

An abstract graphic on the left side of the image, composed of numerous thin, light green lines that curve and swirl together to form a large, irregular, organic shape. The lines are more densely packed in some areas, creating a sense of depth and movement.

Open. Together.



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SUMMIT

EW: Storage



STORAGE

SNIA Computational Storage Technical Work Group

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Compute, Meet Data



STORAGE

Based on the premise that storage capacity is growing, but storage architecture has remained mostly unchanged dating back to pre-tape and floppy...

This TWG is working to show how storage, when provided extra CPU power, can do processing closer to the data.

How would you redefine your stacks to take advantage of this?

Technology on the Ground Floor



STORAGE

This idea began with a 7AM BoF session at the 2018 FMS.

And the first ever session at the event on ‘Computational Storage’

Equal parts start-up, and mature HW; this group asked questions like:

“Could we create a design to solve problems by bringing the compute into storage?”

“Could this greatly reduce I/O bus traffic & allow distributed processing?”



To Get off the Ground Floor



STORAGE

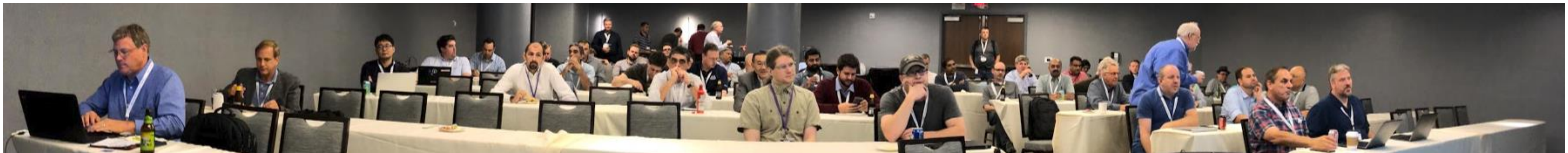
However: The “must haves” included:

- Industry standards support
- Careful guidance from the SW industry
- A really swell name (still working on that one)



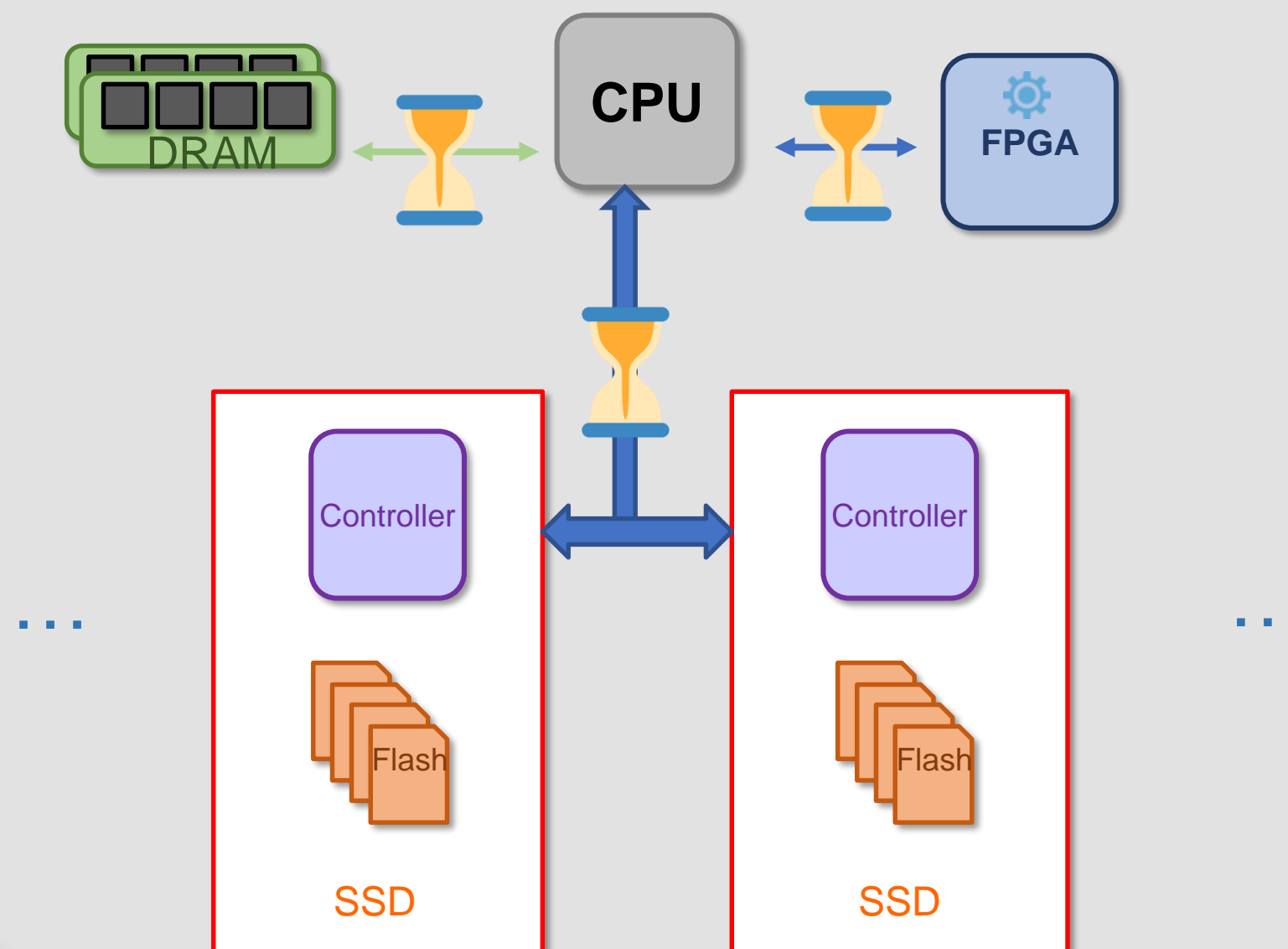
So during the SNIA SDC Event, several Computational Storage sessions were held
And another BoF this time at 7PM was held, even more attended!

This led to an aligned view that SNIA would be a proper proving ground for the
development of standardization work



What's the Problem?

Central Processor-Driven



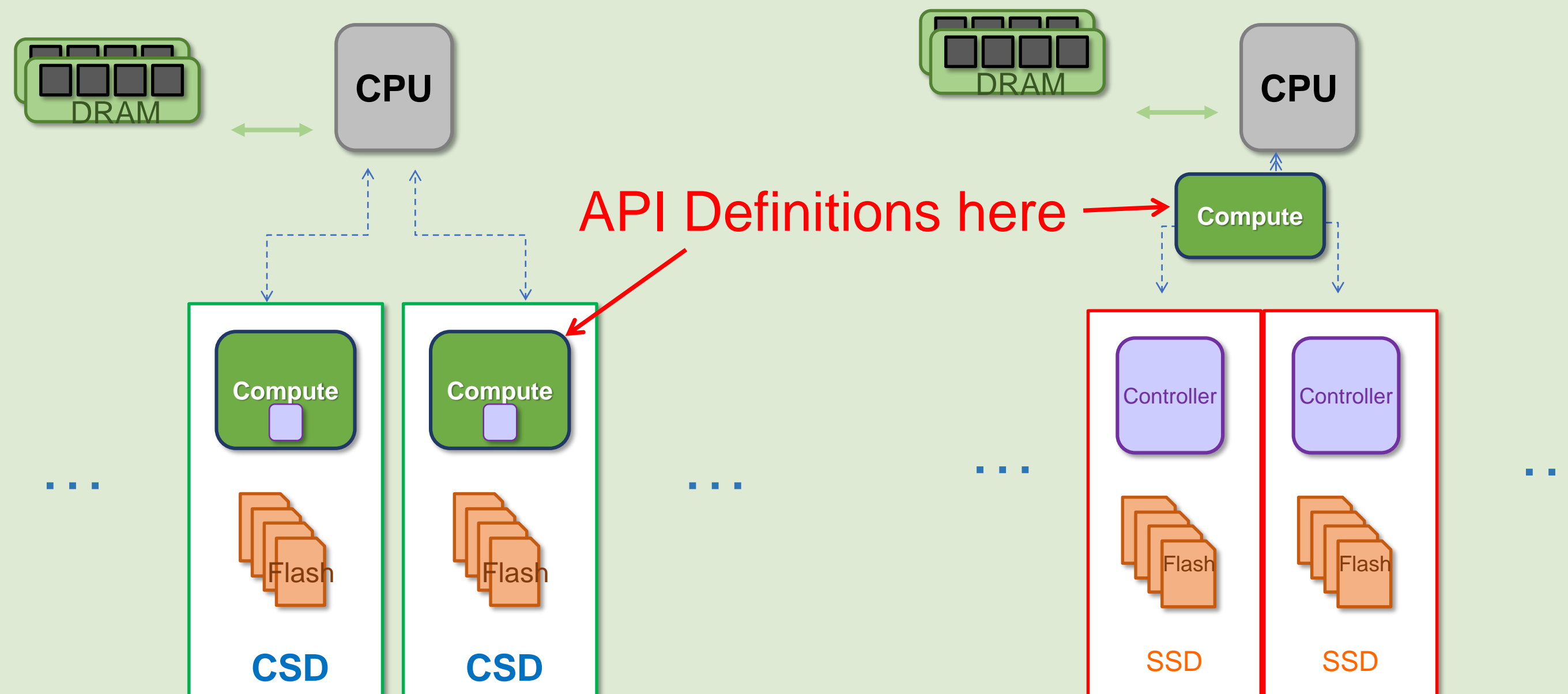
With the widespread adoption of high-speed storage and deployment of data-intensive applications, the traditional architecture...

- **Creates** CPU, Memory & Storage **Bottlenecks**
- With Offloads that are **not** in-line with Storage
- and **fails to scale** Performance with Capacity

How do we fix it?

Example Architectures

Distributed-Processing and Data-Driven



Computational Storage Solutions

- ✓ **Alleviate** CPU, Memory & Storage **Bottlenecks**
- ✓ with Offloads **in-line** with Storage
- ✓ and Performance that **scales** with additional Computational Storage

Notice the missing pieces-

- Software design- we need your help

New taxonomy for new devices

Computational Storage Drive (CSD): A component that provides persistent data storage and computational services

Computational Storage Processor (CSP): A component that provides computational services to a storage system without providing persistent storage

Computational Storage Array (CSA): A collection of computational storage drives, computational storage processors and/or storage devices, combined with a body of control software

What it means for you!

- You know your Big Data problems, help us define this architecture!
- Help us to create a flexible and powerful framework!
- Our 24+ company strong and growing Plan:
 - Define the high level Open architecture first
 - Then spin off the different interfaces, protocols, etc. to the right industry groups
 - Such as scala.org, DMTF, and NVMe.
- Find out more at: <https://www.snia.org/technical-work-and-standards/industry-reference>
- https://www.snia.org/news_events/newsroom/new-technical-work-group-focus-computational-storage





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