

Green Storage Initiative (GSI)

2023 Review and 2024 Plans

Presented by Wayne M. Adams and Chris Lueth

GSI Co-Chairs

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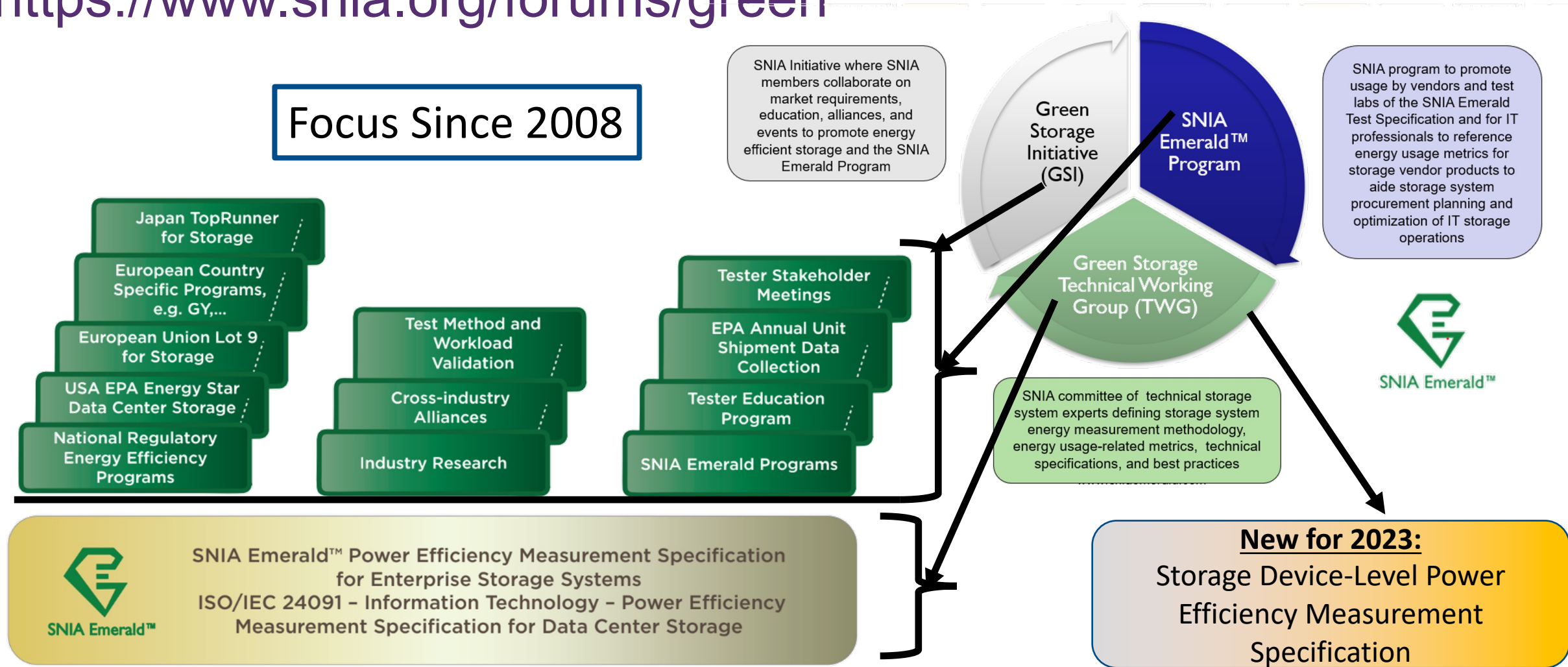
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www.sniamerald.com

<https://www.snia.org/technology-focus/power-efficiency>

Green Storage Initiative (GSI) Mission

<https://www.snia.org/forums/green>



GSI Work Items (slide 1 of 2)

2023 Accomplishments

Completed: SNIA Emerald 5.0 planning for 2024

- **DONE:** Block IO workload tool replacement
 - vdBench → Calypso Test Suite
- **DONE:** File IO workload tool replacement
 - SPEC SFS 2014 → SPEC Storage Solution 2020
- TGG Alliance / EU Lot 9 regulations, EU other
- Data Analysis and Recommendations – SNIA-J for TopRunner.
- EPA Data Analysis DCS 2.1
- White paper for Storage Device-Level Power Efficiency Measurement (SDLPEM) translated Japanese
- SDLPEM Taxonomy and Test Methods

2024 Plans

- Complete SNIA Emerald 5.0 development
 - Modernizing tools and workloads a priority
- TGG Alliance / EU Lot 9 regulations
- EPA DCS Unit Shipment Report for 2023
- Industry Stakeholder Meetings
- Tester Community Training for new SNIA Emerald V5.0 tools
- SDLPEM V1.0 Specification
 - Calypso Test Suite
 - Vendor Testing

USA EPA Energy Star Data Center Storage v2.0 Test Reports, based on SNIA Emerald v4

<https://www.energystar.gov/productfinder/product/certified-data-center-storage/results>

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2024: 71 Test Reports 9 Vendors
2023: 57 Test Reports 8 Vendors

- EPA Energy Star Program:
- Focus is systems with sellable SKU
 - Block IO and File IO
 - Vendor voluntary participation
 - Results independent certification
 - US Gov procurement priority

 - Focus does not include composable systems, in-house proprietary designs, or consumer products.

Green Storage TWG ROADMAP- 2024

Approximate and subject to change

[Update 12-13-23](#)

		CY2024												CY 2025				CY2026
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Q1	Q2	Q3	Q4	
#	Events																	
1	SNIA-GTWG F2F Invite EPA to concall	▽	SNIA Member vSymposium Jan '24					▽ vF2F			▽ vF2F			▽	SNIA Member vSymposium Jan '25			
2	EPA-SNIA Industry Meetings	▽	EPA Meeting for updates						...as needed...					▽	DCS Stakeholder Meeting			
3	ENERGY STAR Data Analysis (on file submittals)									▽	V2.0/2.1 data analysis							
4	ISO version of Emerald 4.0 (tentative)									Submit to ISO		▽		▽	Publish ISO standard			
5	Emerald Measurement Spec v5.0 CTS lite replacement for Vdbench Update to Spec Storage 2020	▽	Define scope Draft Spec for internal review			▽	Spec V5.0 (internal draft)			▽	Spev V5.0 Public review		▽	Sbmit for SNIA Approval				
6	Storage Device Level Power Efficiency Measurement (SDLPEM) On going data collection	▽		▽	Public review	▽	Sbmit for SNIA Approval			▽	Publication							
7	Futures Memory attached persistent storage Test methodologies for capacity optimization, data protection, etc. (impact on performance, energy consumption) Energy measurement for large / new distributed systems; consider small scale measurement as system indicator Collaborate w/ other Servers, Switch Cloud data centers Object storage		Investigate and make recommendations															
8	Partner Collaboration/Tracking	ESTAR, ITI/ TGG (incl 80PLUS, Digital EU), EU Lot 9, ASHRAE, SPEC-Storage/Power, SNIA-Jpn TopRunner, ISO,																

GSI Work Items (slide 2 of 2)

GSI Alliances and Cross Industry Work

Technology and Testing

- SPEC (SFS), Oracle (Vdbench (SPC community)), SPEC (power meters), S-FLOW, 80 Plus Ecova/EPRI (power supply testing), Calypso Testers, Quarch

Policy

- The Green Grid (+Digital Europe) (EU, EU country level pgms)
- SNIA-J (Japan)

Industry Regulatory

- EPA Energy Star (USA)
- TopRunner (Japan) (via SNIA-J)
- EU Lot 9 (via TGG → Digital Europe), Blue Angel, ETSI, others

International Standards

- SC39 / ITS 39

GSI/GreenTWG Cross-SNIA Group Collaboration

■ S3 TWG/CMSI

- Solid state storage taxonomy
- S3 Test Methods/data collection

■ SFF TA TWG (future)

- EDSFF: Enterprise and Datacenter Standard Form Factor

GSI Membership as of 1/1/2024



Membership Dues 2024

Voting dues = \$12K

Non-voting dues = \$6K

■ GSI Leadership:

- Co-Chair, Wayne M. Adams, Independent Consultant
- Co-Chair, Chris Lueth, NetApp
- SNIA Emerald Program Manager , Dave Thiel , Contractor
- SNIA Emerald Data Analysis, Patrick Stanko, Contractor

GSI Participation

- What is the expected industry impact of this work
 - One architecturally unbiased system test methodology to serve regulatory bodies worldwide
 - Proactively provide a single test methodology worldwide
 - Industry knowledge of storage system power consumption and best practices/configurations to optimize power usage w/o compromising system functionality
- What is the industry segment relevance.
 - Storage System Manufacturers; Storage Device Manufacturers; DCIM SW Vendors
- Why you should join and participate in GSI
 - Membership fees underwrite critical contractor services for program mgt, data analysis, test validation, and industry training; industry awareness of your company's leadership
 - Refresh and renew focus on best practices (whitepapers, planning tools)
 - Avoid being surprised when a new regulation goes live and affects your product portfolio/revenues
- Who to contact for additional information
 - GSI Co-Chair, Wayne M. Adams, waynemadams@gmail.com
 - GSI Co-Chair, Chris Lueth, Chris.Lueth@netapp.com
 - GSI SNIA Emerald Program Manager, David Thiel, emerald@snia.org