Seagate Storage Update

Library of Congress Conference on Designing Storage Architectures
April 15, 2024

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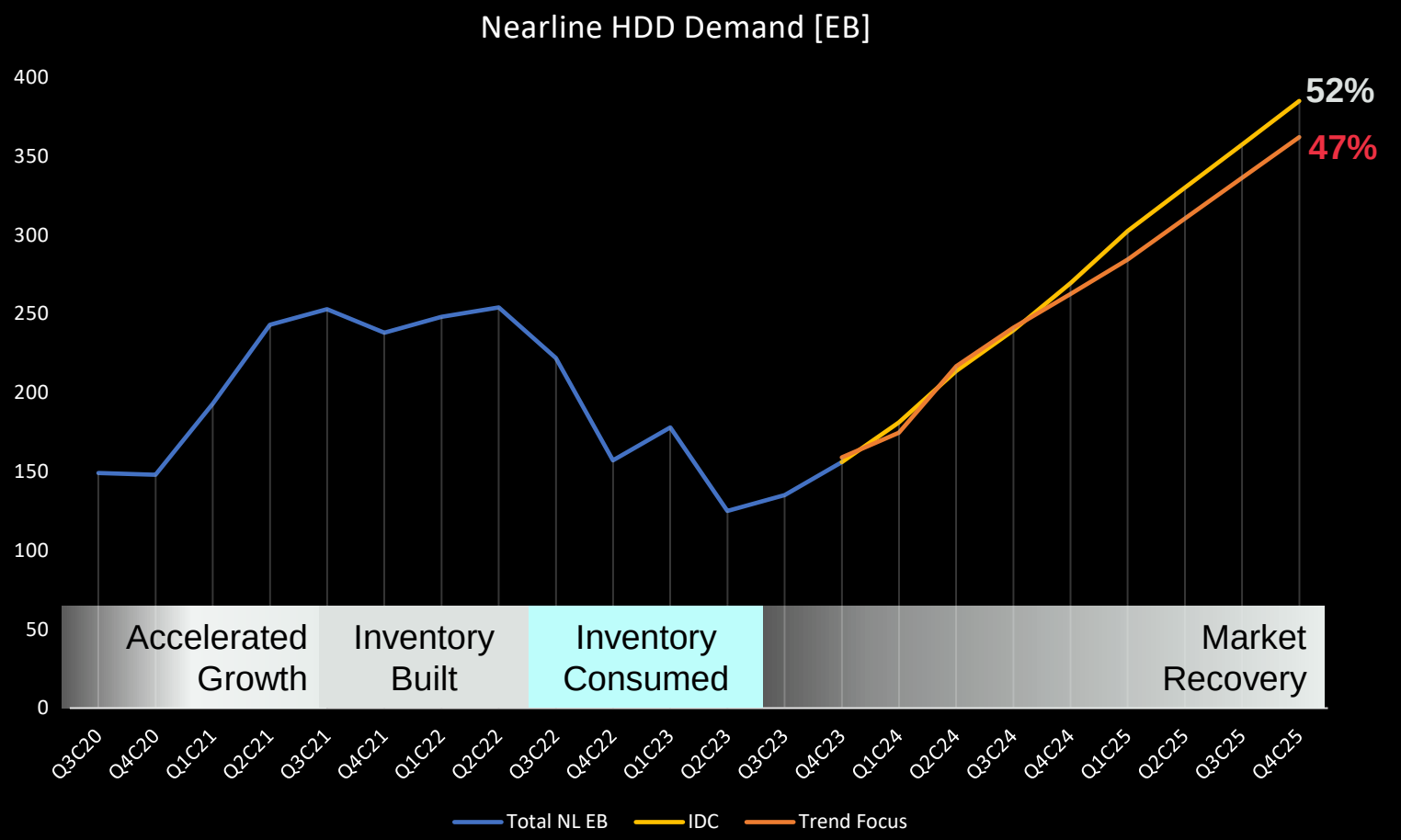
Storage Demand – The Turnaround

Successfully managing an uncertain recovery



Source: IDC WW 3Q23 HDD Shipments, WW HDD Forecast 2023-2027
Source: TrendFocus CQ3'23 Quarterly Update, Long-Tern Forecast, Revised 2023
Source: Seagate estimate based on order forecasts/placements

2022-2023: the data storage industry experienced one of the worst downturns in its history

This resulted in HDD/SSD reductions in production and moves to 'build to order'

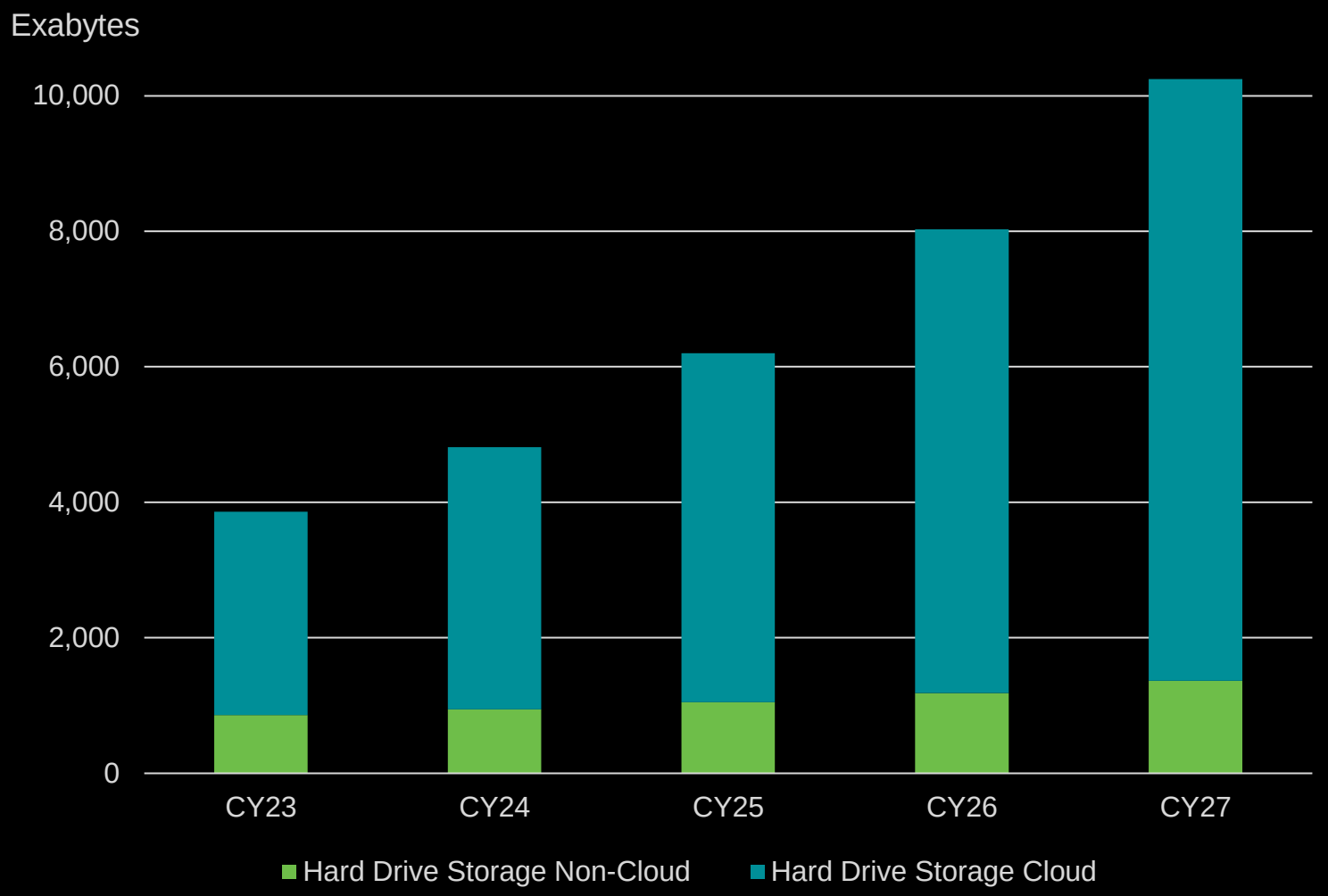
2024 is looking much better but we remain conservative in our projections

A more rapid recovery could result in a constrained storage market

Hard Drive Capacity Forecast from IDC

HDD's still dominate Exabytes Stored (~80% "enterprise", closer to ~90% in CSP)

According to IDC, between 2022 and 2026 the global datasphere will increase by >2x



Source: IDC Global StoragteSphere, 2023

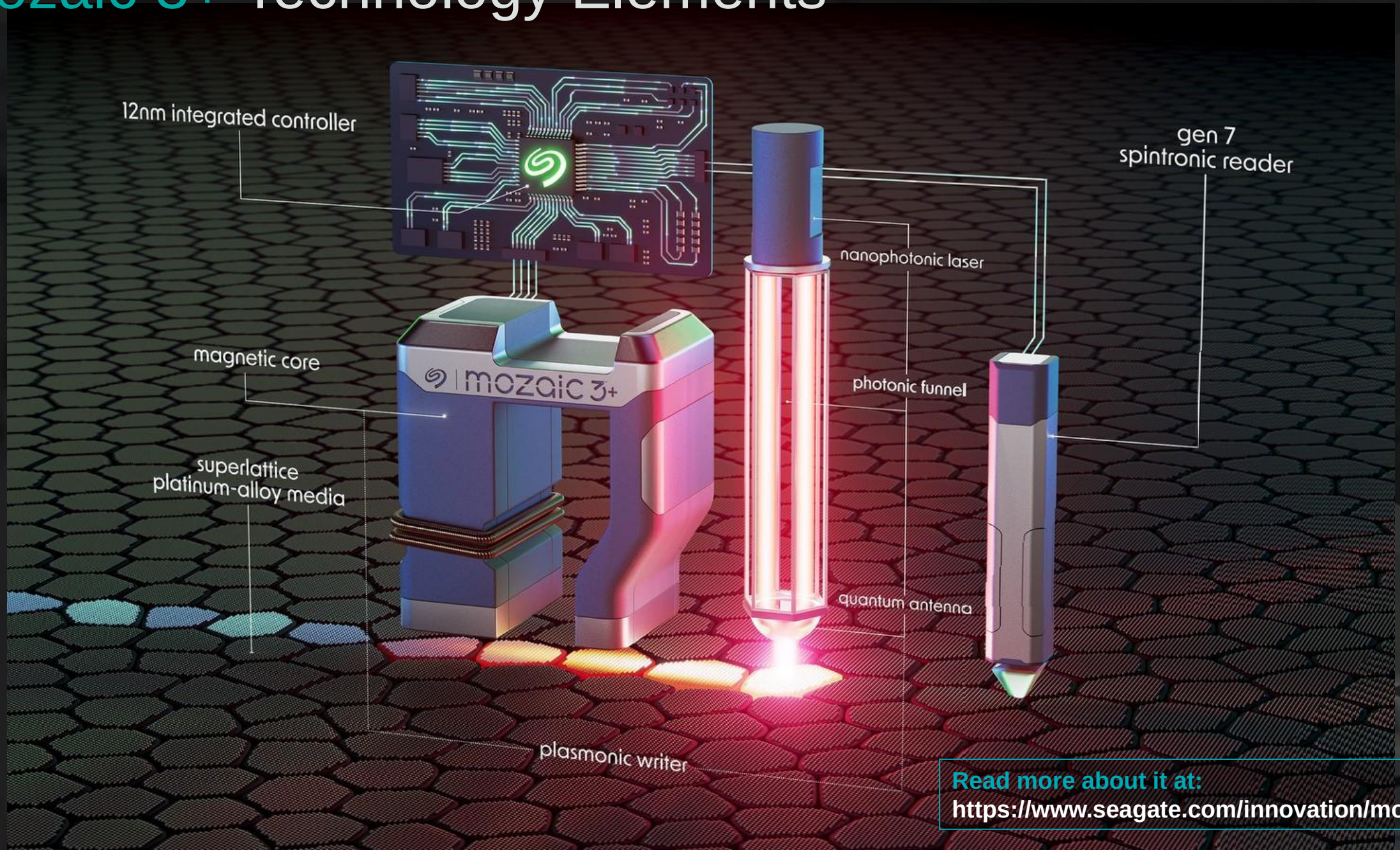
Seagate Areal Density Forecast

The most meaningful measurement of technology progression is areal density innovation— not merely unit capacity

2× capacity gain per disk in under 4 years*

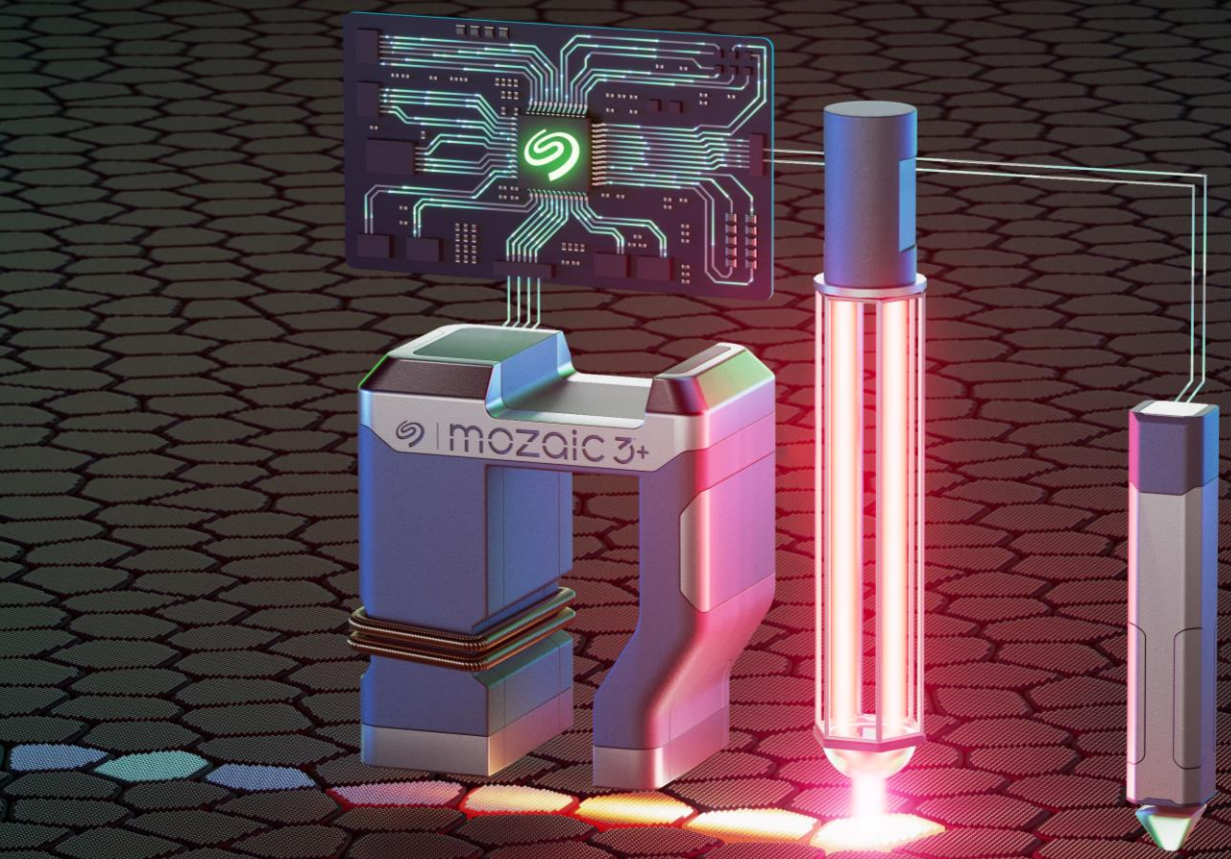
*Areal density-driven capacity growth from 2023 (2.4TB/disk) to 2027 (5.0TB/disk) more than doubles in 4 years. When compared with PMR technology, capacity took 9 years to double.

Mozaic 3+ Technology Elements



Read more about it at:
https://www.seagate.com/innovation/mozaic/

Mozaic 3+ Benefits



Power

Sustainability

Scale

mozaic 3+

Total of Cost of Ownership

TCO

EXOS CORVAULT

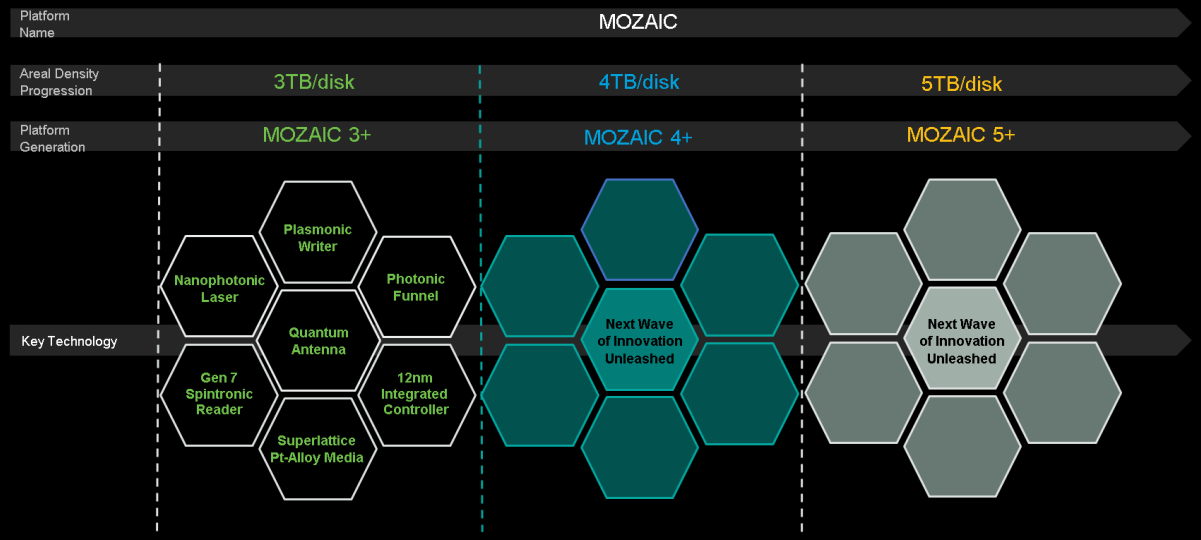
AI Data Explosion

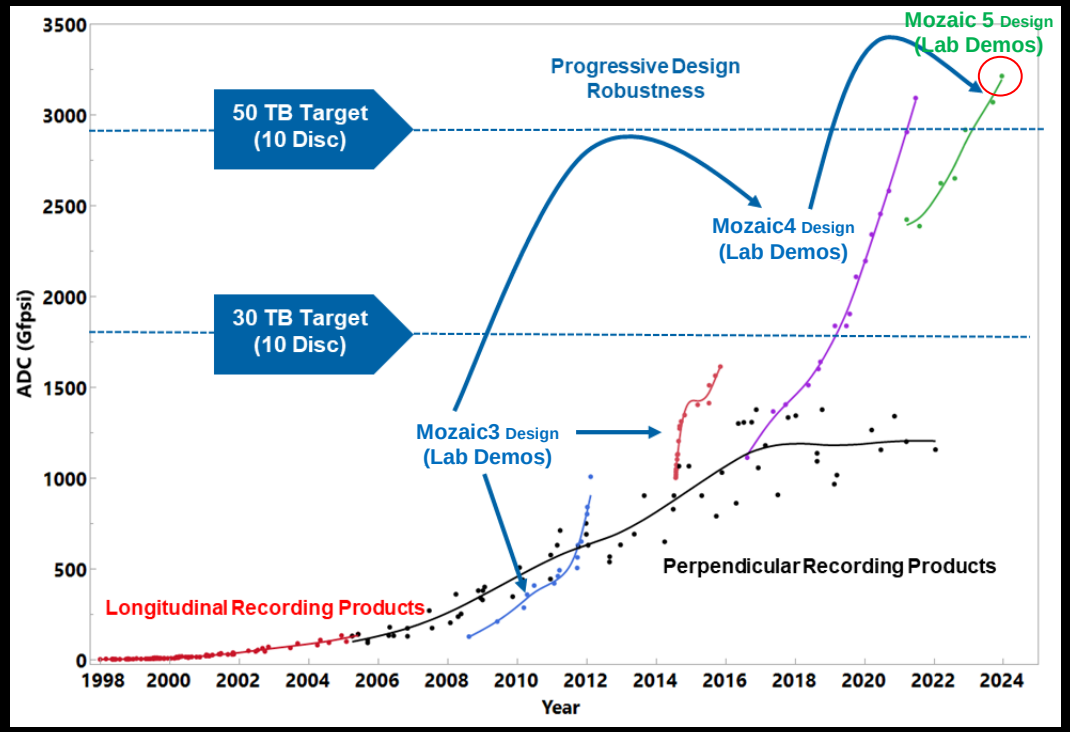
The Impact of Areal Density at Scale Is Profound

Upgrading a fleet of 16TB with 30TB drives delivers **~2**× the data center capacity in the same floor space

PLATTER	HARD DRIVE	HARD DRIVE CAPACITY	DATA CENTER
1.78TB PER DISK	**9 DISKS**	**16TB**	**100 EXABYTES**
3TB PER DISK	**10 DISKS**	**30TB**	**187 EXABYTES**

Mozaic 5™ Advanced Technology Demonstrations





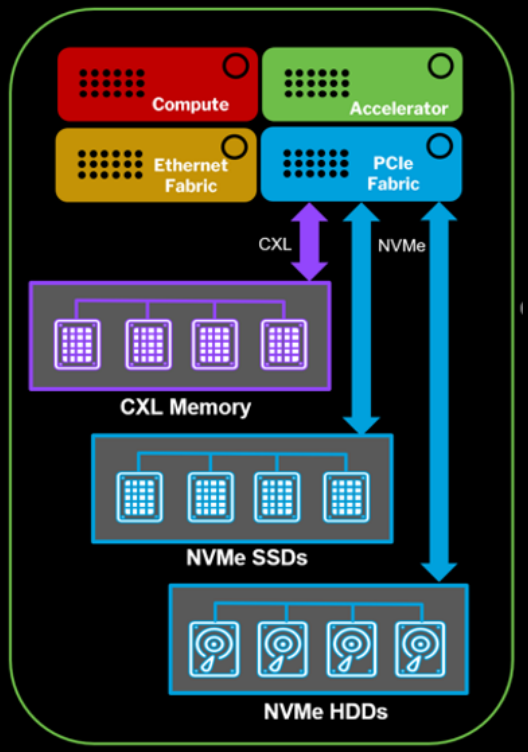
Mosaic 5 ADC Goal Achieved in December 2023!

- Q2: 3.21 Tfcpsi
- Represents > 5TB/disk
- Spin stand demonstration of Mozaic 5

Interface Development

NVMe / PCIe Storage Interface

- Seagate continues work to consolidate HDD interfaces
- NVMe HDD Workstreams have been active since 2020
- We continue to develop and test NVMe HDDs
- Many customers have provided input (OEM, CSP, CPU/GPU Suppliers)
- Seagate is working on delivering NVMe through OCP and with key customers



Sustainability / Circularity

Take-Make-Waste Consumption Model Is Unsustainable.

SEAGATE
CIRCULARITY
PROGRAM

Recertify,
Repair,
And Recycle

Stop
Hard Drive
Shredding

Minimizing
e-Waste

Product Design,
Life Cycle,
Data Durability
and Security

Our Sustainable Practices

Enabling progress with our customers

Data Security Standards

Deploying product, data, and lifecycle security features, spanning design to retirement, that enable sustained use.

Sustainable Operations

Reducing use of natural materials and mitigating waste in service of more sustainable operations.

Sustainable Consumption

Actively working in the industry collective with customers on circularity initiatives, reducing impact, and reusing materials at scale.

Retain, Reuse, and Recover

SUSTAINABILITY

RETAIN: REGEN TO KEEP DRIVES IN SERVICE

REUSE: THERE IS A ROBUST SECONDARY MARKET FOR HDDS THROUGH INSTANT SECURE ERASE

RECOVER: DISASSEMBLE HDDS IN DATA CENTERS TO RECOVER RARE EARTH MAGNETS

Sustainability

ADAPT + ADR technology reduces human intervention and e-waste.

ADAPT: Spare Pool:
Drives & Capacity

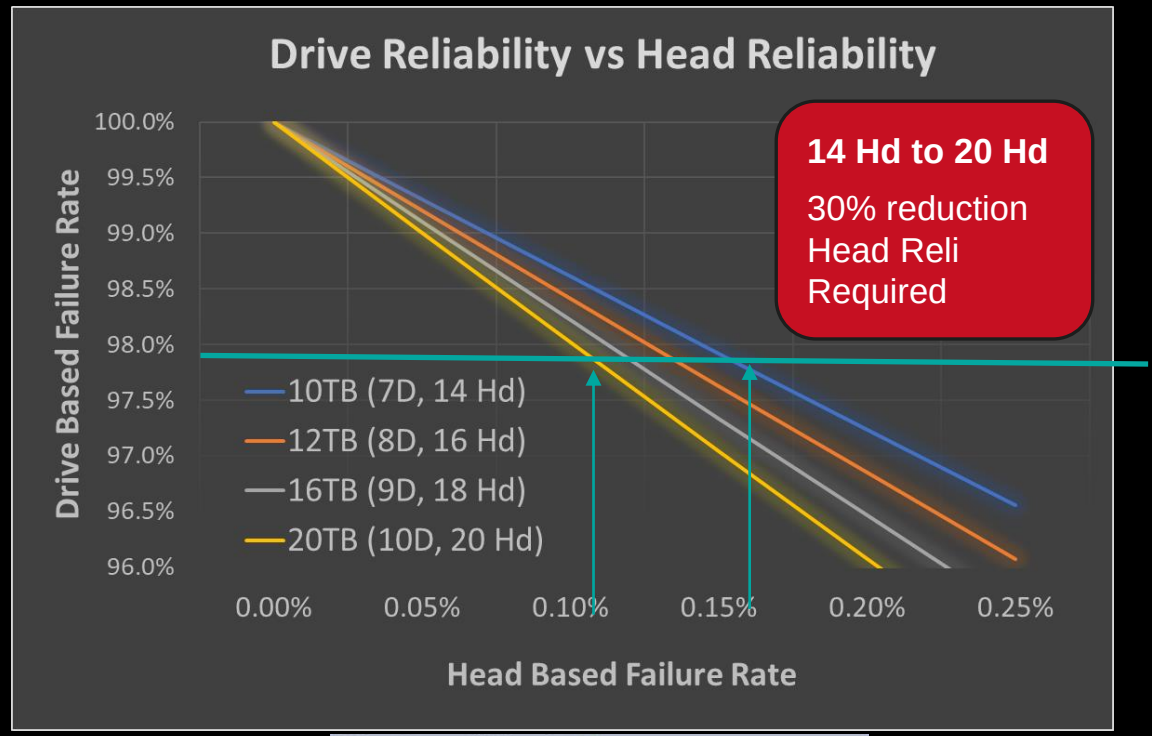
ADR: Spare Pool:
Drives & Reduced Capacity

- Extending HDD lifetime saves 275× more CO_2 than recycling and avoids e-waste[1]
- Drive replacements cost data centers over $1,000 per device replacement
- All hard drives feature Instant Secure Erase for easy reuse or retirement

1: Jin, H., Frost, K., Sousa, I., Ghaderi, H., Bevan, A., Zakotnik, M. and Handwerker, C., 2020. Life cycle assessment of emerging technologies on value recovery from Hard Drives. *Resources, Conservation and Recycling*, 157, p.104781.

Many Reasons for Electrical Depop

- **Good for the data center TCO**
  - **OPEX**: Lowers the cost of removing, crushing, and reinstalling drive. Zero Touch, less dead slots.
  - **TCO**: Enables Sustainability, Circularity, and lowers the carbon footprint, reuse materials (95%)
  - **RELIABILITY**: Address HDD “blast zone” issue that has happened over last 7 years (see chart)
  - Provides safety net if DataCenter has hotspots for workload/temp
  - Provides a safety net under any HAMR product issue (the unknown unknowns)
  - Could increase byte supply by the HDD industry if head supply is limiting factor
- Unified Industry Standard in T10/T13



$$Number\ of\ Heads: N$$
$$Prob.\{Single\ Head\ Issue\} = p$$
$$Prob.\{Single\ Head\ Healthy\} = 1 - p$$
$$Prob.\{All\ Heads\ Are\ Healthy\} = (1-p)^N$$

OPPORTUNITY: 40-60% Drive Failures are individual Heads
* %Percentage in creases as warranty period ends

Reuse: 275× Larger Impact than Recycling

Seagate.com/Circularity

Jin, H., Frost, K., Sousa, I., Ghaderi, H., Bevan, A., Zakotnik, M. and Handwerker, C., 2020. Life cycle assessment of emerging technologies on value recovery from Hard Drives. *Resources, Conservation and Recycling*, 157, p.104781.

Typical Data Center Upgrade: Watt/TB Power Savings

16TB, 9 Platters
AD = 1.78TB/Disk

0.59 Watt/TB

>45%+
Power Savings*
16TB to 30TB

>55%+
Embodied Carbon Reduction

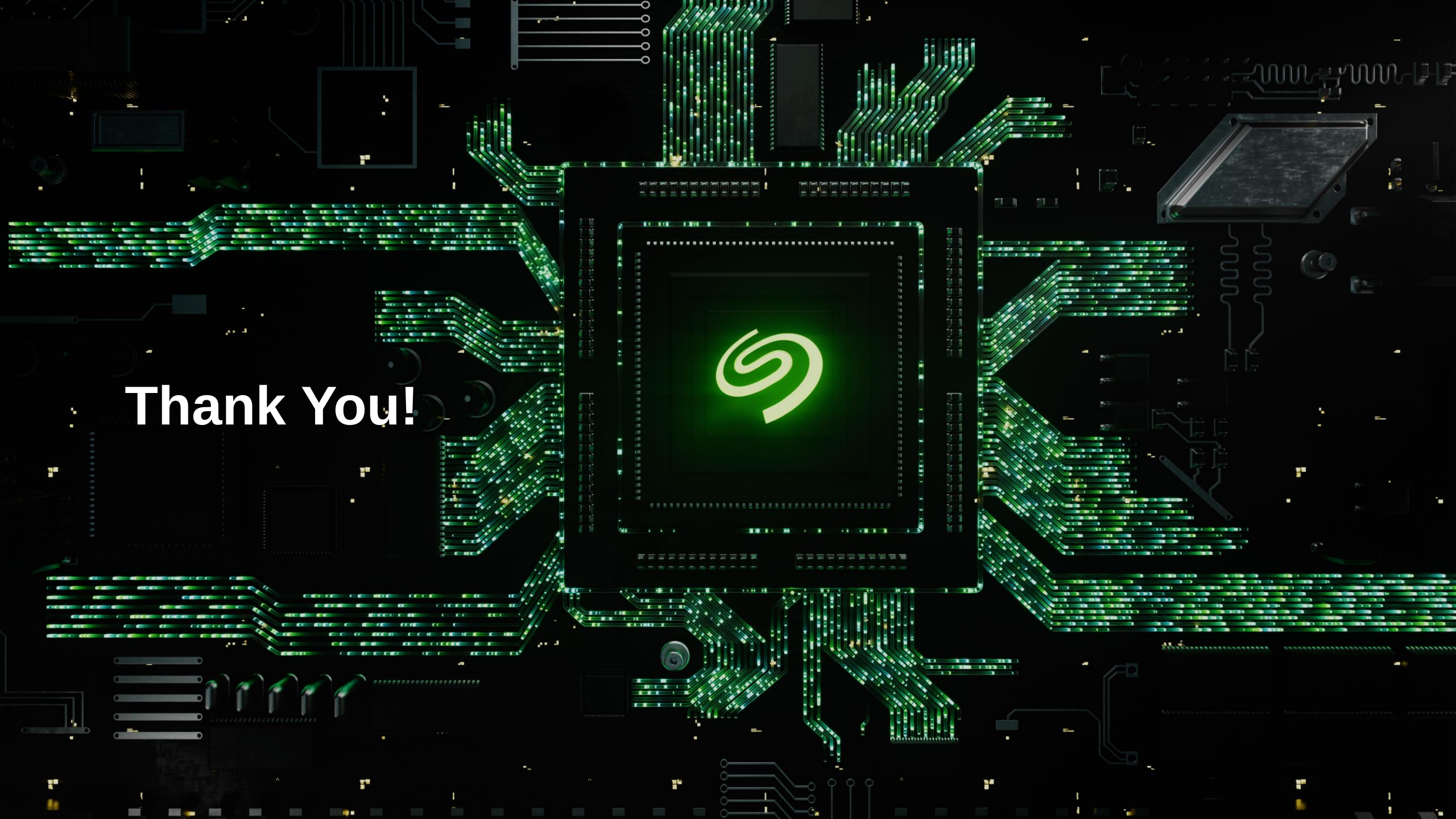
mozaic 3+

30TB, 10 Platters
AD = 3.0TB/Disk

0.32 Watt/TB

*Savings calculated per TB. Method: 16TB to 30TB capacity upgrade (or 1.78TB/Disk to 3TB/Disk) comparing Exos X16 to Exos Mozaic 30TB drive, max operating power,

The **Seagate Circularity Program** creates a secure, sustainable way to retire Seagate hard drives, moving the datasphere towards a more responsible and efficient model that reduces carbon emissions and electronic waste by extending the product life cycle.


Thank You!