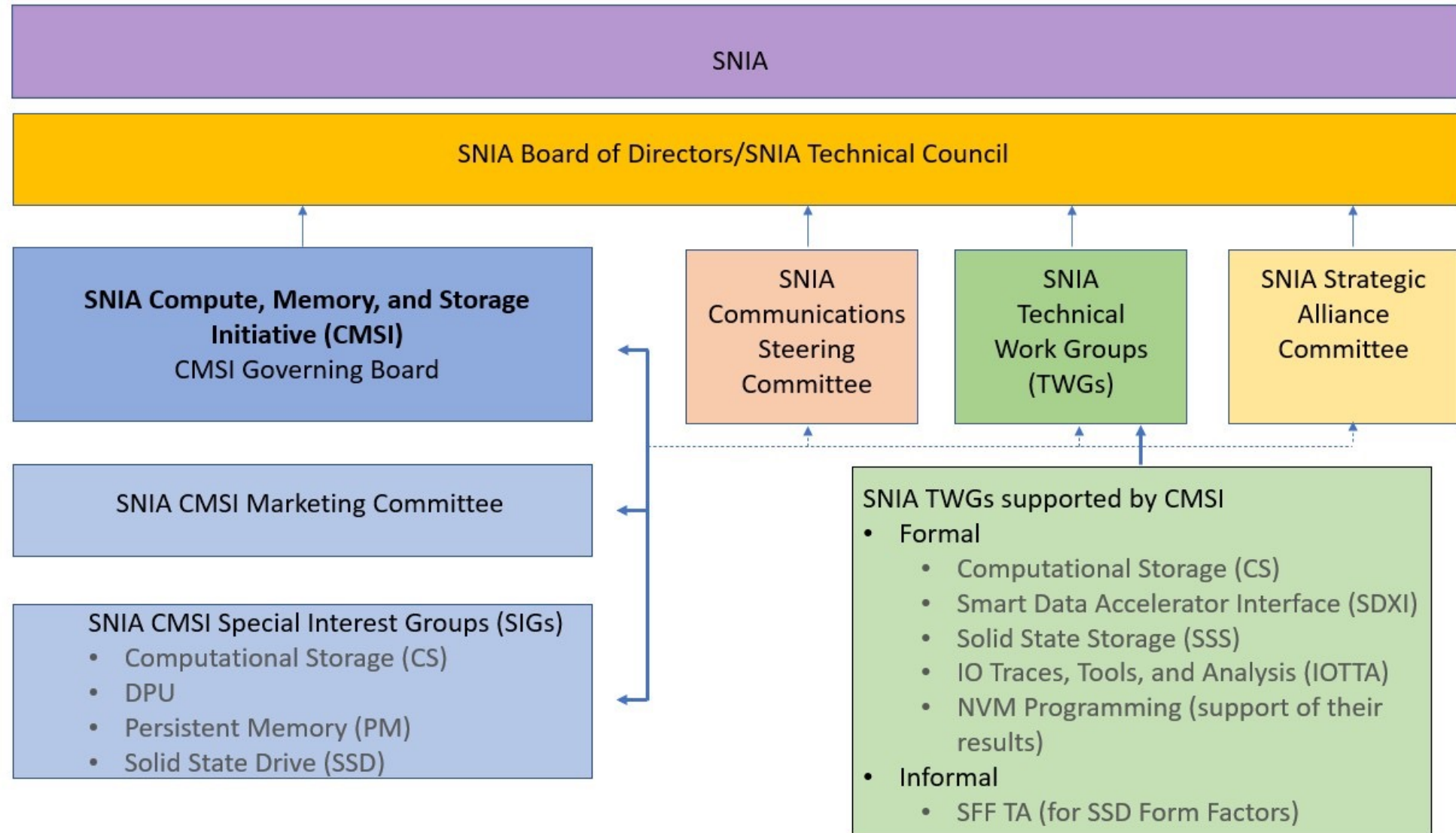# Compute, Memory, and Storage Initiative (CMSI)

2022 Review and 2023 Plans

Presented by Bill Martin, Chair, CMSI

cmsi-chair@snia.org

SNIA and the Compute, Memory, and Storage Initiative

SNIA

SNIA Board of Directors/SNIA Technical Council

SNIA Compute, Memory, and Storage Initiative (CMSI)
CMSI Governing Board

SNIA Communications Steering Committee

SNIA Technical Work Groups (TWGs)

SNIA Strategic Alliance Committee

SNIA CMSI Marketing Committee

SNIA CMSI Special Interest Groups (SIGs)
- Computational Storage (CS)
- DPU
- Persistent Memory (PM)
- Solid State Drive (SSD)

SNIA TWGs supported by CMSI
- Formal
  - Computational Storage (CS)
  - Smart Data Accelerator Interface (SDXI)
  - Solid State Storage (SSS)
  - IO Traces, Tools, and Analysis (IOTTA)
  - NVM Programming (support of their results)
- Informal
  - SFF TA (for SSD Form Factors)

SNIA CMSI 2022 Mission and Accomplishments

CMSI Mission: The SNIA CMSI is dedicated to fostering the growth and success of the market for solid state storage, computational storage, persistent memory, and other advanced storage technologies in both commercial and consumer environments.

CMSI-wide Accomplishments: * Successful completion of 10th annual Persistent Memory + Computational Storage Summit
* Continued outreach and education on SNIA Technical Work Group Standards and Specifications
* Support of SNIA Strategic Alliances (CXL Consortium, NVM Express, OpenFabrics Alliance)
* Sponsorship and support of SNIA SDC Events and 4 Industry Events (OFA Workshop; Flash Memory Summit (FMS), OCP Global Summit; SC22)

Computational Storage SIG

- Successful promotion of the CS Architecture and Programming Model v1.0 launch.
  - Winner of the Flash Memory Summit Best of Show award
  - Presentations at FMS and SDC
- Continued research and documentation of computational storage use cases
  - Added 3 presentations at OFA Workshop that spoke to use cases
  - Added 4 use case demonstrations at Flash Memory Summit, and 3 at OCP Global Summit and SC22
  - Added 1 new webcast on use cases related to updated specifications
- 21 Computational Storage presentations at PM+CS Summit added to the SNIA Educational Library
- Sponsorship of 4 Computational Storage sessions at Flash Memory Summit 2022

Persistent Memory SIG

- Education and outreach on the NVM Programming Model completed by the NVM Programming TWG
- Continued support of Persistent Memory programming with the PM Workshop/Hackathon program
- 11 Persistent Memory presentations at PM+CS Summit added to the SNIA Educational Library
- Preparatory work for the launch of the SDXI Specification v1.0
- Demos and Sponsorship of Persistent Memory session at Flash Memory Summit 2022

Solid State Drive SIG

- Education and outreach on Solid State Storage specifications and EDSFF
- Publication of the Total Cost of Ownership Model for Storage video and white paper and outreach on the TCO webpage material
- Update of NVMe SSD Classification materials and outreach
- Continued support, enhancement of, and outreach on the SSD Form Factor webpage materials
- 3 webcasts on SSD topics
- Briefings to industry analysts on SSD SIG, EDSFF, NVMe SSD, and TCO activities of the CMSI.
- Demos and Sponsorship of SSD sessions at Flash Memory Summit 2022

SNIA CMSI 2023 Work Items (slide 1 of 2)

- Initiative- wide
  - Outreach and participation in six planned industry events (MemCon, OFA Virtual Workshop, PIRL, Flash Memory Summit, OCP Global Summit, SC23)
  - Support of SNIA SDC events (India, US)
  - Persistent Memory/Computational Storage Summit (April 11-12, 2023)
  - One blog/month on the sniacmsiblog.org to include webcast Q&As and education on technology topics from Initiative member thought leaders
- Computational Storage SIG
  - Continued support of SNIA computational storage activities at company and industry events
  - End user evangelization of computational storage use
  - Continued research and documentation of computational storage use cases
  - Three webcasts and four educational videos
  - Launch Computational Storage API
- Persistent Memory SIG
  - Continued research and documentation of PM use cases
  - Expanded PM programming videos and Hackathon events
  - Evangelization and outreach on SNIA SDXI TWG specifications
- Solid State Drive SIG
  - Support of and education on new memory types
  - Expansion of support on EDSFF deployments and use cases
  - More work on Total Cost of Ownership for SSDs
  - Develop Ethernet drive work webpages
  - Support of SNIA TWG work – SFF TA TWG and Solid State Storage TWG
- DPU SIG – new for 2023 – define objectives and launch work

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SNIA CMSI 2023 Work Items (slide 2 of 2)

- **TWGs supported**
  - Computational Storage TWG (Specification promotion/outreach, user input)
  - SDXI TWG (Specification promotion/outreach, user input)
  - Solid State Storage TWG (Specification promotion/outreach, user input)
- **External Group Alliance/Collaboration Activities**
  - CXL™ Consortium - Marketing/outreach work on alliance
  - NVM Express®– support of/outreach on joint marketing and technical alliance activities
  - OpenFabrics Alliance – support of/outreach on joint marketing and technical alliance activities
  - SCSI Trade Association (STA™) - support of/outreach on joint marketing and technical alliance activities
  - JEDEC –NVDIMM-P specification support; automotive SSD standard support
  - Universal Chiplet Interconnect Express™ (UCIe™) - support of/outreach on joint marketing and technical alliance activities

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Compute+Memory+Storage Summit
Save the Date – April 11-12, 2023

- The PM+CS Summit is now the Compute+Memory+Storage Summit
- It returns as a virtual event with
  - Two half-days of live keynotes and panel sessions
  - Pre-recorded breakout sessions released concurrently with the event
- Virtual demonstration opportunities
- Topics to include
  - Future memory trends
  - Computational storage
  - Computational memory
  - CXL connectivity and impact on memory/computational storage
  - Compute, memory, and storage use cases and applications
  - Market and analyst updates
  - Developer-friendly programming frameworks
  - The latest on the SNIA technical work in compute, memory, and storage
- Look for the call for presentations and sponsorship information – coming very soon!
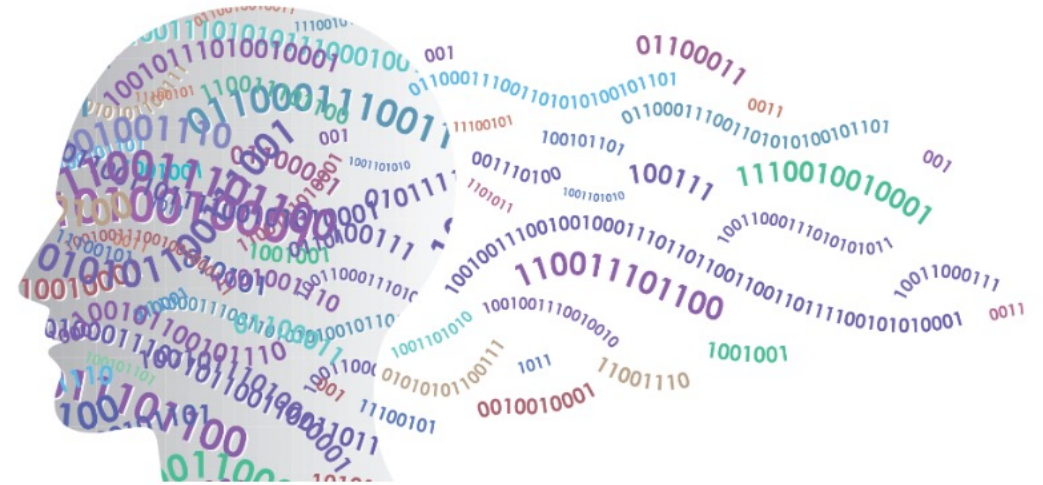
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SNIA Compute, Memory and Storage Initiative Membership*

CMSI Strategic Membership, Voting - $5,000/year; CMSI Membership, Non-Voting - $3,000/year; CMSI Startup Company Membership - $1,000/year

34 company members and 6 individual members as of January 2023   + *New members in FY2023:*   * *Strategic Membership, Voting members*

Who to Contact at CMSI

- **CMSI Chair**
  - Bill Martin (Samsung)

- **CMSI Vice Chair**
  - Leah Schoeb (AMD)

- **CMSI Treasurer**
  - Willie Nelson (Intel)

- **CMSI Marketing Committee Co-Chairs**
  - David McIntyre (Samsung); Willie Nelson (Intel)

- **CMSI Computational Storage SIG Chair**
  - David McIntyre (Samsung)

- **CMSI Persistent Memory SIG Co-Chairs**
  - Arthur Sainio (SMART Modular); Raghu Kulkarni (Intel)

- **CMSI Solid State Storage Drive SIG Co-Chairs**
  - Cameron Brett (KIOXIA); Jonmichael Hands (Chia Networks)

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Participate in SNIA CMSI in 2023

- Expected industry impact of CMSI work
  - Significant education deliverables contributing to expanded knowledge of computational storage and smart data acceleration interface technology
  - The place to go for information on SSD form factors, NVMe classification, and Total Cost of Ownership (TCO) information
  - Expanded reach to end users
  - Implementation knowledge of the NVM Programming Model benefits and application to persistent memory applications
- Industry segment relevance of CMSI work
  - Computational Storage industry
  - Memory industry
  - Storage industry
- Why you should join and participate in the CMSI
  - Engage and educate the industry on compute, memory, and storage technologies
  - Accelerate standards
  - Propel technology adoption
- Who to contact for additional information
  - Reach out to our leadership – Bill Martin – cmsi-chair@snia.org
  - Website – www.snia.org/cmsi
  - CMSI fact sheet - https://www.snia.org/sites/default/files/SSSI/CMSI_2023_fact_sheet.pdf


SNIA CMSI | COMPUTE, MEMORY, AND STORAGE

The 34 companies of the SNIA Compute, Memory, and Storage Initiative (CMSI) support the industry drive to combine processing with memory and storage, and to create new compute architectures and software to analyze and exploit the explosion of data creation over the next decade.

CMSI Engages and Educates
- ✓ Computational Storage
- ✓ DPU
- ✓ Persistent Memory
- ✓ Solid State Drives
- ✓ PM and SSD Performance
- ✓ Solid State Systems
- ✓ Smart Data Accelerator
- ✓ SSD Form Factors
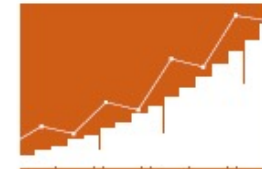
CMSI Accelerates Standards
- ✓ Computational Storage Architecture & Programming Model
- ✓ Computational Storage API
- ✓ NVM Programming Model
- ✓ Smart Data Accelerator Interface
- ✓ Solid State Storage Performance Test Specifications
- ✓ SSD Form Factor Specifications

CMSI Propels Technology Adoption
- ✓ Persistent Memory Programming Workshops
- ✓ SSD Form Factors Explained
- ✓ Computational Storage, Memory, and Solid State Drive Demos at live and online technology events
- ✓ Interactive Webcasts with Industry Experts Technology
- ✓ Videos on the SNIA Video YouTube Channel

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