



SEAGATE
GOVERNMENT
SOLUTIONS

HDDs for Mass Capacity Storage

MANUELA OFFENBERG

MARCH 2023

01

Total HDD Exabytes shipped is aligning to market evolution

HDD demand driven primarily by High Capacity (average 7.8TB & growing)

Post-covid demand is down but seeing some encouraging indicators

Market outlook for High-Capacity HDD is positive as inventories are being depleted

02

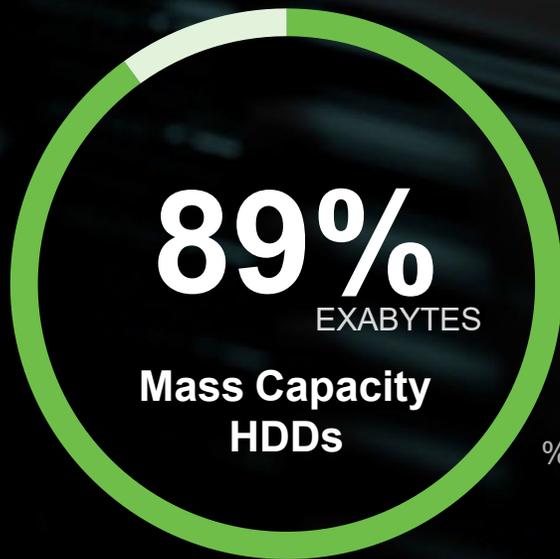
Ongoing adoption of 20+TB platform, representing nearly 60% of Seagate nearline EB shipped in Q2FY23

03

Confidence in Heat Assisted Magnetic Recording keeps growing

"We are meeting or exceeding all product development milestones and reliability metrics, and we will be shipping prequalification units to key cloud customers in the coming weeks. As a result of this progress, we now expect to launch our 30-plus terabyte platform in the June quarter, slightly ahead of schedule." (Dave Mosley, CEO, Q2FY23 earnings call)

Cloud Data Centers Choose Mass Capacity HDDs

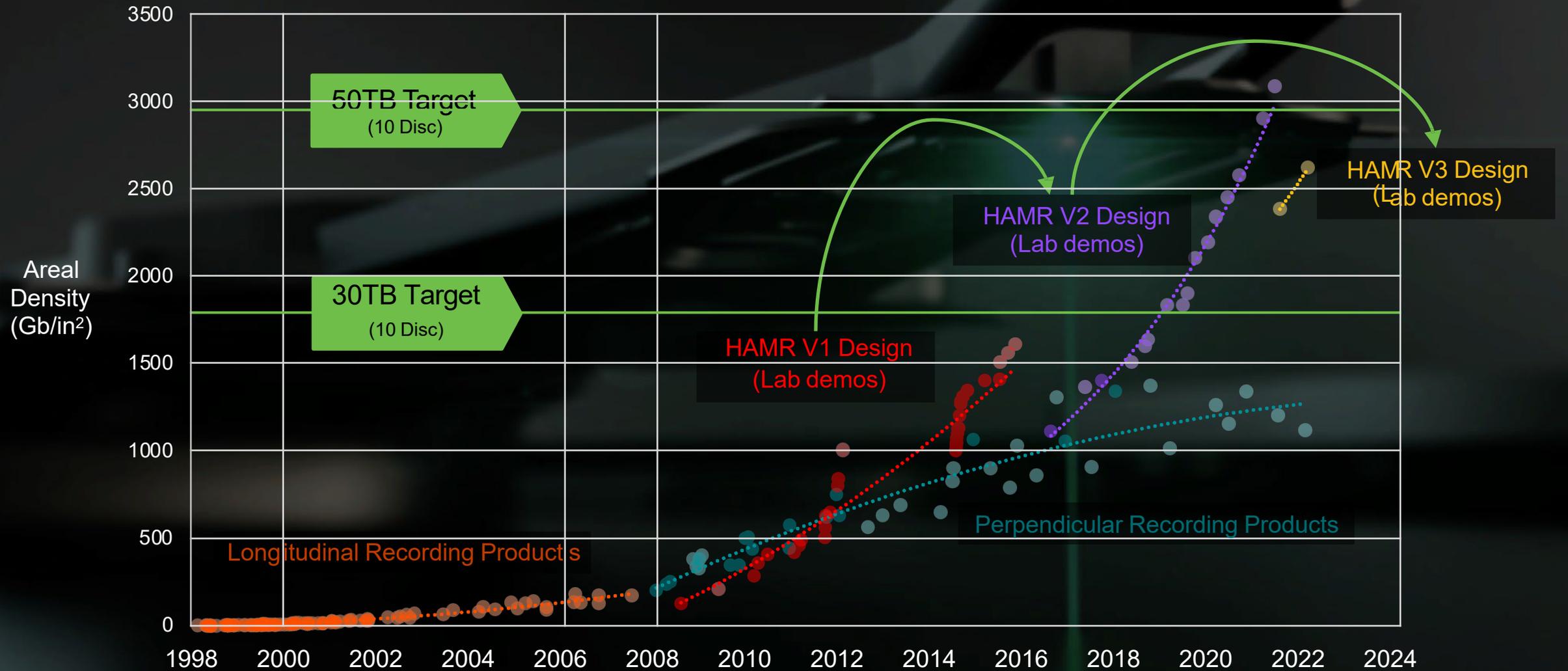


Hyperscale Data Centers

Cloud #
% Exabytes Stored

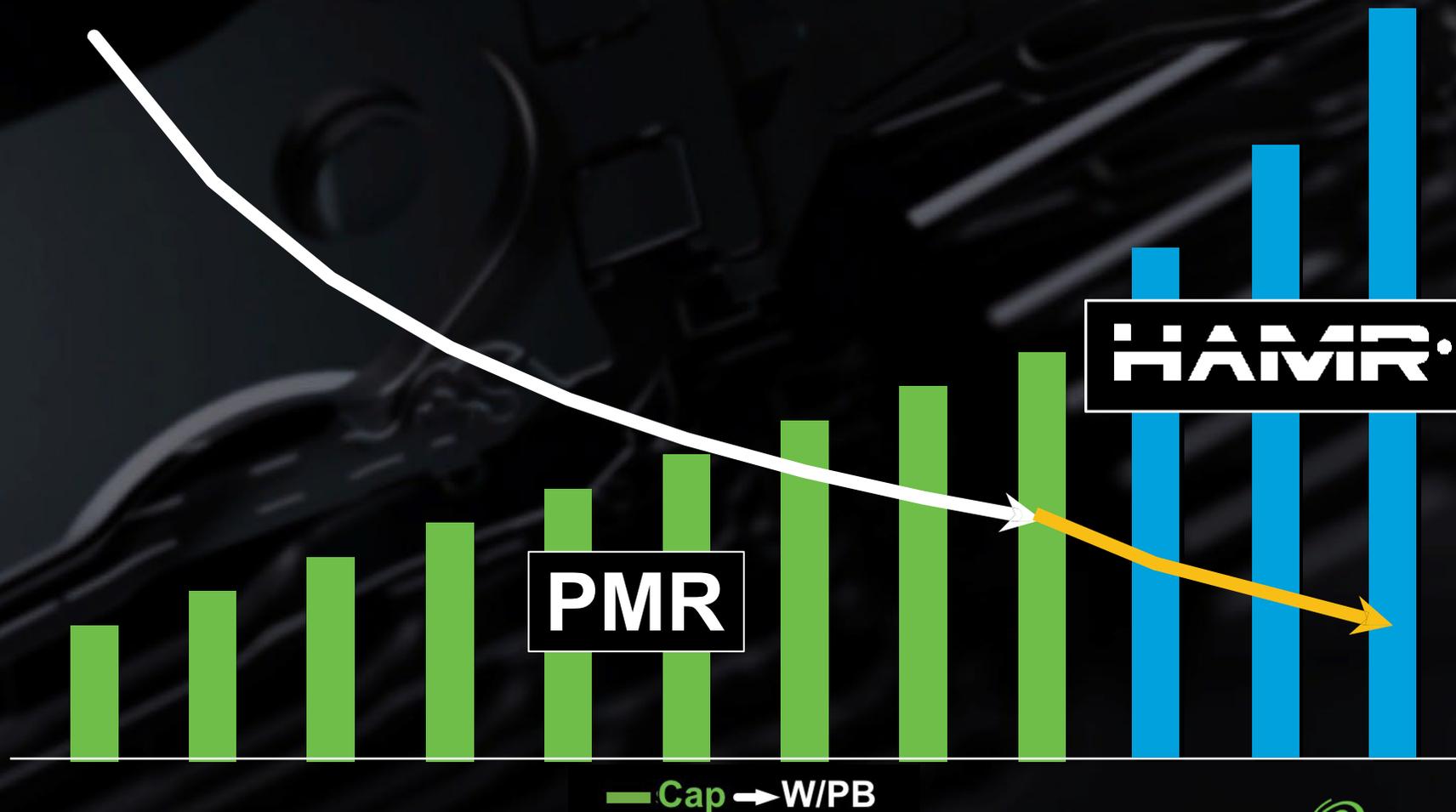


Good Progress in HAMR Recording Technology



Dramatic Capacity Growth & Power Reduction

HAMR Enables Continued Watts/PB Decline



Increasing Need for Circularity



Media Sanitization is a Must

A process or method to render access to target data on storage media infeasible for a given level of effort.

Sanitization Defined for each Media Type.

Interface-specific techniques (e.g., SATA, SAS, NVMe).



2883-2022

Standard for Sanitizing Storage



ISO/IEC 27040-2015

Security Techniques - Storage Security



NIST SP 800-88R1 2014

Guidelines for Media Sanitization

Built on a Solid Storage Security Foundation

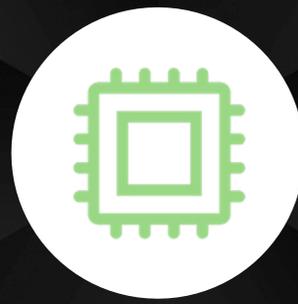
Self-Encrypting

Standards

Ubiquitous

Assurance

Transparency



2007

2010

2014

2018

Now

Data Confidentiality

At-speed Data Encryption

Instant Secure Erase

Government Grade

FIPS 140-2 Certified

TCG Storage Security

Root-of-Trust

Digitally Signed Firmware

Secure Boot & Diagnostics

Device/Supply Chain

ISO / NIAP Common Criteria

ISO Trusted Technology
Provider

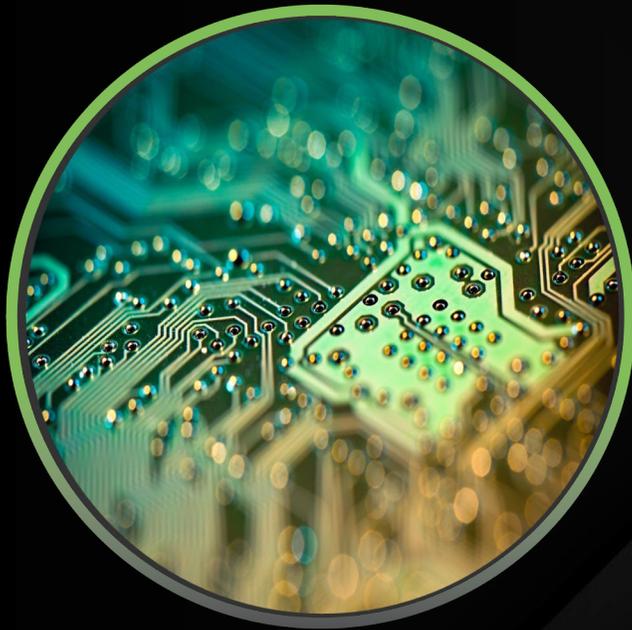
Trustworthiness

Secure Isolation

Open Secure Hardware

Security Transparency

 RISC-V®



 opentitan

Open Hardware Standards

RISC-V's open and clean-slate design presents an opportunity to re-think security for the next generation of storage infrastructures

*“OpenTitan is the first open source project building a transparent, high-quality reference design and integration guidelines for silicon root of trust (RoT) chips.”
(OpenTitan website, <https://opentitan.org/>)*



HAMR is working! Seagate is shipping HAMR based products.

Will launch >3 TB/disk this year, ahead of schedule.

Increasing focus on Sustainability, Circularity, Data Security, and Media Sanitization as device capacities keep growing.