

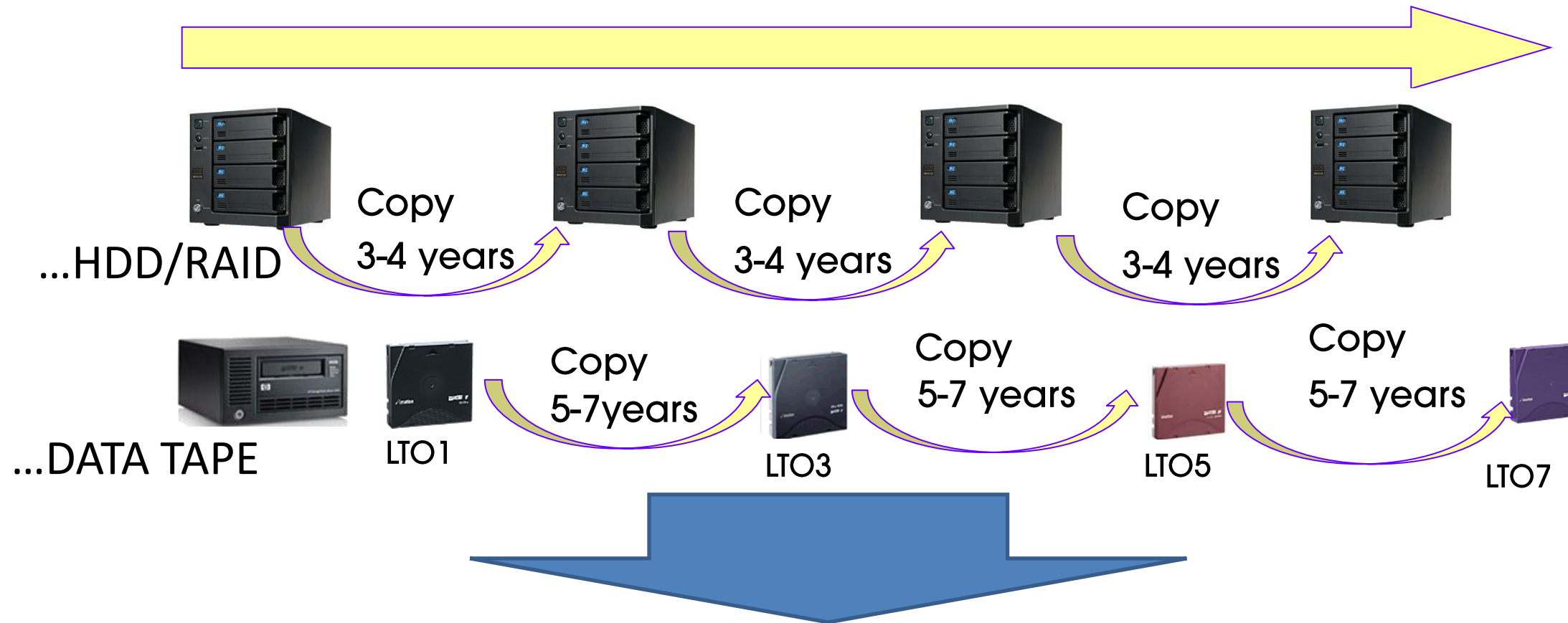
Optical Storage Systems and Solutions



Alan Gagliardotto, Sr. Product Manager
Sony Professional Solutions of America
Email: Alan.Gagliardotto@am.sony.com

How to Protect Data Long Term?

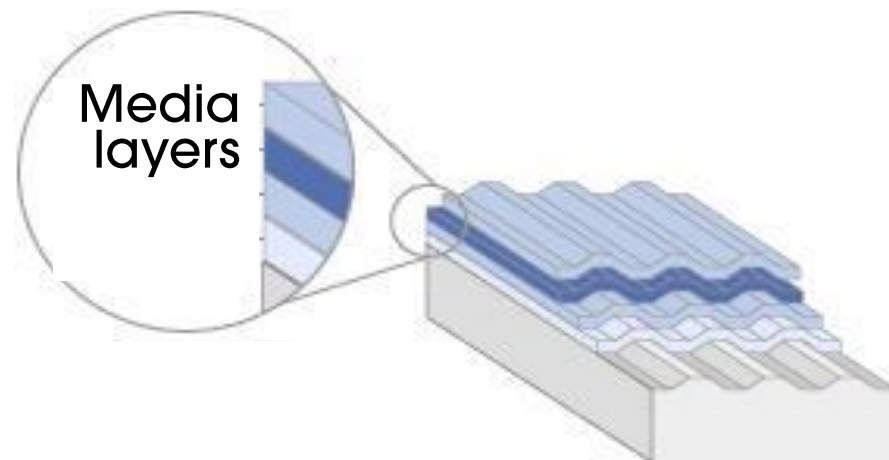
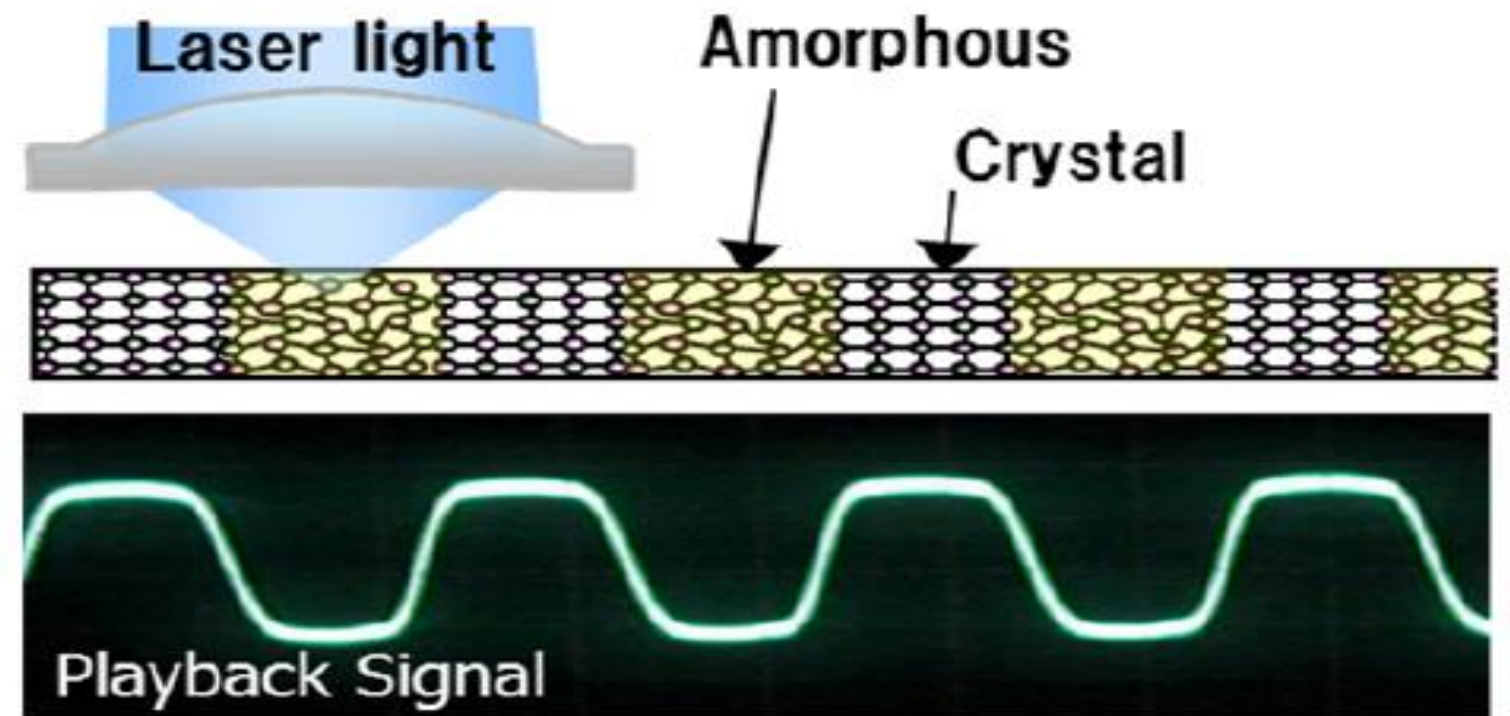
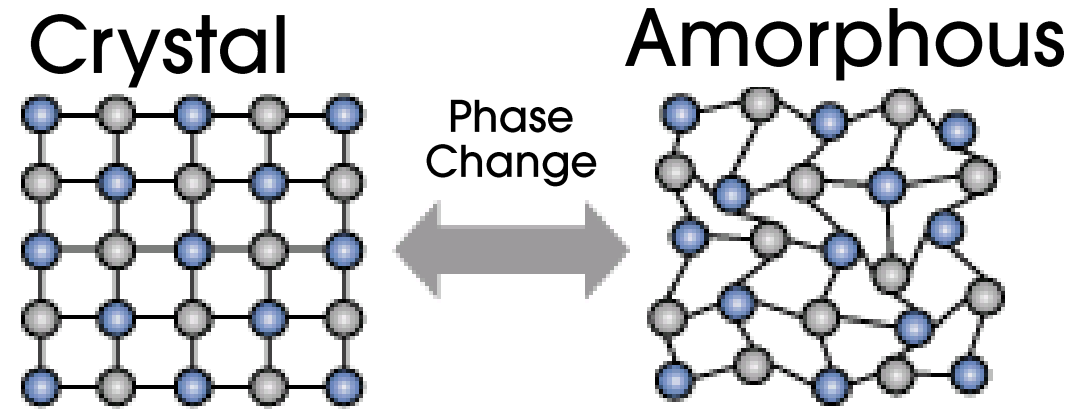
To archive content for 20 - 30 years... multiple data migrations are necessary...



Optical Disc can solve these issues

Phase Change Technology

- In-organic metallic alloy
- Non-contact recording
- Long term data preservation

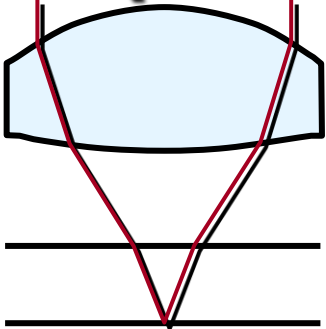


Long Life Format

After 33 years

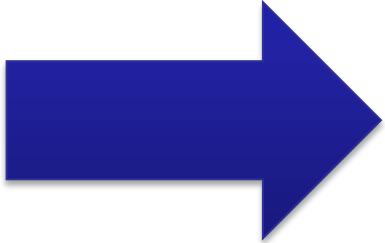
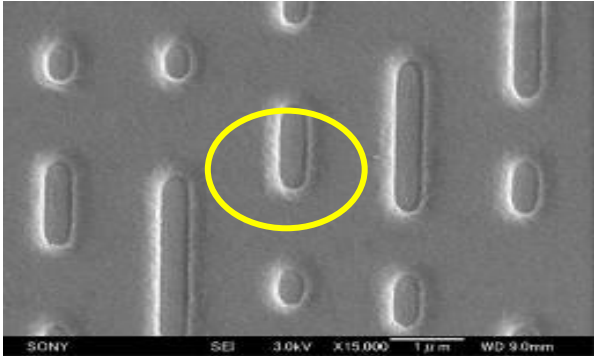
Now
2015

CD(1982)



First press CD(1982)
52nd Street by Billy Joel

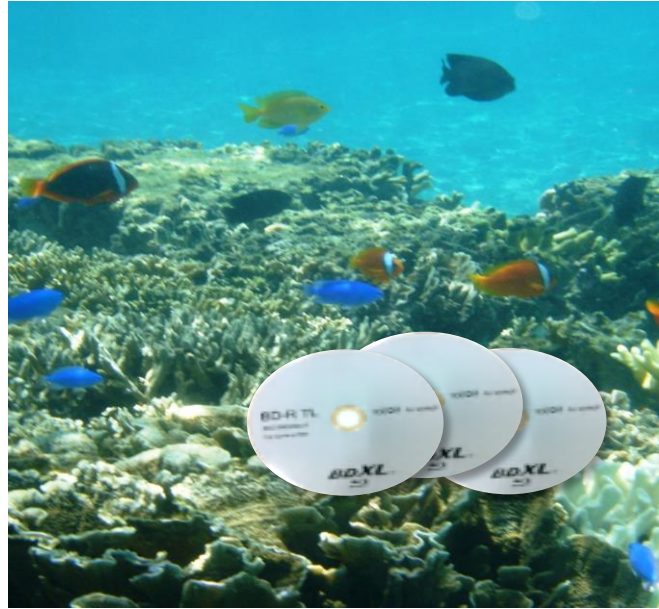
Current Blu-ray™ Drives
can play back 33 year old CD's



650MB

23GB-128GB

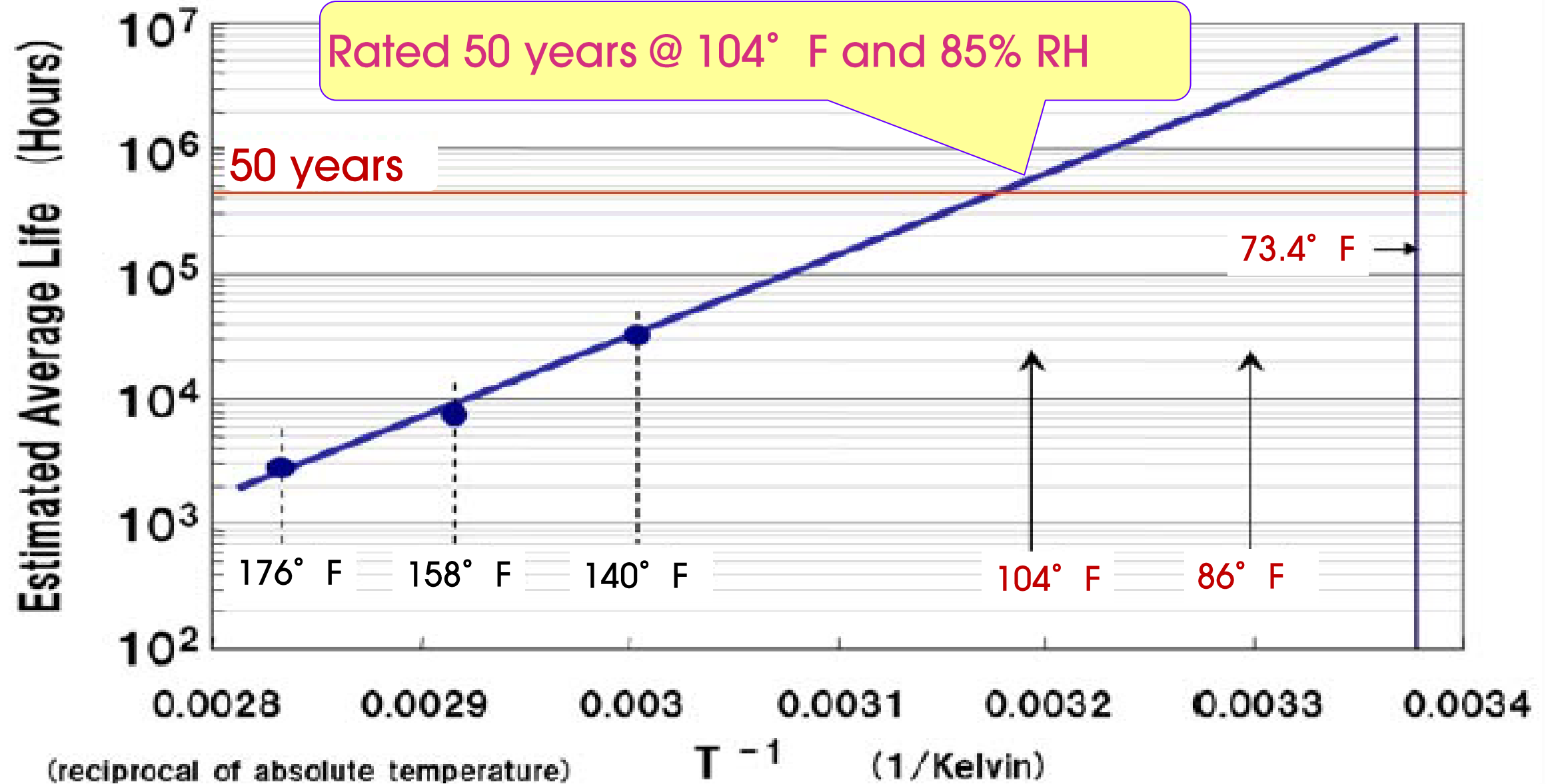
Disaster tolerant media



- Higher resistance to sea water
 - Kept Blu-ray™ Disc submerged in sea water for 5 weeks
 - ➔ Read back by Blu-ray™ drive without any problems
- Higher resistance to electromagnetic waves and magnetic fields
 - Data on the disc is recorded without electric/magnetic properties
 - ➔ Not affected by super solar storm

Archive life of Professional Blu-ray Disc

ISO Standard Life Acceleration Test => Arrhenius Law



Why Optical Disc?

Optical Disc Benefits

- Disaster tolerant media, non magnetic
- Long file life
- No generational migration, lower TCO
- Lower power consumption/CO2 emissions
- Versatile tiered storage:
 - Near-line/Active archive
 - Tapeless archive
 - Hybrid (cloud and on premise)
 - Cold storage







Optical Disc Archive


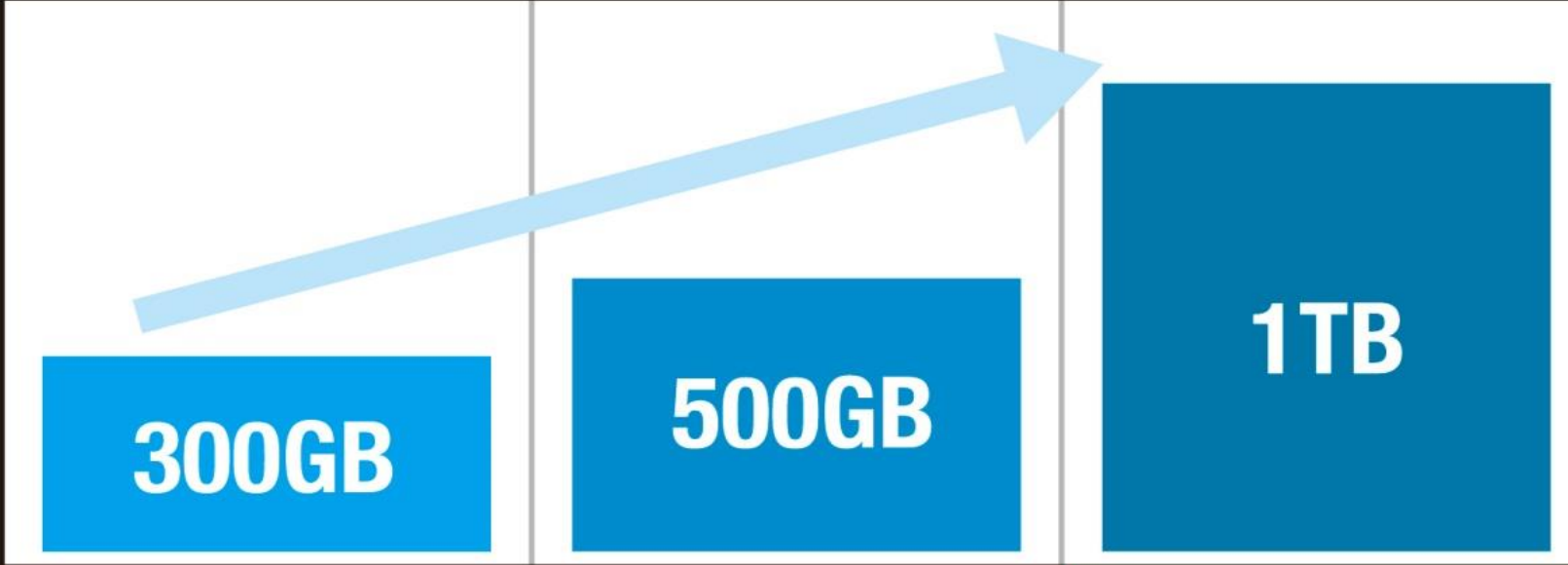


Next Gen Optical Disc

Optical Disc Formats

	Capacity	Format Name	Symbol Logo
2015	1TB 500GB 300GB	Archival Disc	 Archival Disc Sony Panasonic
2003	QL 128GB TL 100GB DL 50GB SL 23.3/25GB	Blu-ray Disc	
1996	4.7GB	DVD	
1982	650MB	Compact Disc (CD)	

Archival Disc "bare disc" roadmap

 Archival Disc Roadmap	
Capacity	 <p>300GB → 500GB → 1TB</p>
Signal Processing Technology	<p>Narrow Track Pitch (Crosstalk Cancellation Technology)</p> <p>High Linear Density (Inter Symbol Interference Cancellation Technology)</p> <p>High Linear Density (Multi Level Recording Technology)</p>
Basic Specification	<p>Double-Sided Disc Technology $\lambda=405\text{nm}$, $\text{NA}=0.85$, Layer Structure: 3Layers/side</p>





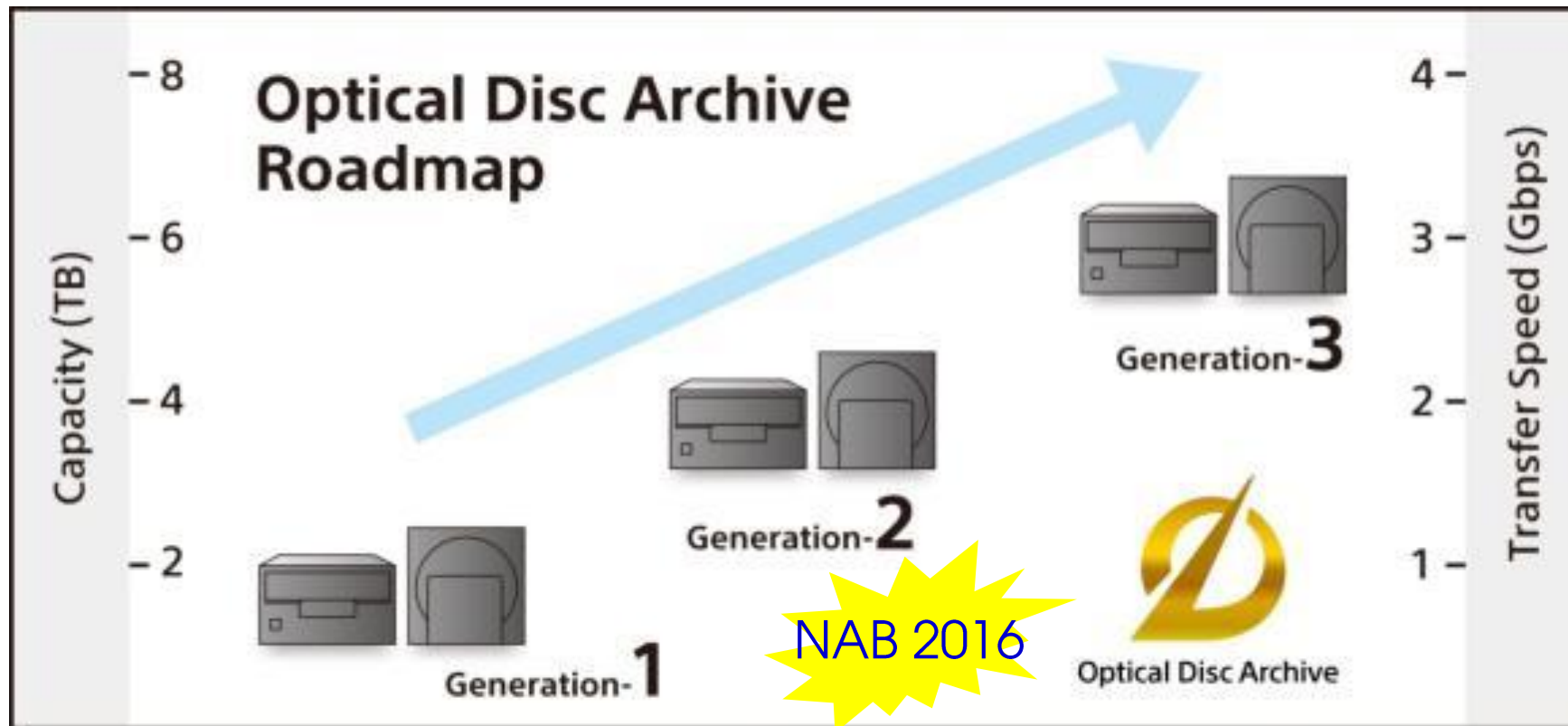
Optical Disc Archive

Optical Systems and Solutions

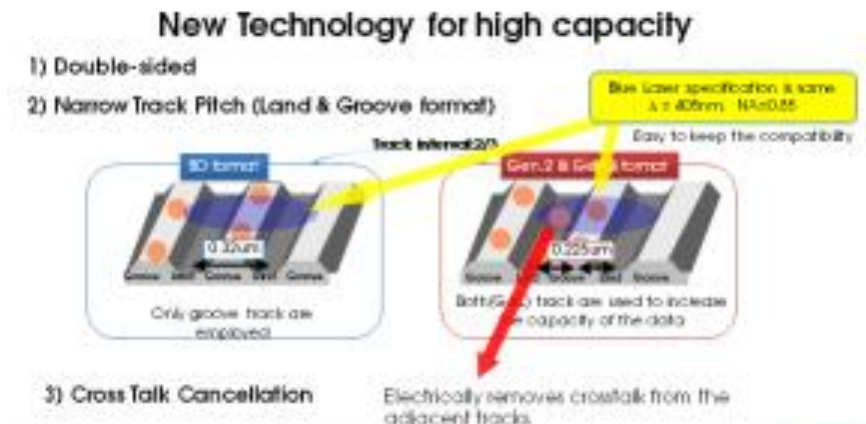


Optical Disc Archive

Optical Disc Archive: Roadmap



		Generation-1	Generation-2	Generation-3
Capacity		Up to 1.5TB	3.6TB	6TB
Transfer Speed	Read	Up to 1.1Gbps	2Gbps	3Gbps
	Write (w/Verify)	Up to 440Mbps	1Gbps	1.5Gbps



Transfer speed

The transfer speed is heavily related to the hardware design, and Sony has unique technology thanks to XDCAM 4G Drive development

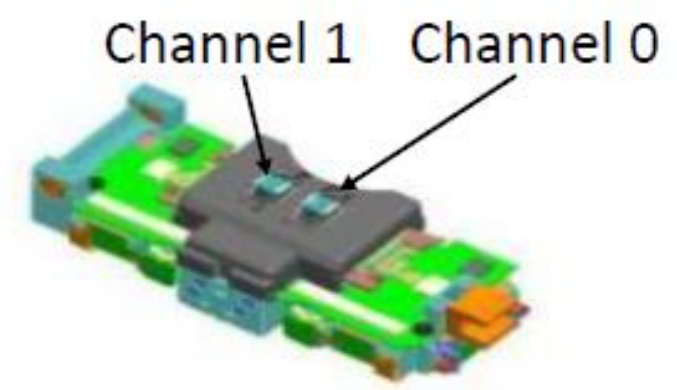
XDCAM 4G Drive: XDS, PDW-U2



Optical Disc Archive: Gen 2

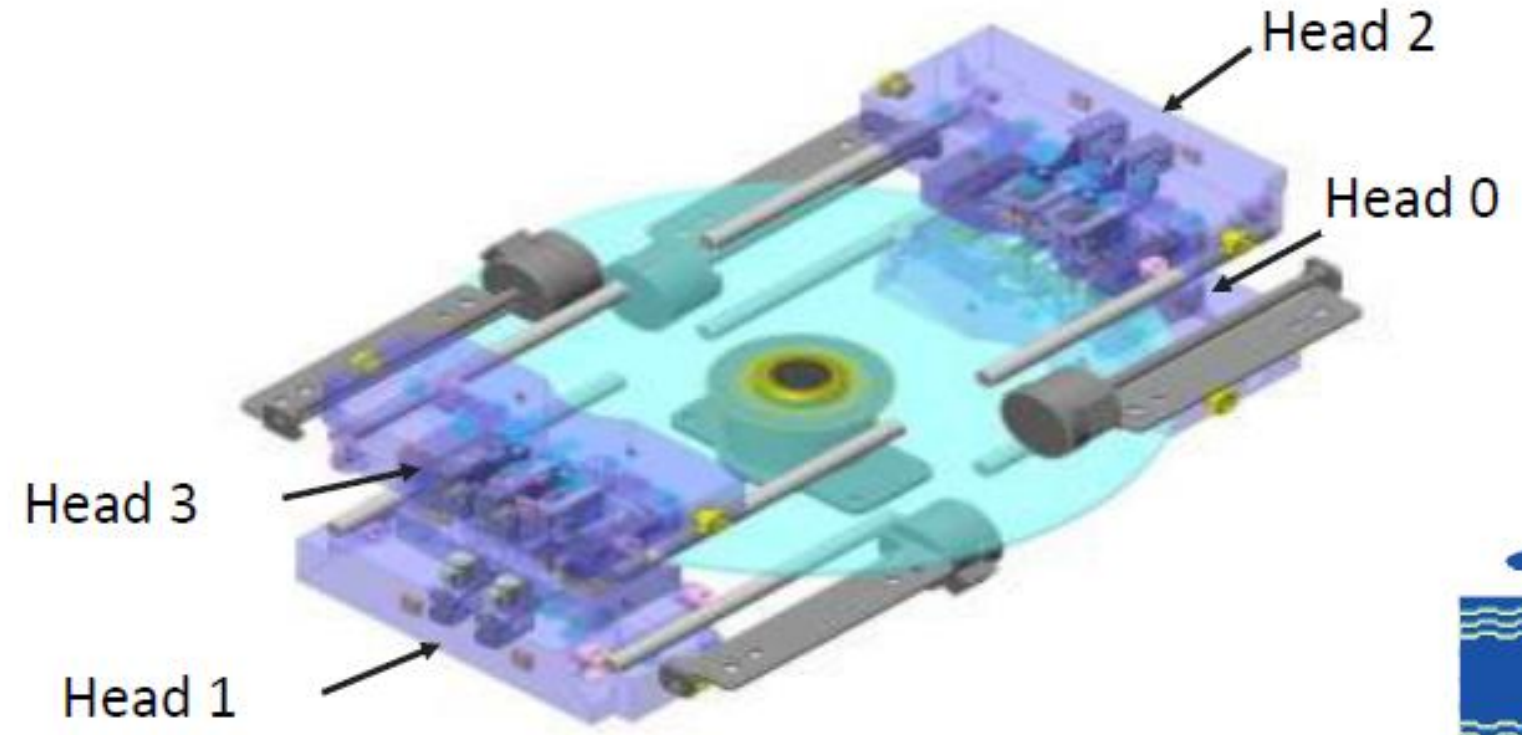
8-channel Drive can handle double-sided disc

2-channel Head

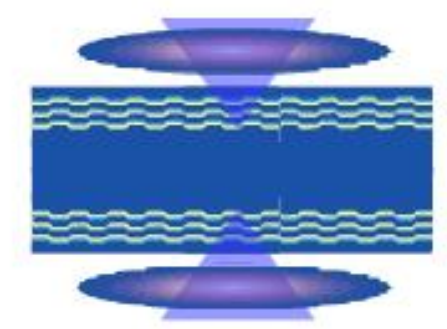


Dual Channel Head Ass'y

Drive structure



8-channel Drive



Double Side

Optical Disc Archive

Sony Technology Benefits

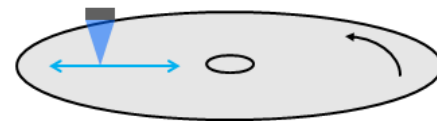
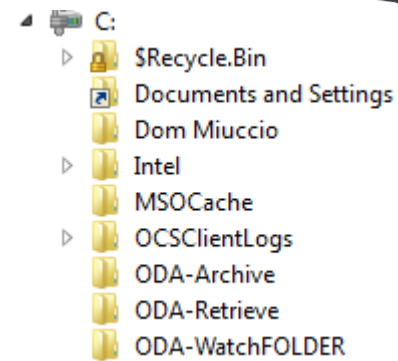
- Blu-ray with key attributes from Sony's XDCAM

- Single large volume media

- Open file system (UDF)

- Random disc access

- Generational backward compatibility

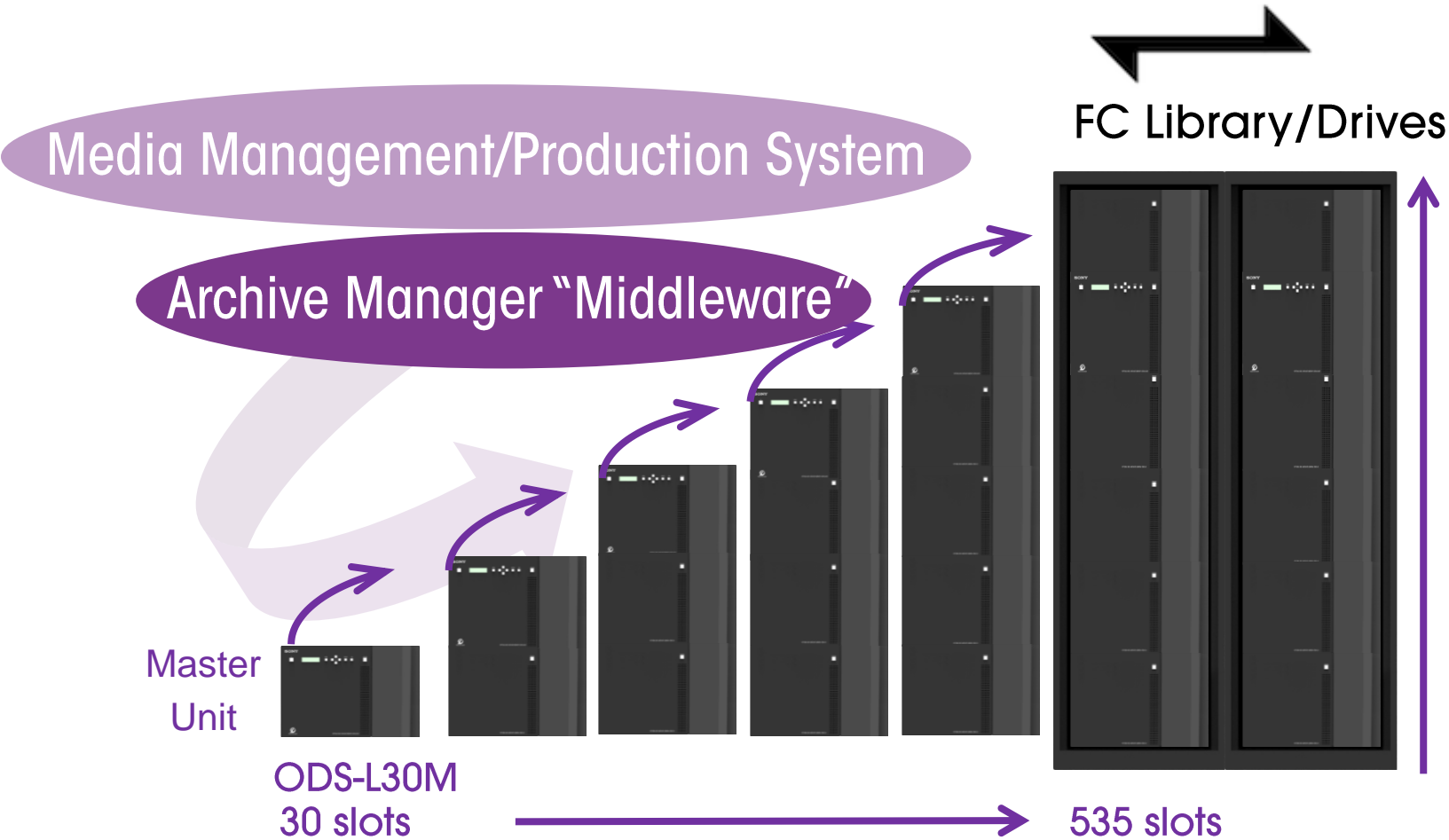


Optical Disc Archive

Scalable Libraries to Standalone Drives



“PetaSite” Model ODS-L30M



Model ODS-D77U

External Drive Unit
USB 3.0



Optical Disc Archive-Tapeless Archive



Optical Disc Archive

Nearline Access | Legacy Content | Deep Archive | Disaster Recovery

Media Production

NLE's

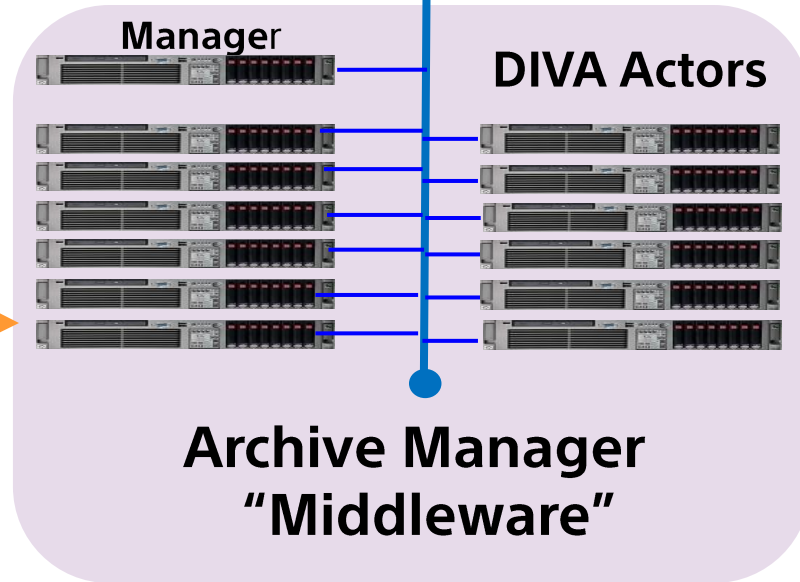
Sports

News

NRCS





Existing LTO Tape Library



Background Data Migration

System Details
Slots: 3,465, FC Drives: 42
Capacity: >5 PetaBytes
Middleware: Oracle FPD DIVA
Load count: >200,000 media exchanges since July 2014



**New "PetaSite"
Optical Disc Archive**

Beyond Definition

Optical Disc Archive: Solution Partners

