cerabyte

Sustainable, Permanent & Accessible Data Retention

Building the Ecosystem

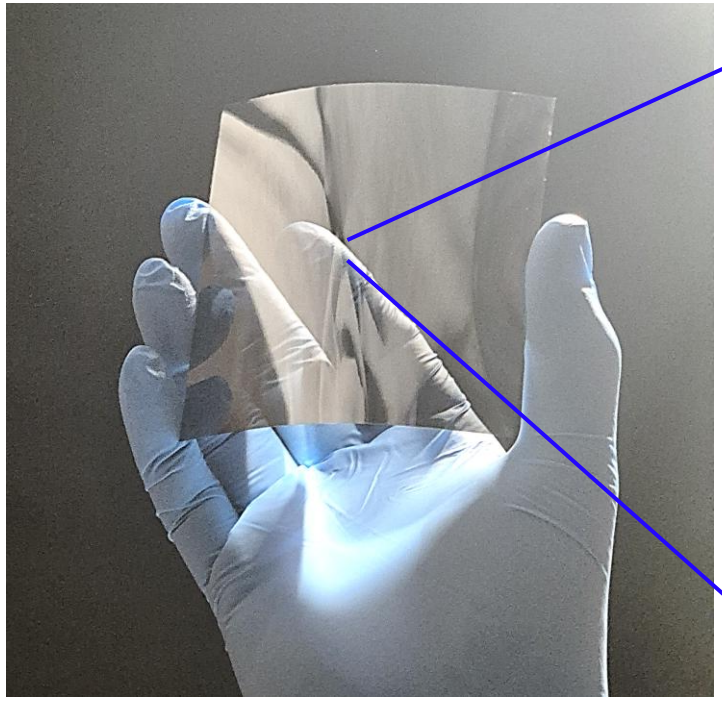
Library of Congress, March 9, 2026

Martin Kunze, Co-founder, CMO, Cerabyte

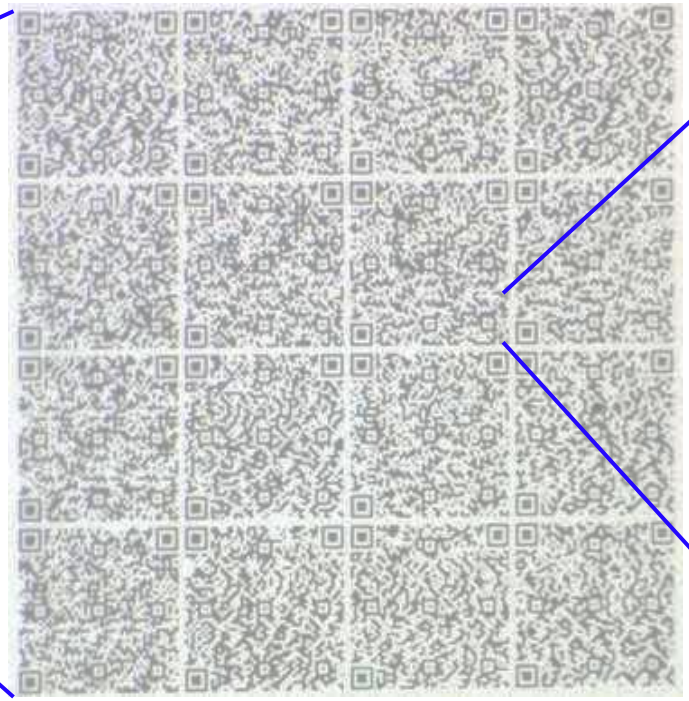
Video *Digital Dark Age*
https://vimeo.com/1118772314

Virtually **unlimited** storage media life

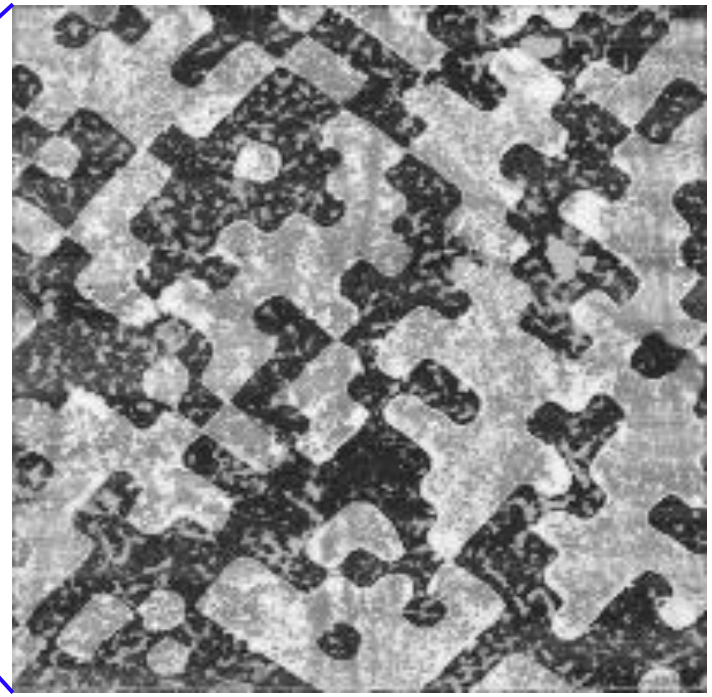
Ceramic punchcards at nanoscale



Ceramic-on-glass sheets



Data matrix



500 nm physical bits

How to pass on our digital heritage: Cerabyte writes physical bits in a thin ceramic layer on flexible glass sheets.
This is permanent and requires no energy to retain data. As a side effect, it eliminates the need for frequent media replacement, data maintenance and migration, which are the drivers for the high costs of long-term data storage.

Four key functions of ceramic-on-glass coating

100x lower writing energy = 100x lower CapEx & 100x faster

The dark layer absorbs laser energy better than uncoated glass. Only a 100th of the energy is needed to create a bit. This lowers the cost/TB by100x

Anti-adherent surface for reliable random access

Uncoated glass sheets strongly adhere to each other when stacked, making it difficult to separate individual sheets.
Cerabyte's coating acts as an anti-adherent, so stacked sheets can be separated precisely - enabling practical random access.

Data protection with extreme resilience

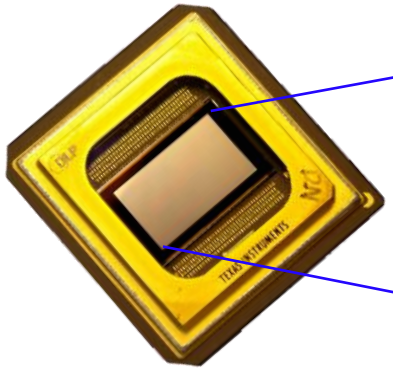
Writing directly onto uncoated glass creates nanocracks, which significantly reduce robustness.
Cerabyte's coating instead protects the glass surface.

High contrast, thus high Signal-to-Noise Ratio (SNR)

The dark ceramic coating provides excellent optical contrast, producing a high SNR , thus enabling very fast deterministic readout. This is crucial for a new storage technology to fit into current and future architecture.

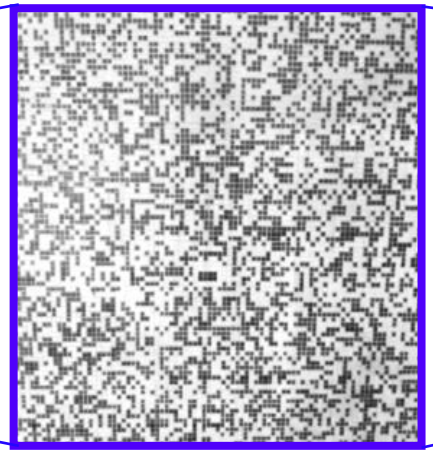
Key to fast-track productization

Massive parallelization

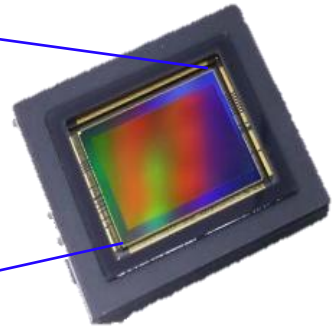


Megapixel
DMD

Writing millions of
bits with **one** shot



Reading millions of
bits in **one** capture

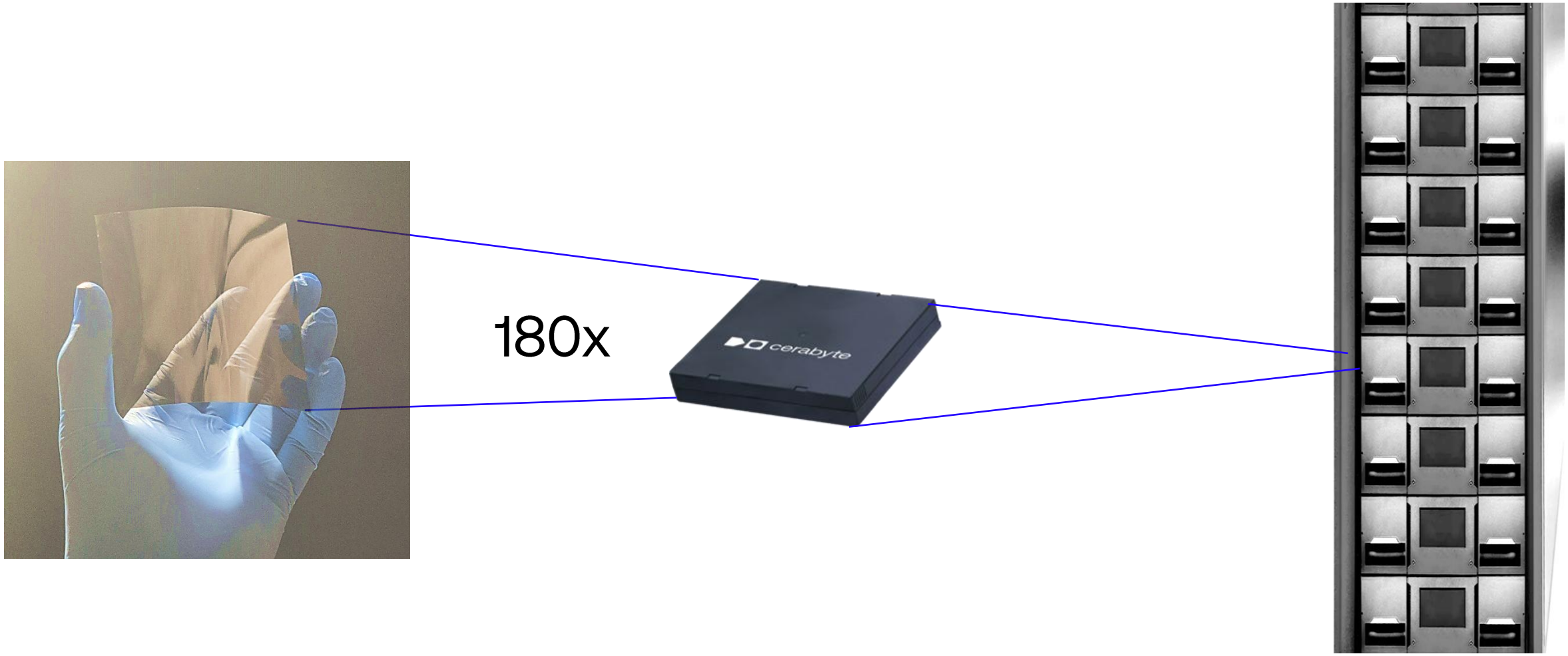


Ultrafast HR
image sensor

Write/Read
1 – 2 GB/s
target 2030

Leveraging high volume technologies and materials - for the media, for write/read and for storage is the key for the fast track to productization.
Writing with a „laser stamp“ and reading with an image sensor allows massive parallelization, enabling W/R speeds in the range of GB/s.

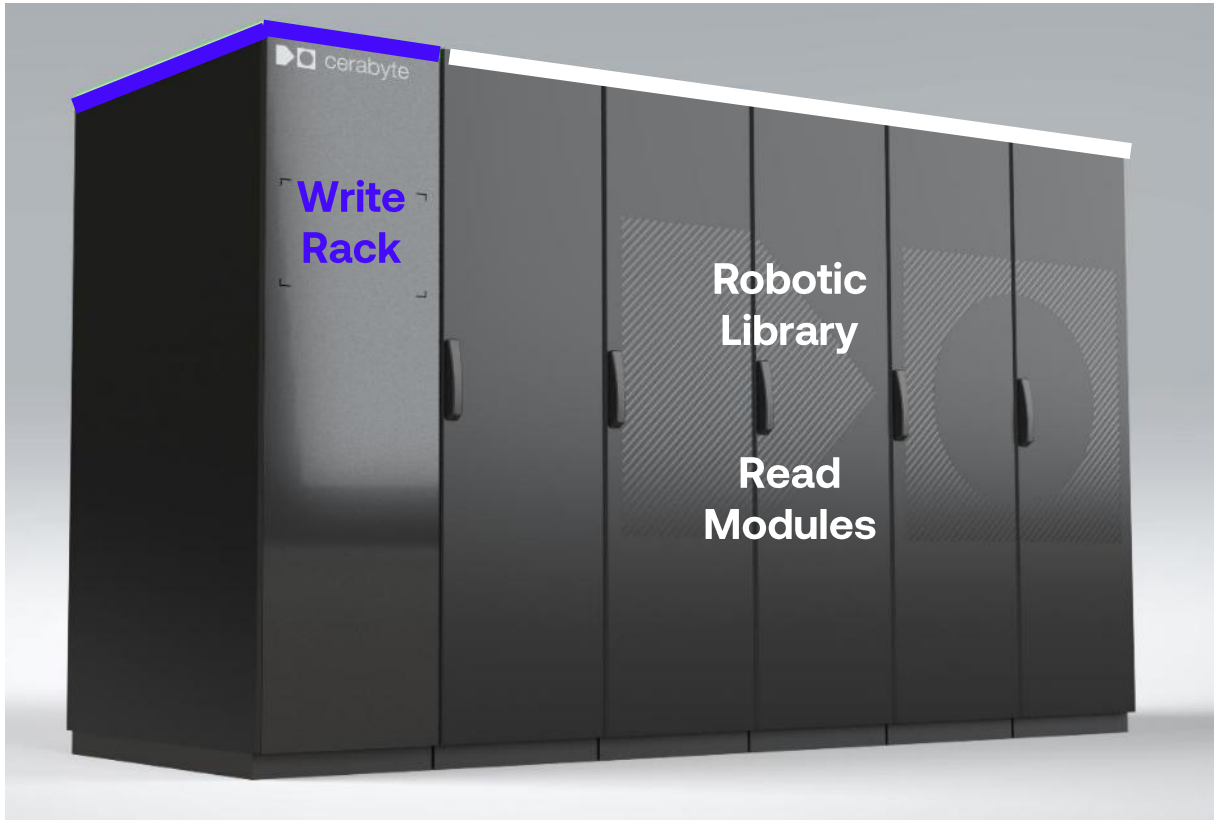
Easy integration: LTO form factor & library automation



Using existing form factors and footprints, Cerabyte can easily be integrated into existing DC infrastructure.

Modular architecture

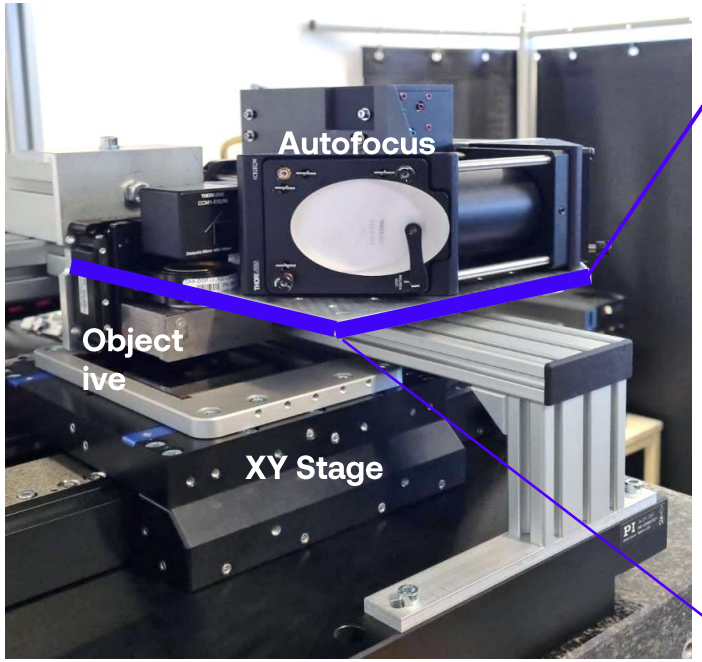
DMD module

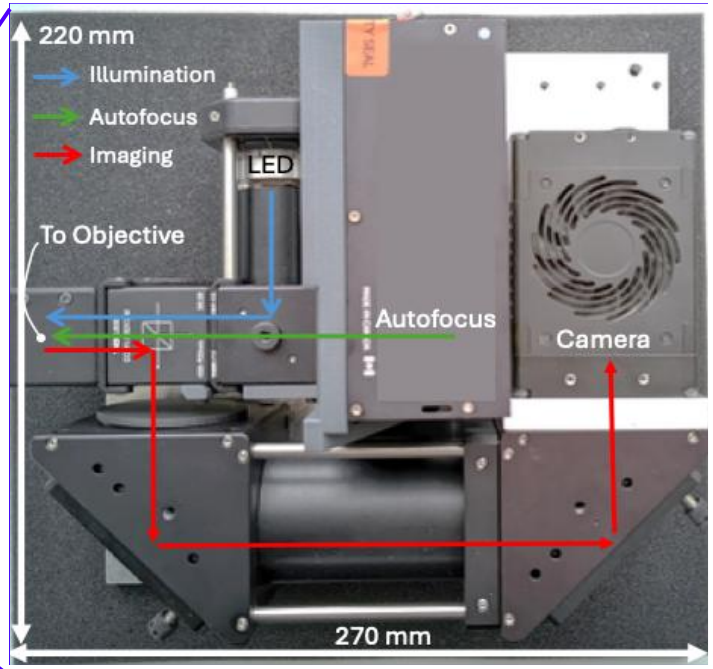


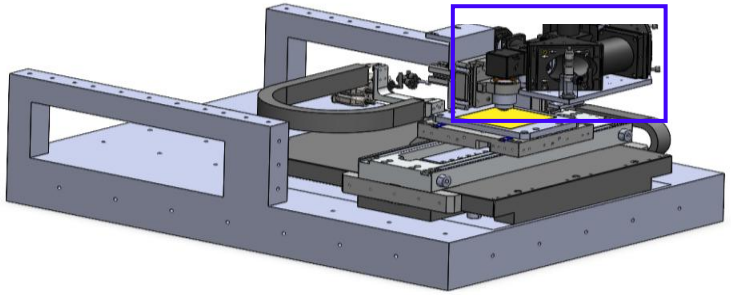
In the last year we managed to shrink the writing module, so it easily fits into a standard datacenter rack, supporting our concept of modular architecture. This modularity leverages the production capacities of partners.

Progress

Compact read module







Integrated Reader

< 10 s

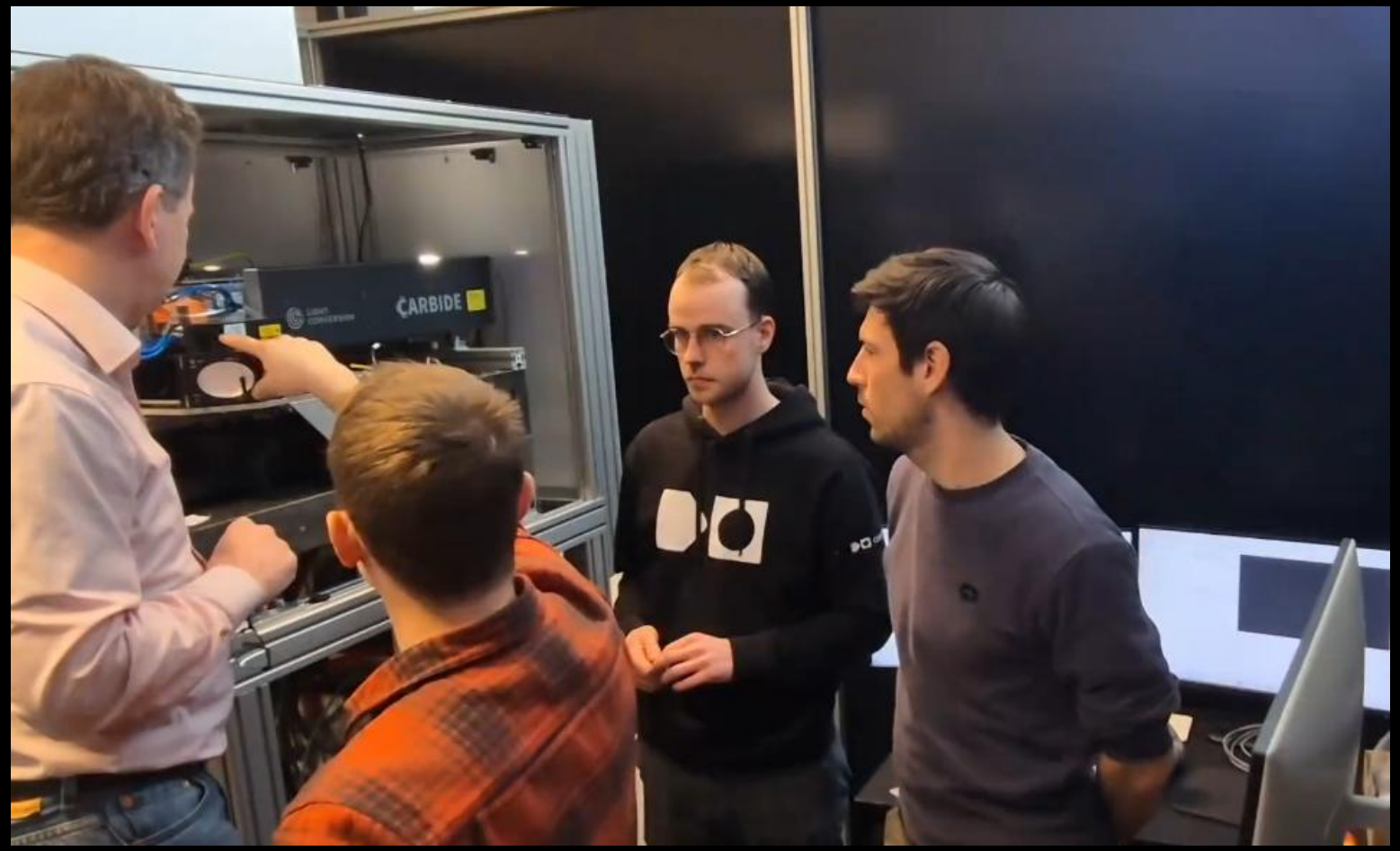
time to first bit

target 2028

We made the reader more compact, paving the way to integrate a reader in a 6U library module

Video Cerabyte Progress

https://vimeo.com/user197976995/cerabyteprogress



Production & Read Demo

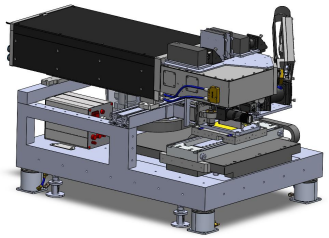
Hundreds of sample sheets for OCP Global with US Constitution

Portable readout demo
with $300 microscope & smartphone QR-reader

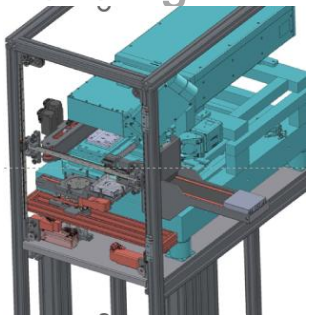
Cerabyte Ceramic Data Storage System

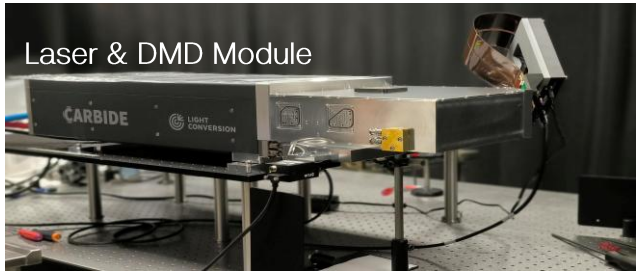
Cerabyte´s modular architecture leverages the production capacity of partners

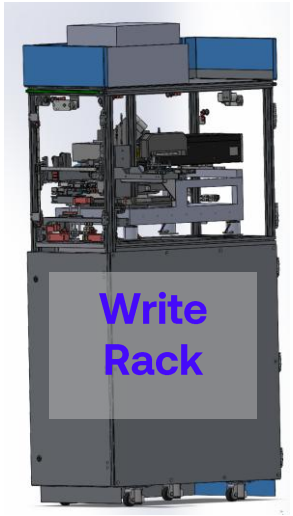
Write Device



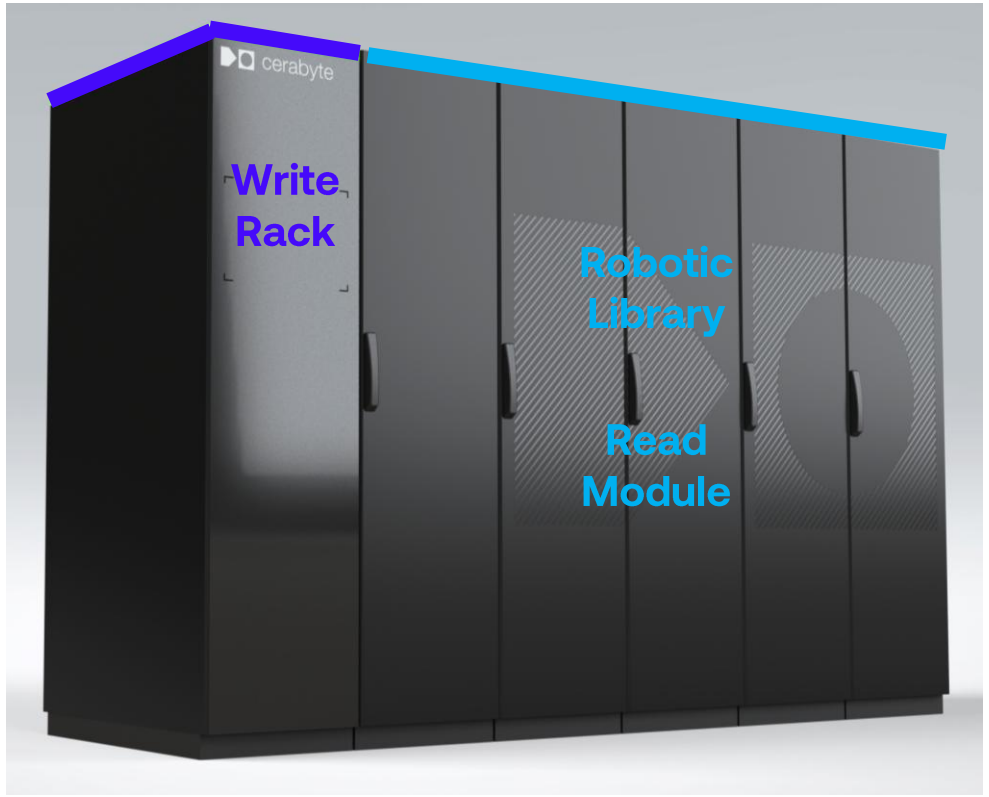
Handling







Cerabyte System Overview



Robotic Library & Read Module

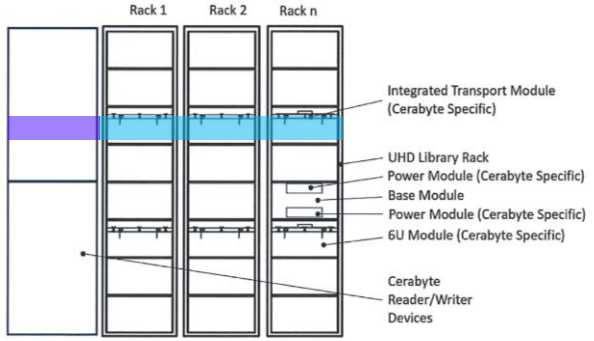
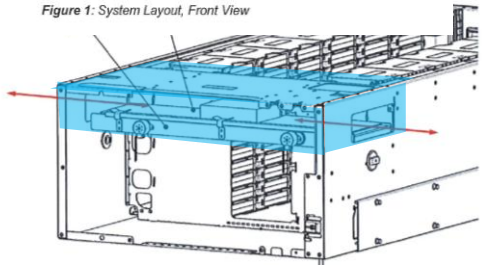


Figure 1: System Layout, Front View

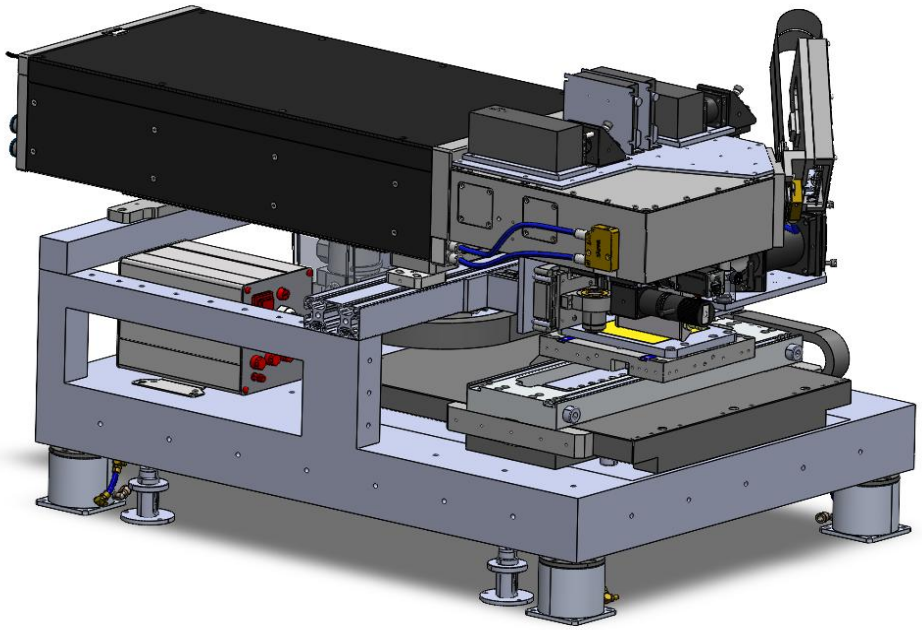


Transport Unit

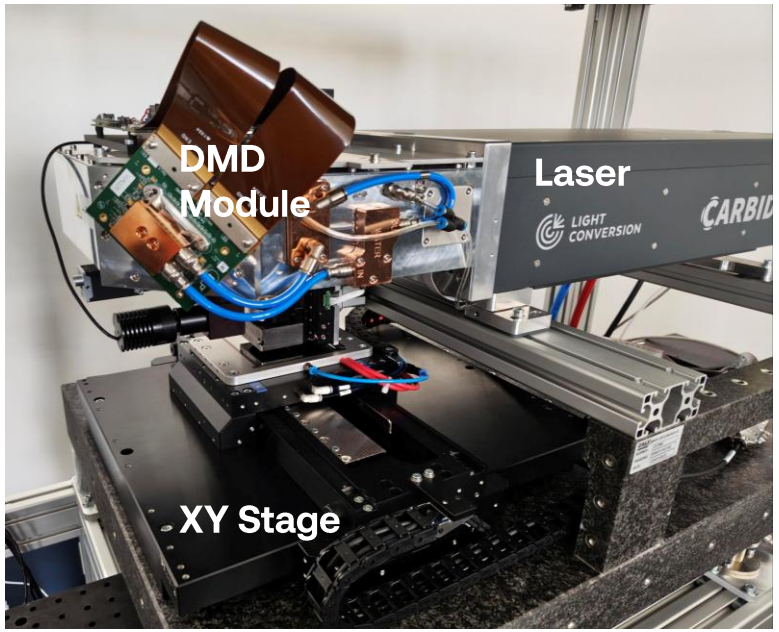
Write Rack connected to series of **Robotic Libraries with Read Modules**

Cerabyte **adapts** existing products or processes to **scale production**

Write Device



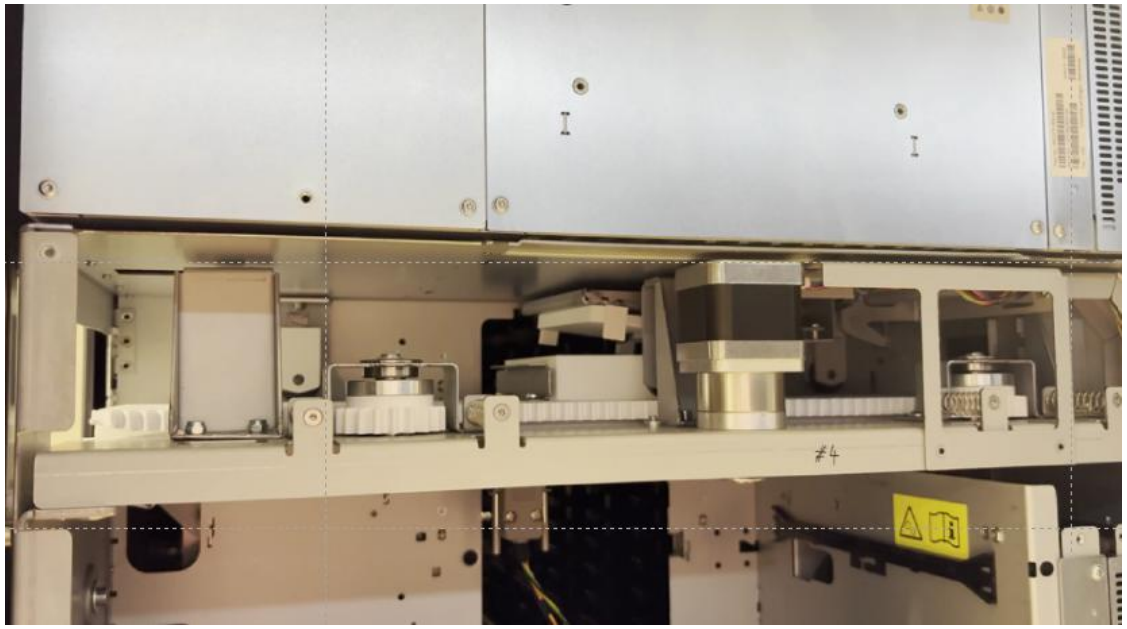
Compact Writing Module



Cerabyte modified a **Robotic Library Module** with a lateral transport unit

Modified Library Module

Lateral Transport Unit
in Volume 1



Partner Opportunities

Shaping how data is stored in the future

Explore Cerabyte pilot collaborations scaled to your funding

- **Early access**
- **Remote Access**
- **On-prem testing**

Looking forward to discussing **Your Pilot Engagement**

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