

# Computational Storage Overview

## TWG and SIG update

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# Computational Storage History

SNIA.  
SSSI | SOLID STATE  
STORAGE

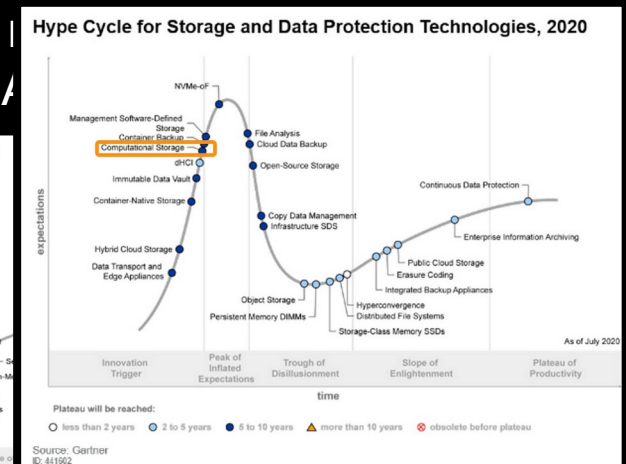
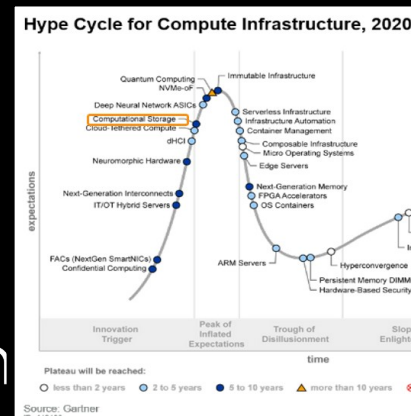


SNIA.  
CMSI | COMPUTE, MEMORY,  
AND STORAGE

- Expanded the scope of the Initiative from solid state storage and persistent memory to add computational storage
- CMSI Governing Board authorized the formation of the Computational Storage Special Interest Group
- Budget allocated for outreach and education on computational storage 2020 and beyond
  - Live F2F TWG meeting support
  - Industry visibility of TWG work
  - Support of SIG projects

# Computational Storage TWG Direction and Value

- What is the expected industry impact of this work
  - Deliver a path for unified deployment of Computational Storage Devices through Architectural and Programming models for members, vendors and customers
- What is the industry segment relevance.
  - With a growing marketplace of products, a standardized way of interacting with these devices is paramount for market adoption and growth
- Why you should join and participate in this TWG
  - This growing technology innovation is expected to explode in the near future and become a standard use case for storage infrastructure – Industry A



# Computational Storage SIG Mission and Objectives

- **Mission:** Accelerate the awareness of computational storage concepts and influence industry adoption and implementation of the technical specifications and programming models when available
- **Objectives:** The Computational Storage SIG will:
  - Communicate the CS taxonomy and technical specification
  - Communicate the CS programming model and why there's a standard model
  - Educate on benefits, use models, and implementation of Computational Storage
  - Evangelize CS TWG work and recruit members to contribute to spec
  - Influence the industry to adopt programming model and uses when available
  - Coordinate marketing across industry standards groups in conjunction with SNIA Strategic Alliance Committee

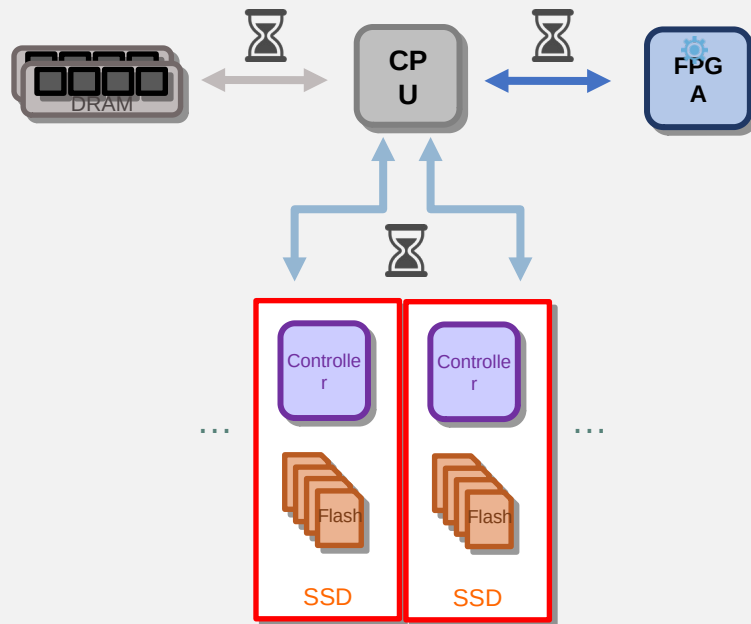


# 46 Participating Companies - 227 Member Representatives



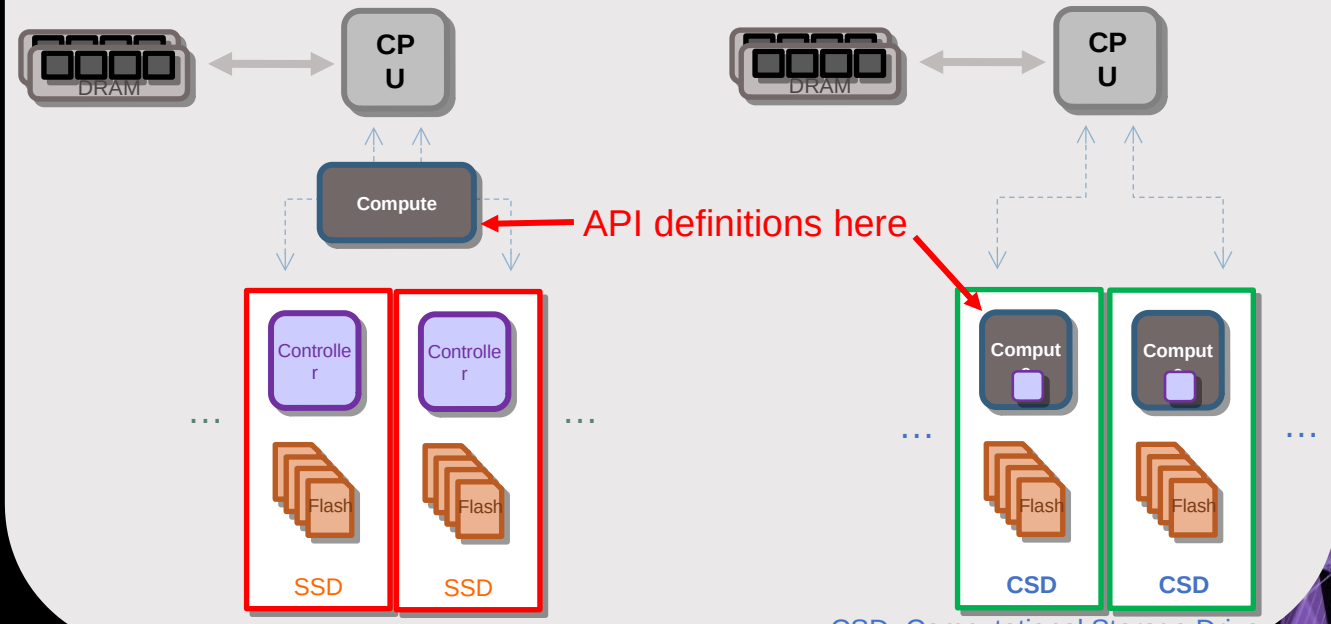
# Computational Storage

## Current Compute / Storage Architecture



## Computational Storage Architecture

Move Compute Closer to Storage



CSD=Computational Storage Drive

# Definition Updates

## REMOVAL OF - CSS, FCSS, PCSS to better align the Architectural use case of the Computational Storage Devices (CSx) - Addition of replacement terms below

### **Computational Storage**

Architectures that provide Computational Storage Functions (CSF) coupled to storage, offloading host processing or reducing data movement.

### **Computational Storage Device (CSx)**

A Computational Storage Drive, Computational Storage Processor, or Computational Storage Array.

### **Computational Storage Resources (CSR)**

Resources available for a host to provision a CSx that enables that CSx to be programmed to perform a CSF

### **Computational Storage Engine (CSE)**

A Component that is able to execute one or more CSFs

### **Computational Storage Function (CSF)**

Specific operations that may be configured and executed by a CSE

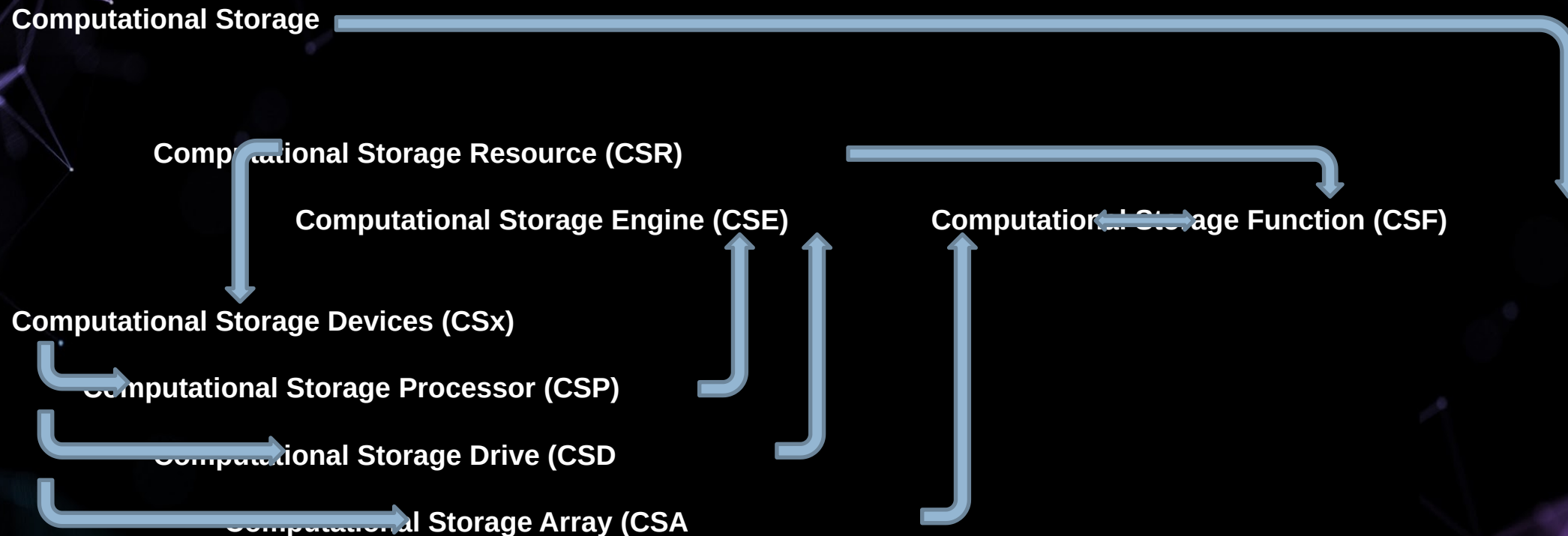
### **Computational Storage Processor (CSP)**

A component that contains one or more CSEs for an associated storage system without providing persistent data storage

### **Computational Storage Drive (CSD)**

A storage element that contains one or more CSEs and persistent data storage

# Visual Representation of Definition References





# Computational Storage TWG Work Items for 2021

- Architectural Document to Rev 1.0 and released
- User Space API document initial draft and public release for comment
- Security items are being evaluated
- SNIA Group collaboration
  - Engaged and monitoring SDXI efforts
- External Interactions
  - NVM Express interaction around TP work
  - ISO and NIST around Storage Security

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