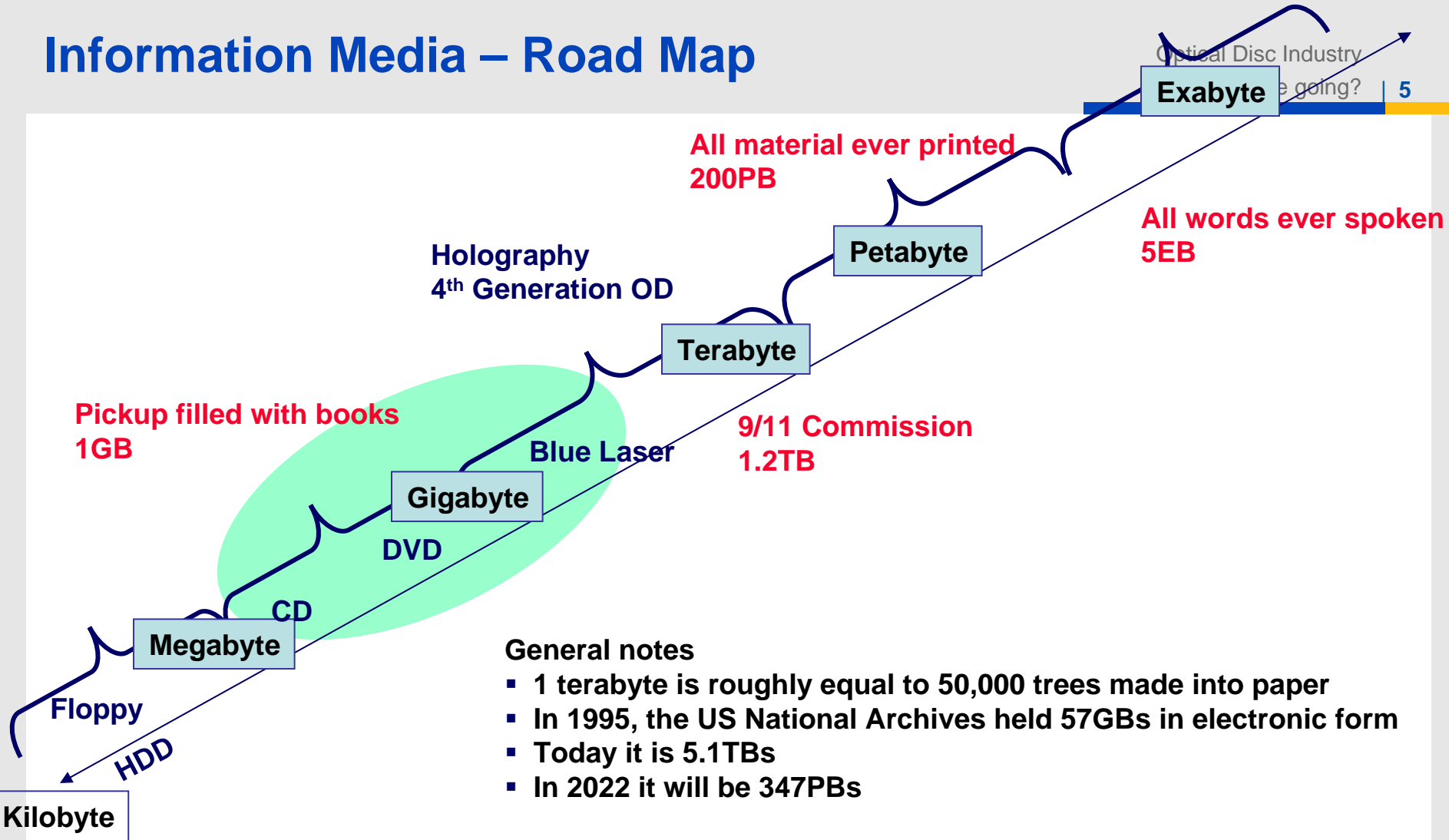


OPTICAL MEDIA/ Storage Capacities



- High performance media will grow

Information Media – Road Map

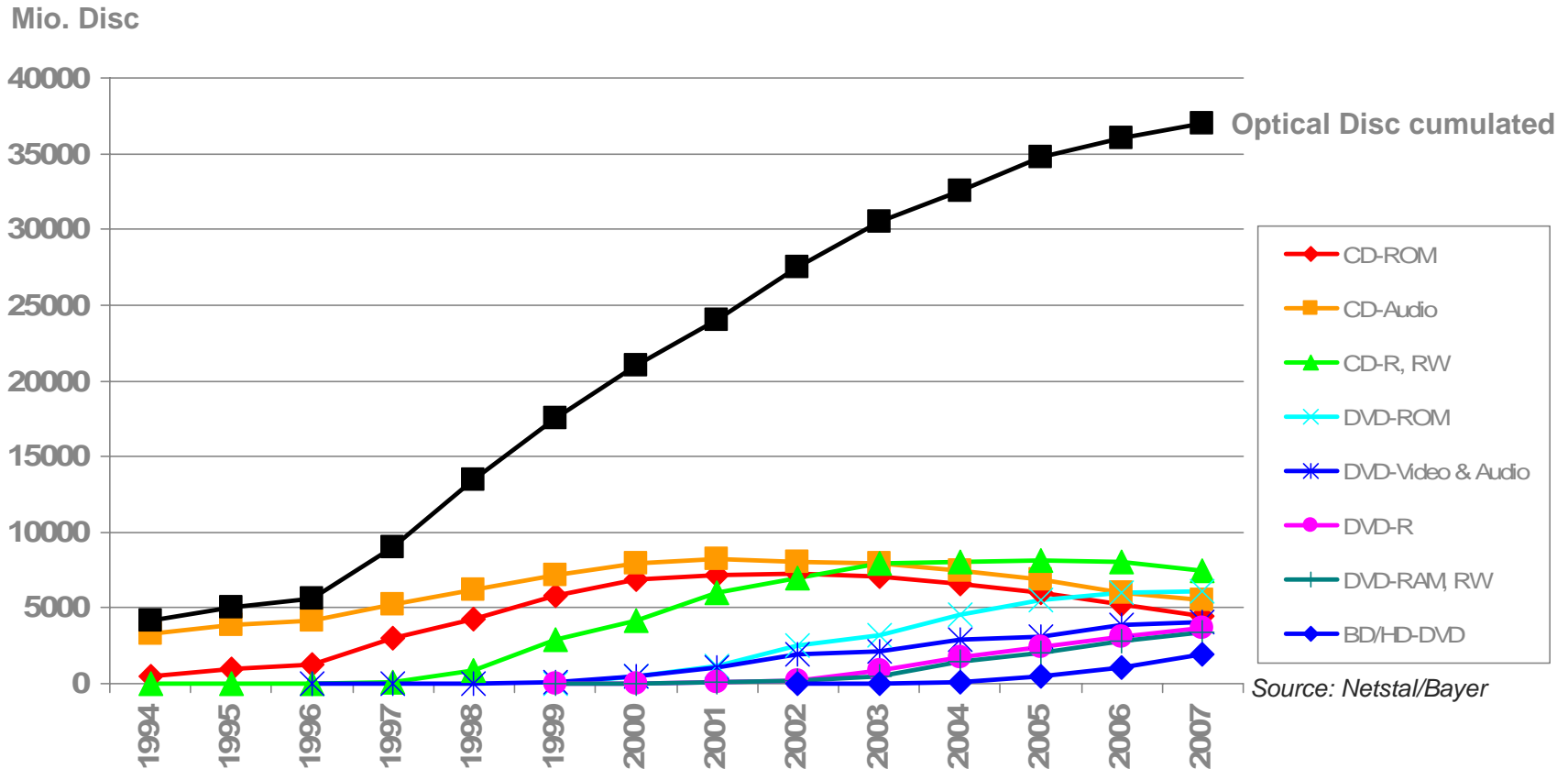


General notes

- 1 terabyte is roughly equal to 50,000 trees made into paper
- In 1995, the US National Archives held 57GBs in electronic form
- Today it is 5.1TBs
- In 2022 it will be 347PBs

- Optical Discs are cheap and have become a real mass storage media

OPTICAL MEDIA/ Market Development



- History: Optical Discs have been an exciting growth market for more than 15 years

- The MEDIA-TECH Association was created in 2001 to better serve the media manufacturing industry and their suppliers
- Founding companies:
Tapematic, M2, Unaxis Nimbus, Steag-Hamatech, Comet, Singulus Technologies, Toolex, Dr. Schenk, Convac, Emould
- 96 Member companies from Europe, Asia and the Americas
- Also MTA is focused on Optical Disc markets only

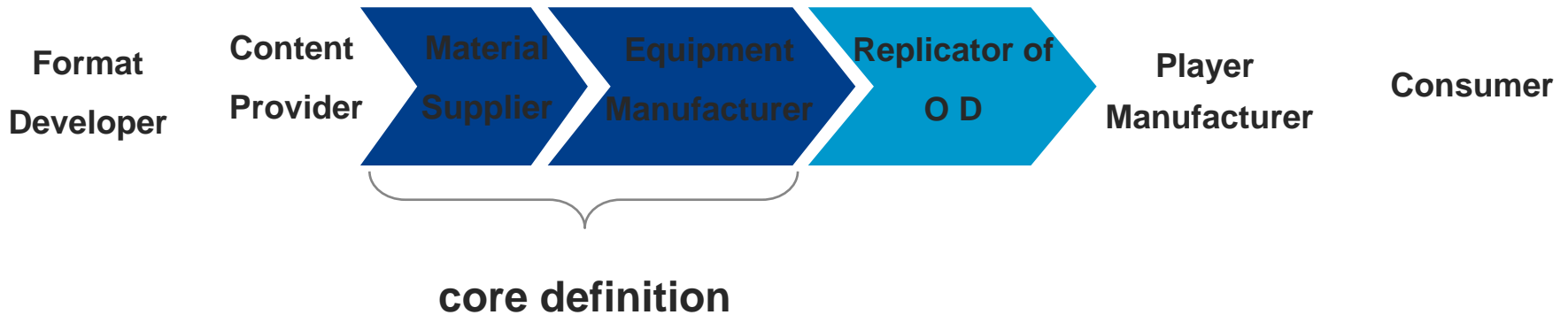


- To create a market-place for manufacturing of optical media
- To better coordinate exhibitions and conferences
- To provide information about markets, technologies and new standards / formats
- To define common interests of members
- To offer a forum for synergies within the industry
- To establish contacts with other organizations such as the DVD Forum, HD DVD Promotion Group, Blu-ray Disc Association, DEG, etc.

- MTA wants to create a healthy business environment to the benefit of all members

- core definition

Material Suppliers and Production Equipment Manufacturer for all kind of Optical Discs



- In Future: Membership open to the entire media industry

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Uncertainties ahead:

- Format development
 - The format war HD DVD versus Blu-ray – will we ever see a clear winner?
 - The unresolved manufacturing technology of Blu-ray Dual Layer
 - The advent timing of 3rd generation formats in volume (!)
 - The pricing of 3rd generation players and recorders
 - Will the perceived value by consumers of the 3rd generation be high enough to create a new mass market quickly?
 - The confusion of Hybrid formats
 - Announcement of 100 Gbyte Blu-ray development
 - The question of 4th generation Optical Media (Holography, Near field recording?)

- The world of Optical Media becomes more sophisticated and confused

Optical Media Industry Challenges

- Optical media are challenged by competitive technologies
 - MP3 technology
 - Broadband technology and online supply
 - iPod / iTunes
 - USB Memory stick
 - Flash memory
 - Magnetic Hard disc

- Optical media have to defend their applications and markets

- The Optical Media Industry is challenged by low profits and losses
 - High impact of prices for polycarbonate to cost of Optical Disc (volatility!)
 - Replicators and equipment suppliers don't make enough money anymore (recordable!)
 - Consolidation and shake out among replicators (prerecorded and recordable discs)
 - Increasing expenses for R & D of manufacturing technologies for new formats and media (DVD-R Dual Layer, Blu-ray Dual Layer)
 - Significant erosion of prices and margins for equipment approx. 10 % p.a.
- The Optical Media Industry needs to improve financial results

- Situation in the MTA
 - Due to consolidation of material- and equipment-suppliers we see a shrinking number of members
 - Less exhibitors to finance MEDIA-TECH Expo and Showcase & Conference
 - Find new members beyond the material- and equipment suppliers to the Optical Disc industry

- MTA has to approach and to recruit new members outside of the already known community



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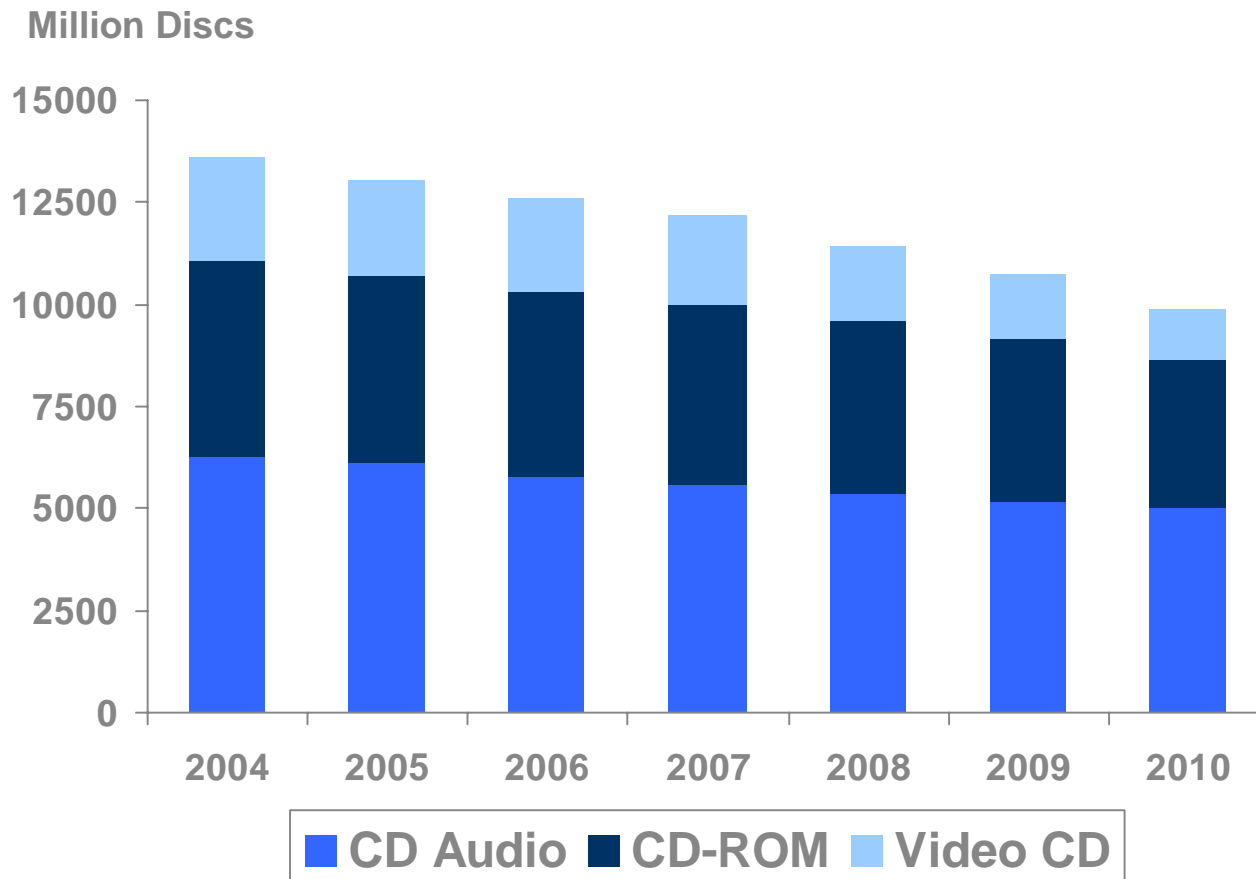
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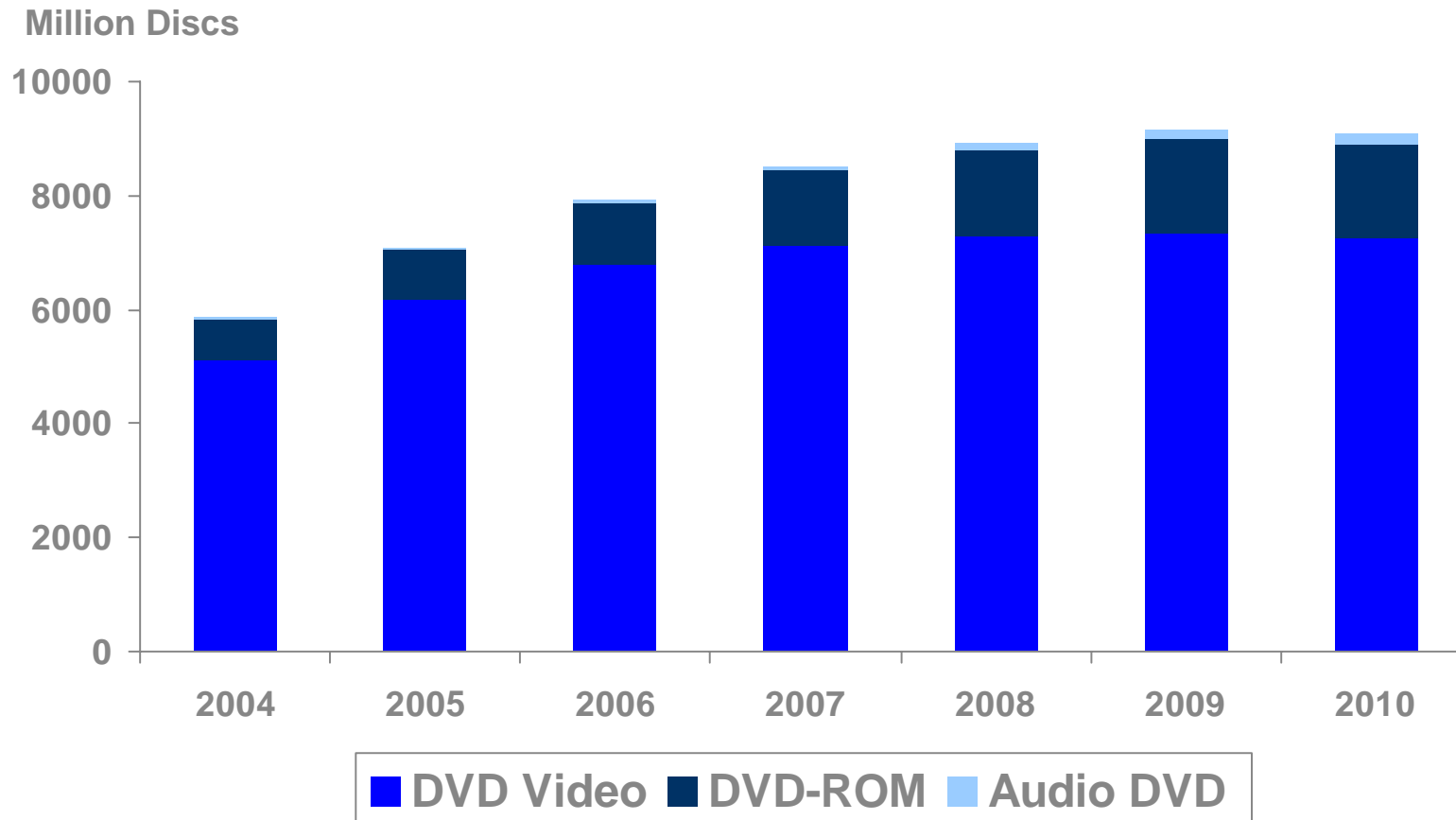
Projected CD Supply (Prerecorded) Worldwide



Source: Understanding & Solutions

- The prerecorded CD market will slow down

Projected DVD Supply (Prerecorded) Worldwide



Source: Understanding & Solutions

- The DVD market will further grow



OPTICAL MEDIA/ Understanding & Solution Statements

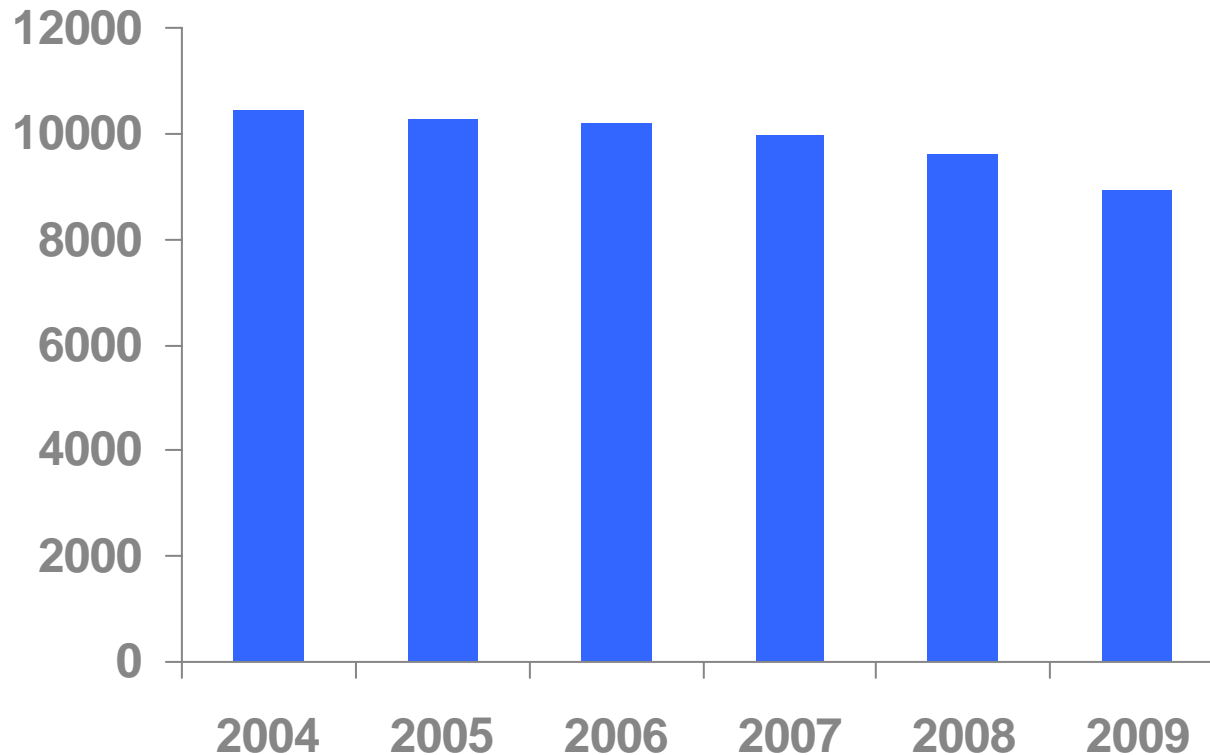
- DVD production will see a 12% expansion during 2006 up to 7.9 billion units
 - DVD-Video will increase by 10 % to reach 6.8 billion discs
 - DVD-ROM will expand by 22% to 1.1 billion units
 - DVD-ROM will be pushed by games consoles Xbox 360 and Nintendo Wii

- DVD will grow again this year 2006



Projected CD-R/-RW Supply: Worldwide

Million Discs



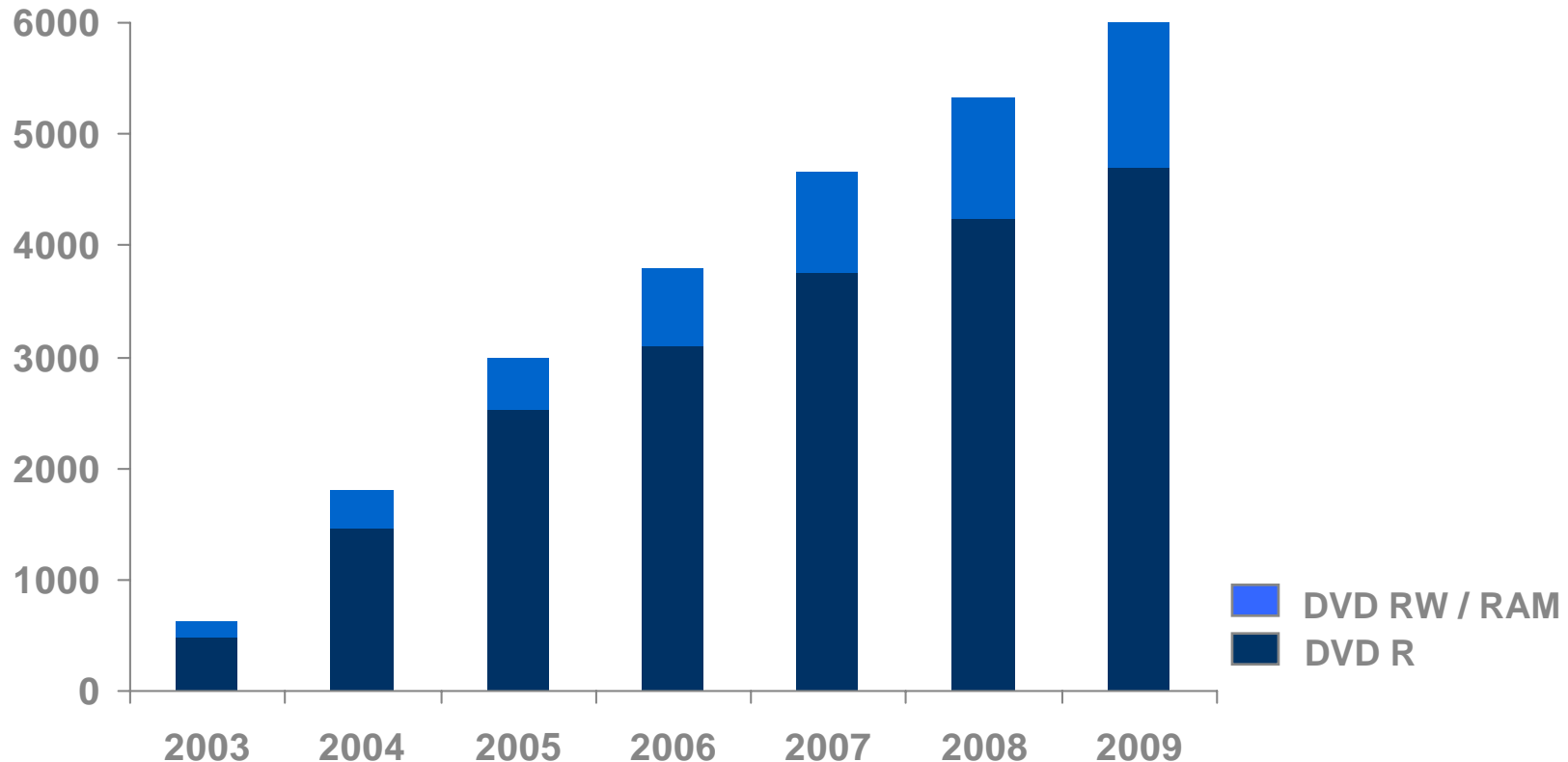
Source: Understanding & Solutions

- Recordable CD media will stay flat



Recordable / Rewritable DVD Market Demand

(million Discs)



Source: Understanding & Solutions

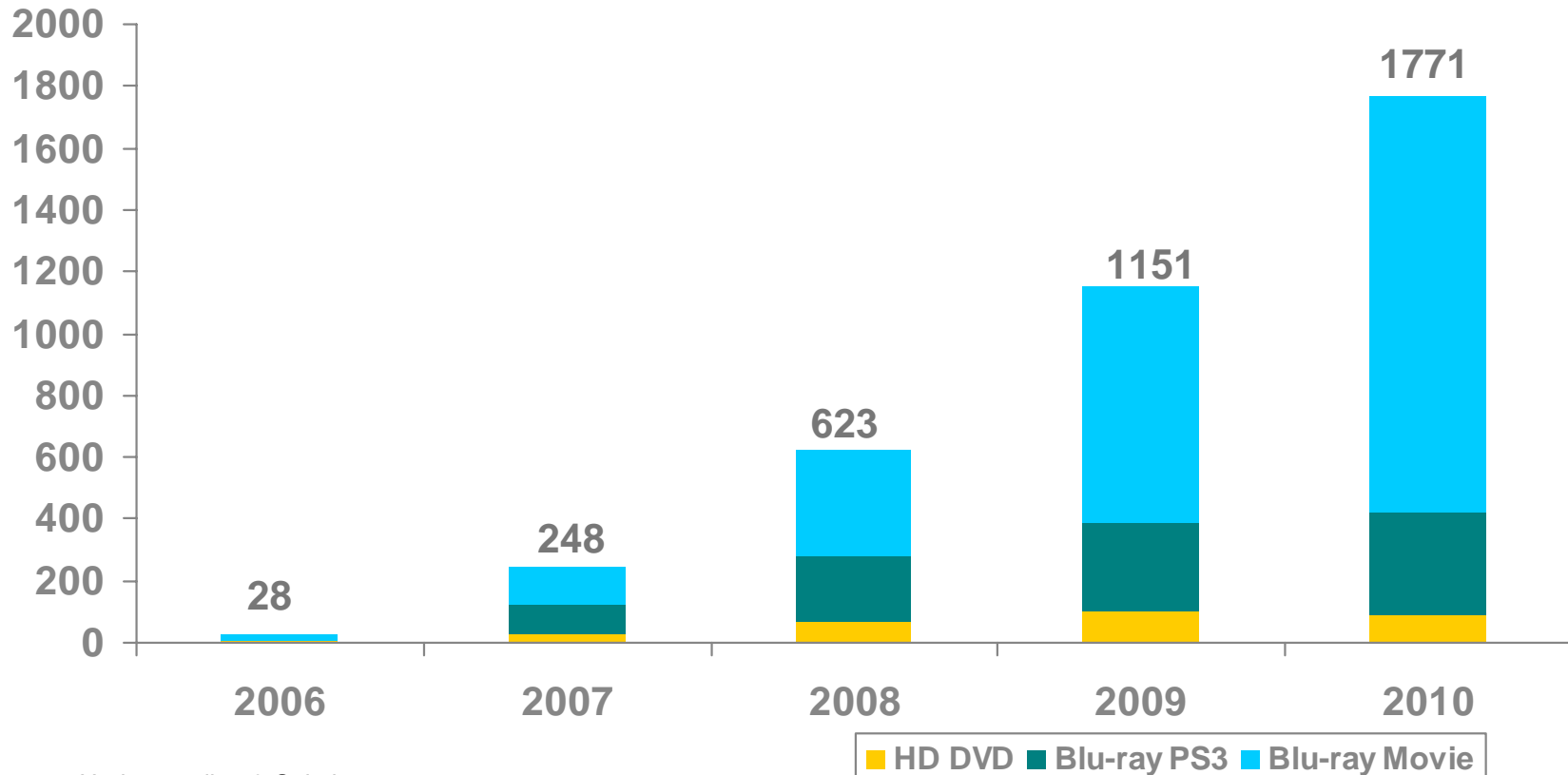
- The Recordable DVD market will further grow



OPTICAL MEDIA

HD DVD & Blu-ray Movies

(million Discs)



Source: Understanding & Solutions,
March 2006

- HD DVD/ Blu-ray will become a small/ but growth market for the next years

Who will invest in High Definition Replication Capacity

Replicator	Customer Base BD Camp	Customer Base HD Camp
Technicolor	Buena Vista Paramount/Dreamworks	Universal/Paramount/Dreamworks
Cinram	MGM/Fox/Warner Lionsgate	Warner/New Line/HBO
Sony DADC	Sony Pictures/Sony PS 3	
Sonopress	MGM	New Line

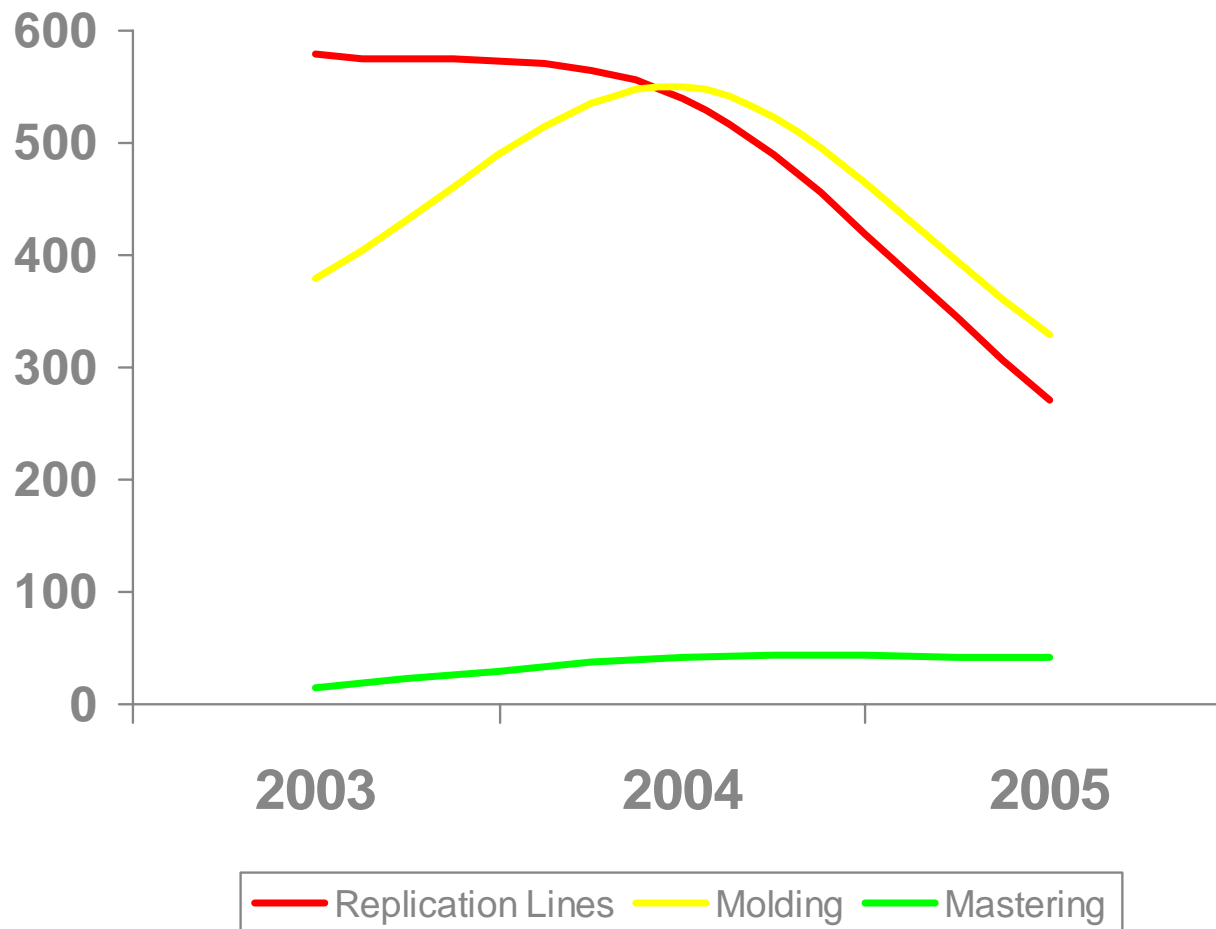
Optical Media

Industry Problems

- The general problem of Optical Media industry:
 - Worldwide supply of media exceeds demand
 - The announcement of 3rd generation formats happened far too early
 - Delay of 3rd generation formats postpones future growth and capital expenditures
- The consequences:
 - Shrinking margins and profits for
 - replicators
 - equipment suppliers
 - Consolidation among replicators
 - Shake out among producers of recordable media
 - Consolidation among equipment suppliers
 - Emerging low cost equipment suppliers in Asia
- Highly competitive environment for replicators and equipment suppliers

Example

SINGULUS TECHNOLOGIES

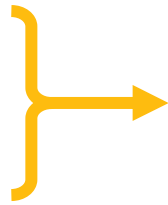


- Future opportunities
 - DVD life cycle will last longer than previously expected (also CD did!)
 - Market introduction of 3rd generation HD DVD/Blu-ray (with less participants)
- Management of changes
 - Today's business models need to be changed for
 - Replicators: become service providers for the total supply chain (from Studio to Retailer)
 - Equipment suppliers:
 - reduce cost by design and manufacturing (location?)
 - reduce cost for R&D
 - charge for process development and implementation (Recordable!)
 - enter into new businesses outside of Optical Media
- The world of Optical Discs will see significant changes!

MEDIA-TECH Association/ horizontal and vertical Expansion of MEDIA-TECH Expo

Management of changes

- Optical Media
- Magnetic Storage
- Solid State Memory



Topics

- Media Manufacturing
- Duplication
- Content Creation
- Packaging
- Supply Chain
- Intellectual Property Rights

- In Future: MTA might be focusing on all storage technologies

OPTICAL DISC

Industry Summary

- The Optical Discs Market has already reached its all-time high in the past
- The Optical Discs Manufacturers market is already facing a downturn for replicators and equipment suppliers
- Limited replacement of systems for CD and DVD
- Limited expansion for DVD and 3rd generation formats HD DVD & Blu-ray
- System suppliers and disc producers have to find additional areas of revenues and profits
 - By diversifying vertically (following the value and supply chain)
 - By diversifying horizontally (to other data storage media)
 - By finding totally new business areas outside of Data Storage Technologies

After 38 years in systems business

I have to state

Managing changes and new challenges is

business as usual“