

Python-Blosc2

Compress Better, Compute Bigger!

Francesc Alted / francesc@ironarray.io

Luke Shaw / luke.shaw@ironarray.io

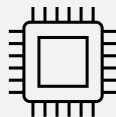


PyData Global
December 10th 2025

Agenda



Blosc2: Compressing Better



Blosc2: Computing Bigger



Caterva2: Sharing Faster

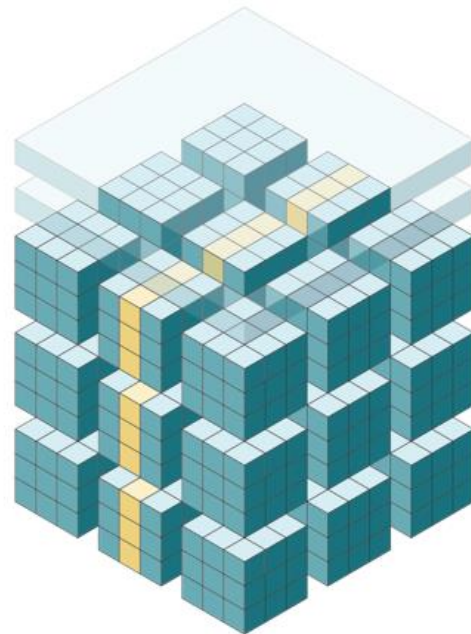
Who is ironArray SLU?

Team of experts empowering you to harness the full potential of compression for computation and data sharing capabilities.

We are here to help!



<https://ironarray.io>



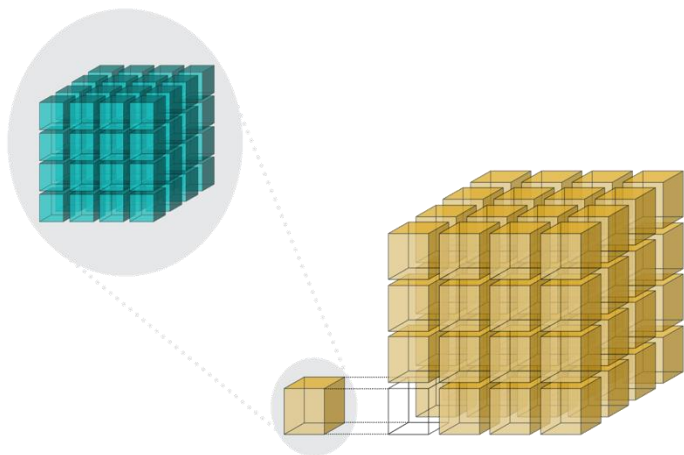
Blosc2: Better compression

For multidimensional, binary data

<https://www.blosc.org/>

Blosc2 Architecture

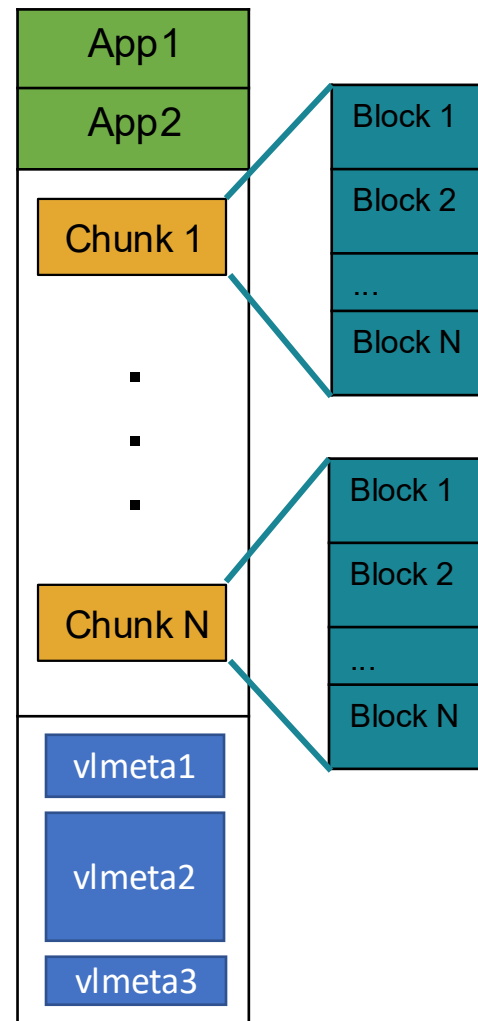
- ✓ 64-bit containers
- ✓ Metalayers for adding info for apps and users
- ✓ [Blosc2 NDim](#): Multi-dim blocks and chunks



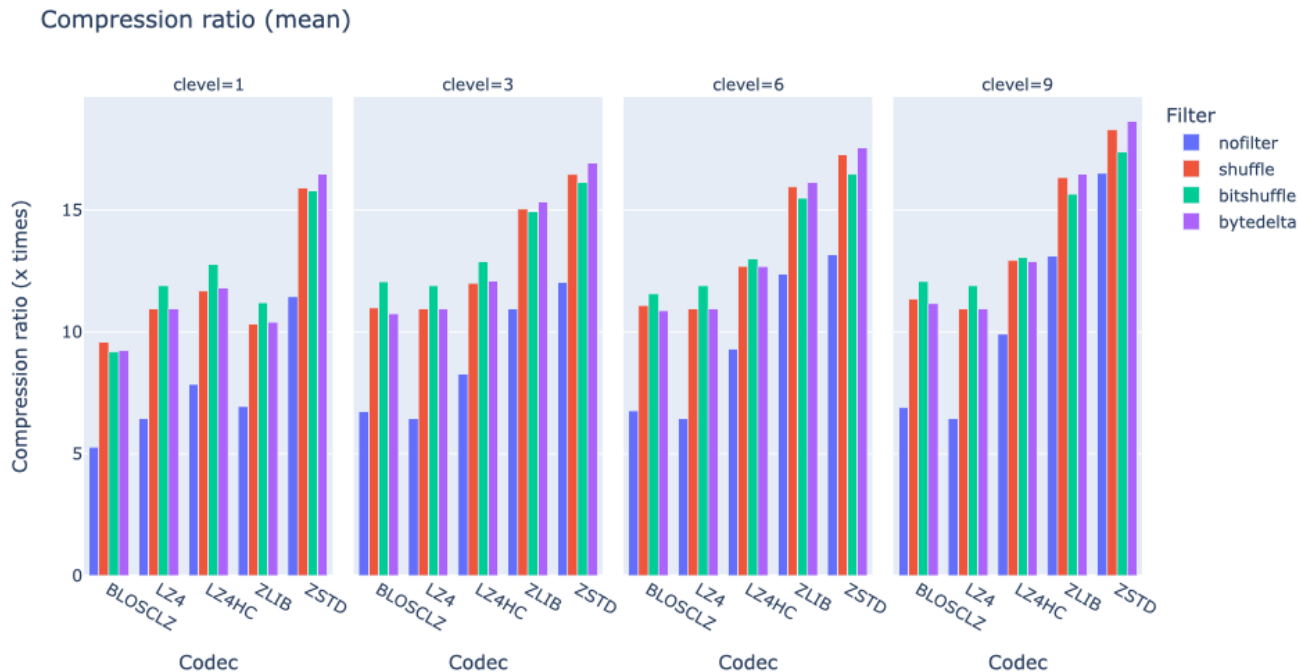
Header:
Fixed Length
Metalayers

Data:
Super-Chunk

Trailer:
Var Length
Metalayers
(up to 2 GB)



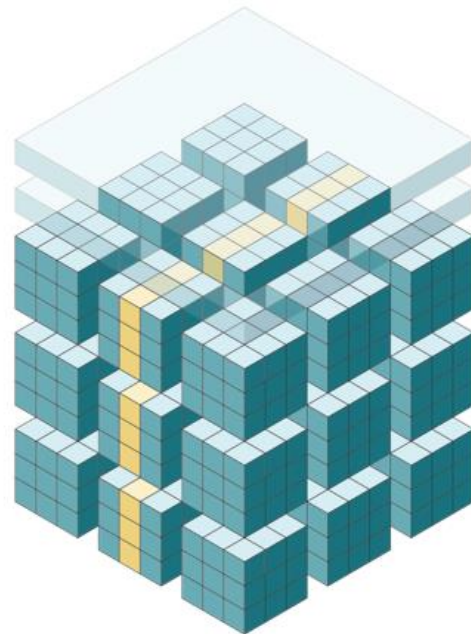
Different Codecs and Filters



How to predict the best combination?

<https://ironarray.io/btune>





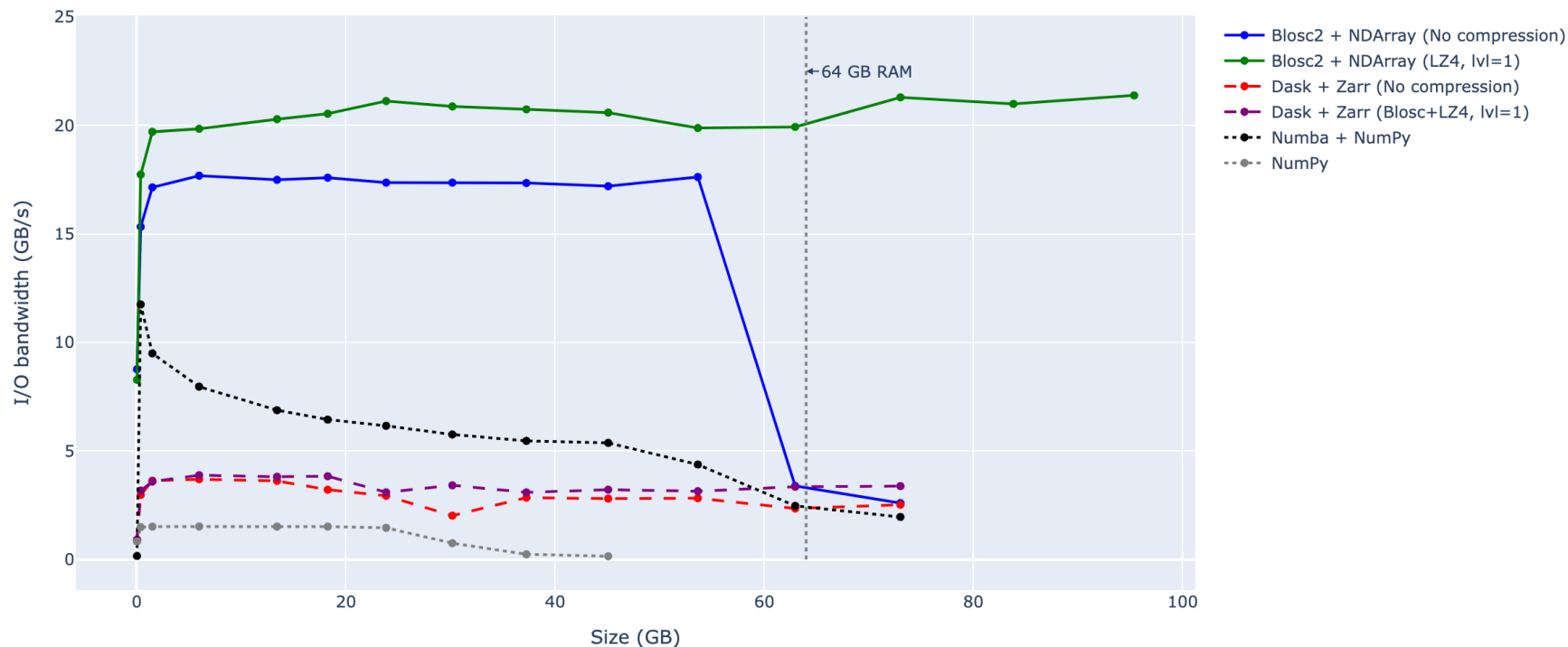
Blosc2: Compute Engine

Compute with your big compressed arrays, fast!

How it works (video)

Compressed Computing (In-Memory)

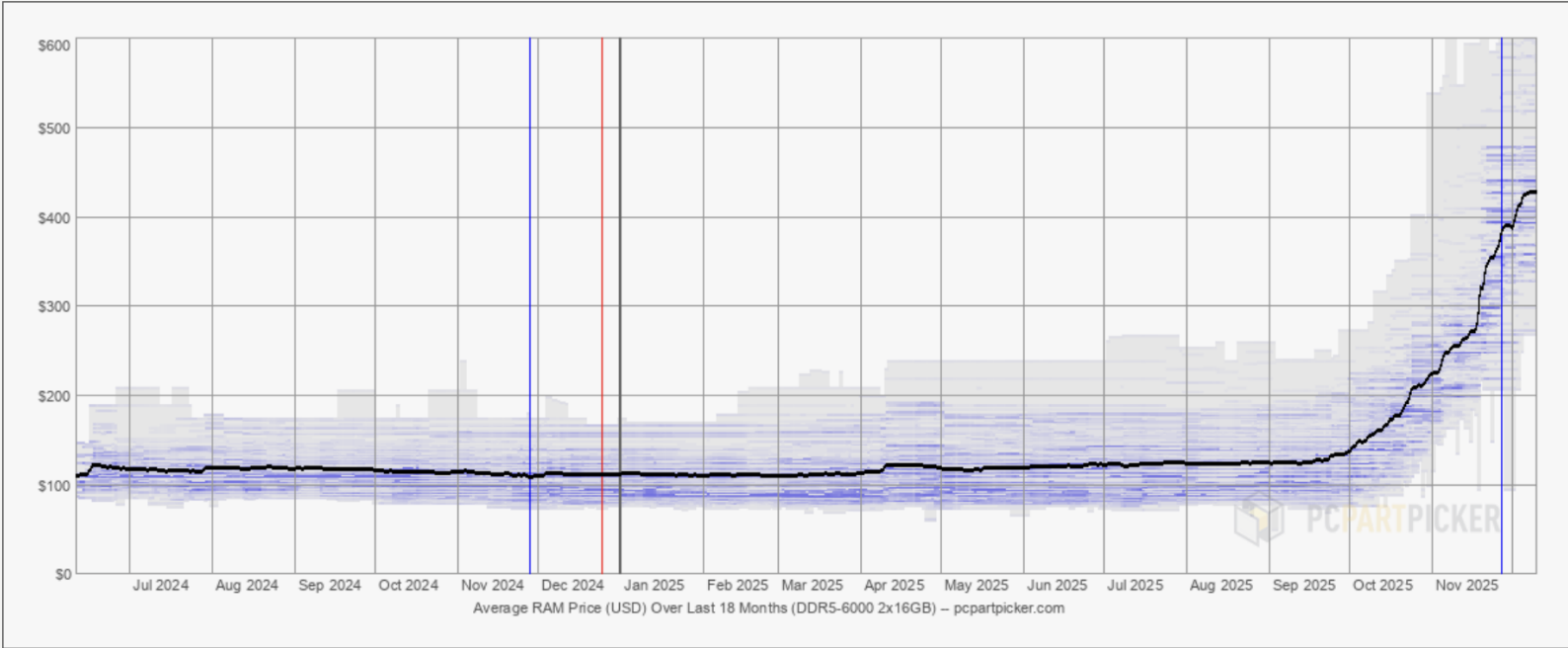
Blosc2 vs others; compute: `np.sum(((a ** 3 + np.sin(a * 2)) < c) & (b > 0), axis=1)`



<https://ironarray.io/blog/compute-bigger>

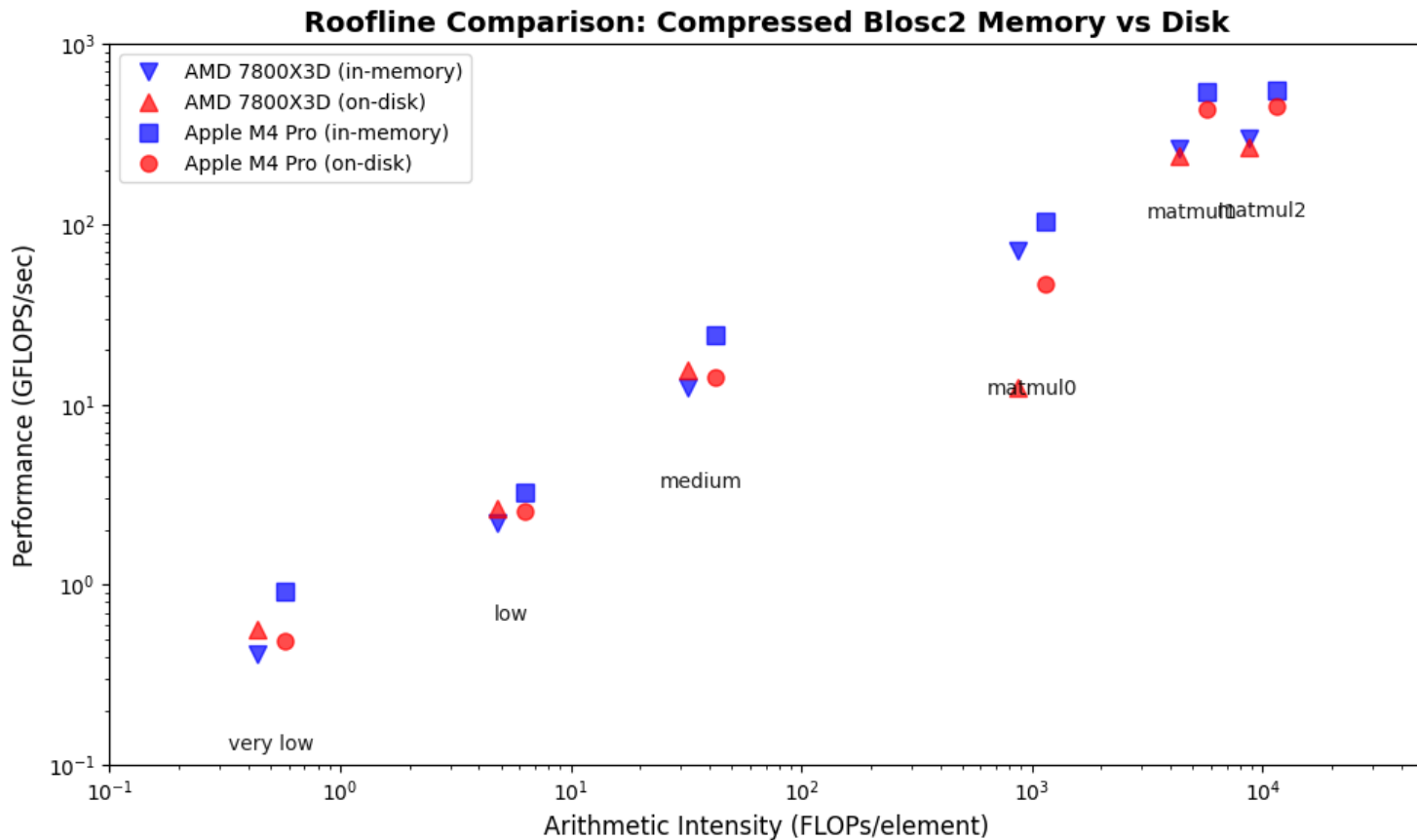
RAM Matters (But Is Becoming Scarce)

DDR5-6000 2x16GB (Average price in USD over last 18 months)



<https://pcpartpicker.com/trends/price/memory/>

Goal: Efficient Disk Computation

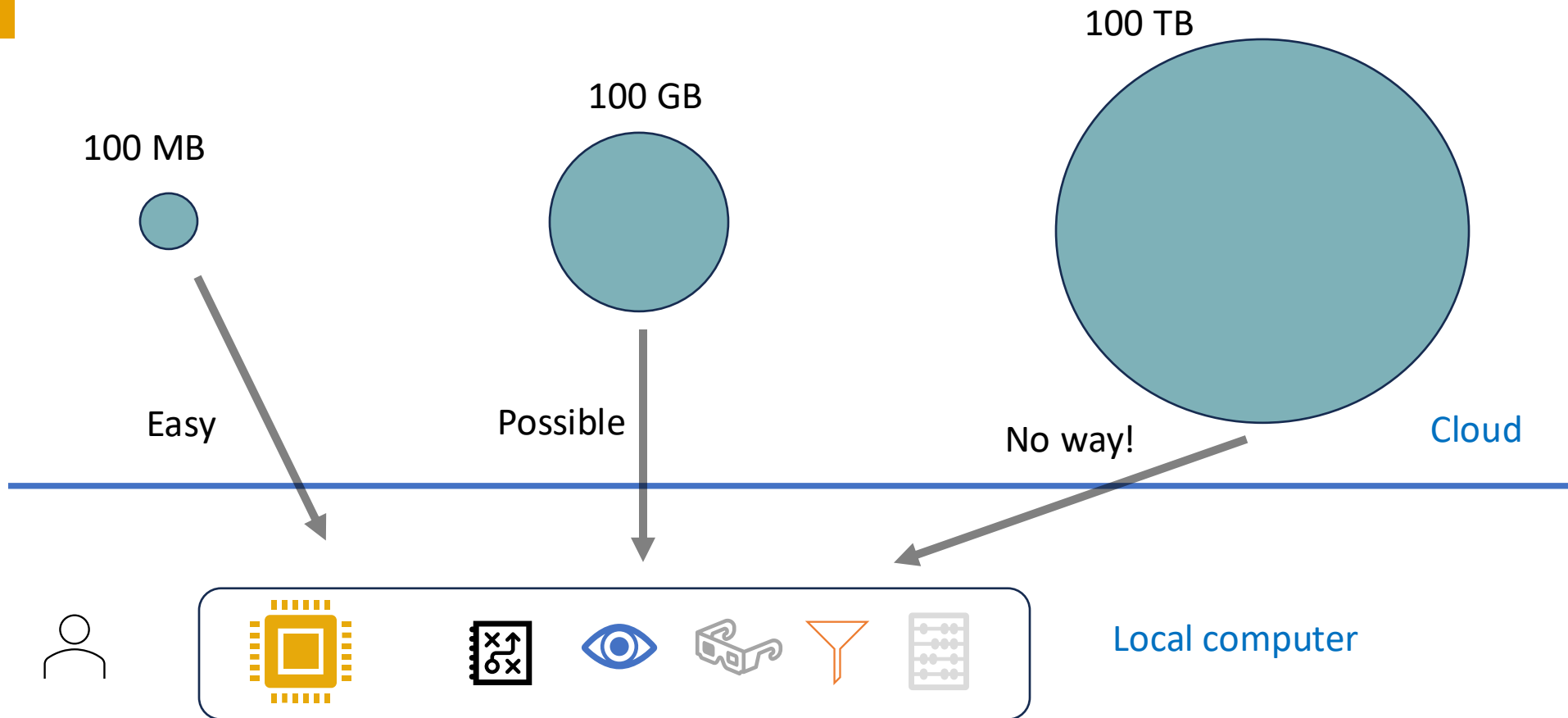


<https://www.blosc.org/posts/roofline-analysis-blosc2/>

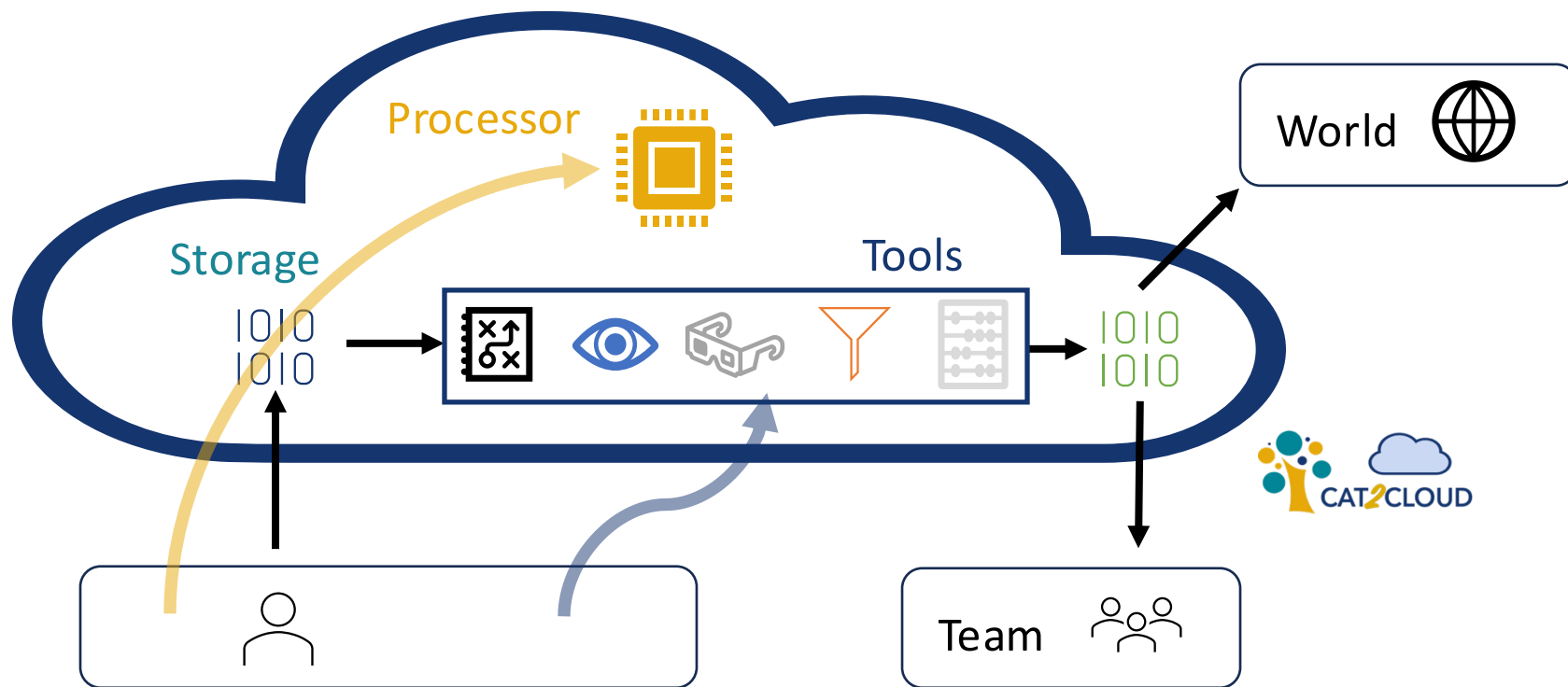


Bring Computation Closer To Where Data Is Stored

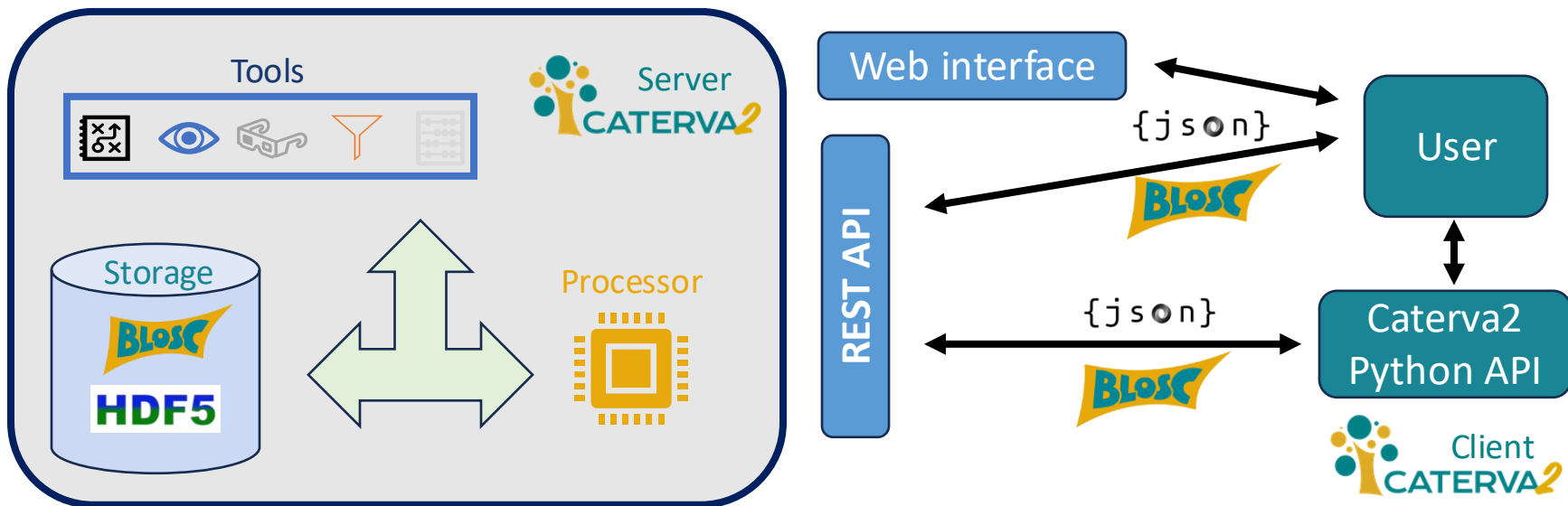
Data Is Affected By Physical Laws!



Computation Needs To Be Closer To Where Data Is Stored



Caterva2: Computing, Compressing And Serving Data



Your Data Workflows Right In The Cloud



<https://ironarray.io/caterva2>

- Efficient compute
- Better compression
- Easy sharing
- **Open Source**



<https://ironarray.io/cat2cloud>

- Same capabilities
- Works in the cloud
- Operated by ironArray
- Contract and ready to go

Choose what you prefer!

Hands-on Time