



EIC Computing at BNL (PD Funded Project) All Hands Meeting #4

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June 5, 2026

Brookhaven National Laboratory, Upton, NY, USA

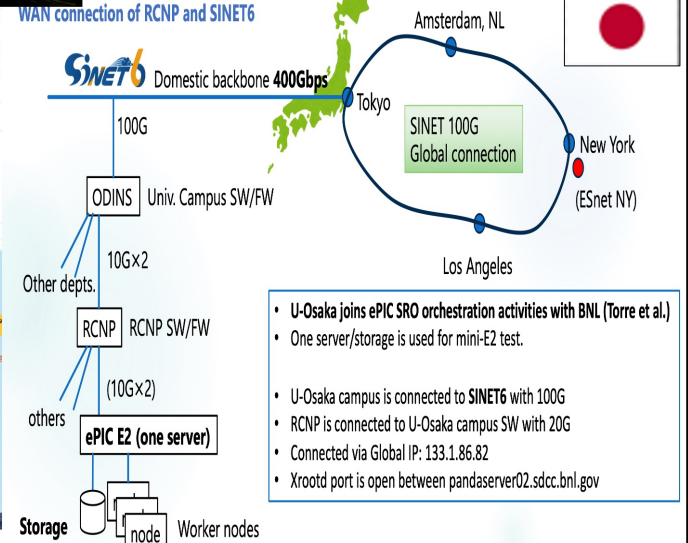
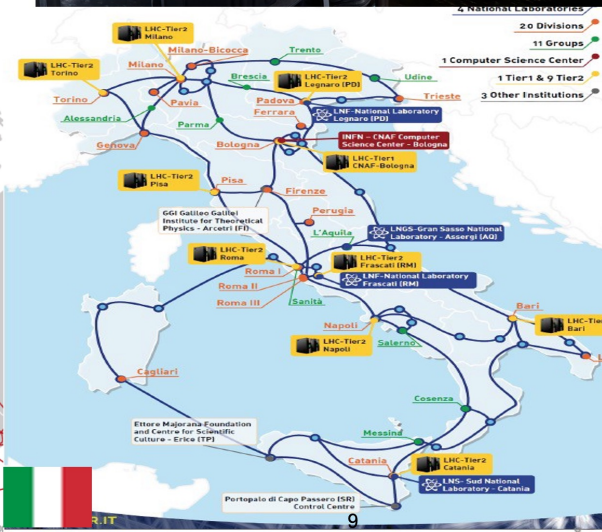
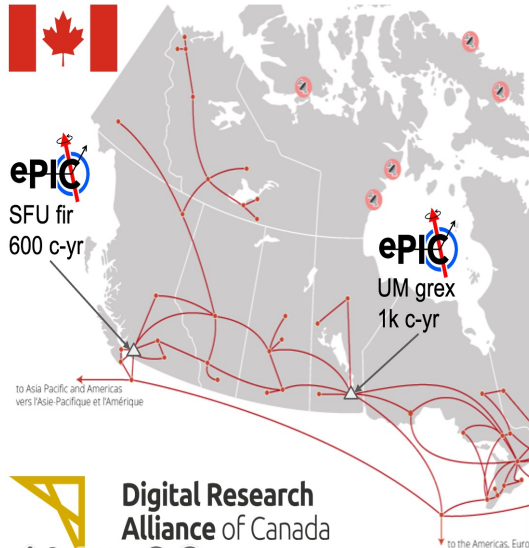
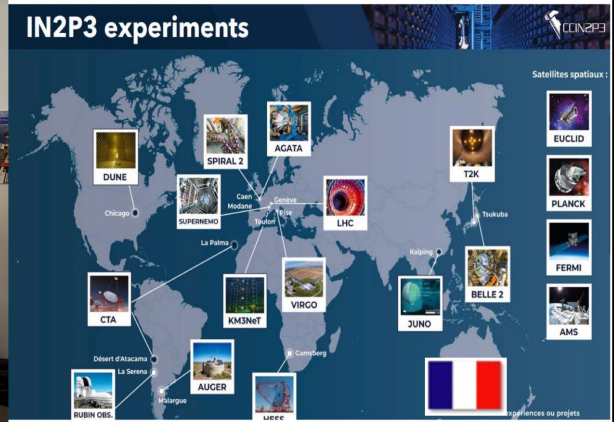
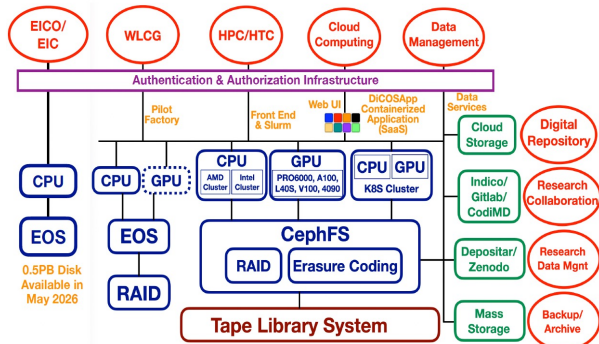
ePIC/EIC Computing Planning Dates

Planning Dates	2026
ECSJI talk at ePIC collaboration meeting	January 20
Regular meetings with LHCONE and ESnet (EIC network infrastructure)	Feb, Apr, May
EIC International Computing Organization annual meeting	May 18-19
Host Labs Responsibilities for collaborative services and tools (technical discussion)	June 17
Data streaming and workflow orchestration Technical Meeting (ESnet, BNL and JLab)	July 30 - 31
Echelon-0 (DAQ) first racks will be installed at the BNL Data Center	End of August
LHCONE-LHCOPN meeting	October 1-2
ECSAC review : ePIC and ECSJI software and computing review at BNL	October 13-14
EIC Computing (Echelon0 and Echelon1) workshop at BNL	October 15

*The **LHCONE** is a dedicated network architecture inter-connecting participating Resource Centre sites and allowing those sites to pool their computing resources for a more efficient distribution, storage, processing and analysis of physics data. Acceptable Use Policy ensures an appropriate secure scientific use of the overlay network and to protect the connected sites. **Many EIC sites are LHCONE sites***



ASGC Resource & Services



Digital Research Alliance of Canada

EICO and ECSJI 2026 Annual Meeting at CERN May 18-19, 2026

Meeting highlights and action items

- ✓ [EIC Computing Technical Forum](#) is established. Co-Chairs : F.Noferini (U & INFN Bologna) and A.Panta (JLab)
- ✓ WLCG Leader (T.Boccali) invited EICO and ePIC to be WLCG associated members
- ✓ JLab will begin the formal process of transitioning to LHCONE
- ✓ [EICO Overview Board](#). We will begin forming the EICO OB with the aim of completing it by January 2027. EICO members will hold discussions within EIC national groups and with funding agencies, and will propose one OB member per country.
- ✓ Six national teams (CA, FR, IT, JP, TW and UK) started (will start) a formal process to request Echelon2 resources
 - ✓ Potential Echelon2 centers are defined, and sites are already in production
 - ✓ Discussion about Cooperative Agreement (iCRADA)
- ✓ Joint data challenges will be planned by ECSJI, EICO and ePIC
 - ✓ EICO members are already participating in many E1 activities
- ✓ Present Echelon1s computing needs at the June RRB and Echelon2s computing needs at the November RRB

Agenda

- ❖ ePIC Computing Model
- ❖ EIC Computing : Echelon1 and Echelon2 needs
- ❖ International partners view and prospects on ePIC/EIC computing
- ❖ Meeting with WLCG Leadership Team
- ❖ EIC Networking (LHCONE and ESnet infrastructure)
- ❖ EICO evolution : Overview Board composition and EIC Computing Technical Forum
- ❖ Preparation to EIC RRB in June



ePIC/EIC growth of computing needs at BNL and JLab [2027-2029]

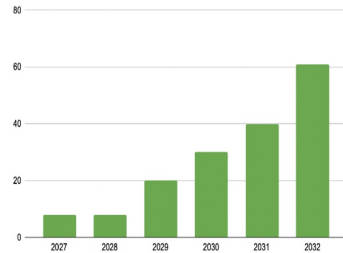
CPU and Storage Estimates 2027-2032

Year	Total ePIC/EIC need computing [cores]	Requested to US Echelon1 US Echelon1 computing [cores]	Total ePIC/EIC need disk storage [PB]	Requested to US Echelon1 US Echelon1 disk storage [PB]	Total ePIC/EIC need tape storage [PB]	Requested to US Echelon1 US Echelon1 tape storage [PB]
2027	16,000	8,000	10	2	-	-
2028	16,000	8,000	10	4	-	-
2029	40,000	20,000	15	7	1	1
2030	80,000	30,000	40	20	4	4
2031	120,000	40,000	100	50	40	40
2032	160,000	61,000	400	220	200	200

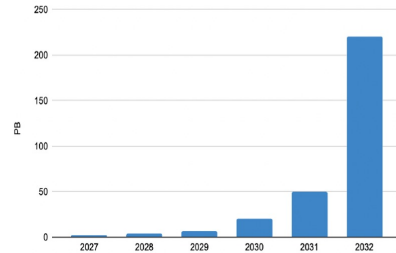
- There is a gap in the funding of IT resources between the EIC project and EIC operations, and the DOE's OHENP is aware of this. According to DOE OHENP it is necessary that the laboratories prioritize their allocation of facility operations funds to address this gap
- The computing requirements of the host laboratories appear reasonable, and the DOE (in collaboration with BNL and JLab) is working on how IT costs for the period 2027–2029 could be incorporated into the EIC portfolio.
- The DOE does not foresee any fundamental issues regarding Echelon 1 funding from the CY2027 onwards. However, EIC compute needs will have to be addressed within the constraints that the program has shared with the laboratory leadership

CPU and Storage profiles 2027-2032

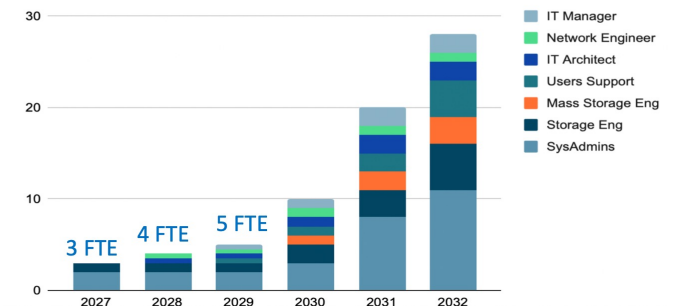
CPU [kCores] vs Year



Storage [PB] vs. Year



Labor Profile 2027 - 2032





AMERICAN
SCIENCE CLOUD

Federated Orchestration of Heterogeneous Workflows

PI: Alexei Klimentov (CDS)

Team:

CDS : Matt Cowan, Hironori Ito, Ofer Rind, Oszkar Tarjan

NPP: Wen Guan , Tadashi Maeno, Torre Wenaus

May 13, 2026 | BNL : Computing and Data Sciences : Scientific Computing and



Federated Orchestration of Heterogeneous Workflows

The Science Case:

- Orchestrating exabyte-scale scientific workflows, with heterogeneous cyberinfrastructure
- This demonstration aims to prove that heterogeneous scientific workflows can be seamlessly orchestrated in DOE and commercial computing, moving away from the “facility silo” model. **"The whole is greater than the sum of its parts"**

Data and Computing Challenges:

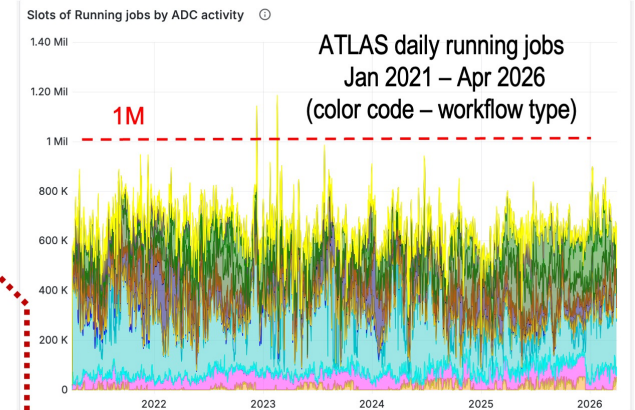
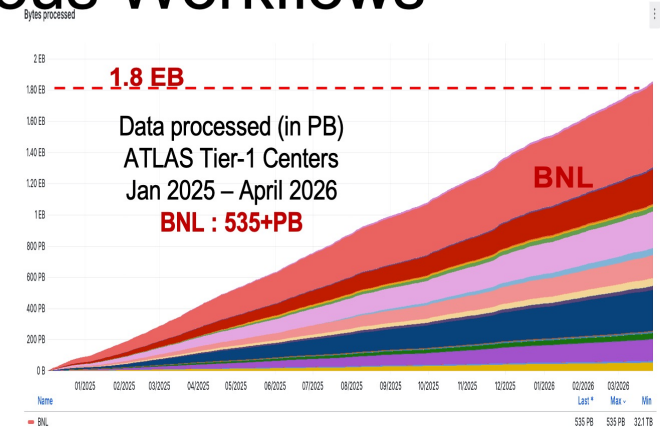
- Modern HENP experiments data: volume (exabytes), processing time (months), number of payloads ($O(10^6)$ /day)
- The primary challenge is seamlessly integrating these heterogeneous payloads across a diverse cyberinfrastructure.

Mid-term Goals: With **AmSC**, we seek to significantly reduce the time to provide physics results and response to the DAQ in quasi-real time, as well as prepare exabyte-scale data for AI end user analysis. Presently, this is limited by the constraints of distributed computing infrastructure and middleware.

- Conventional Distributed Computing: *Data processing using on-premise resources takes 2-3 months.*

AI-based Computing (AmSC):

Seamless integration of LCFs, on-premise, and commercial clouds | 10-sec response to DAQ, Agentic Workload Management System for payloads orchestration, AI-driven automation of computing operations | *Days instead of months*



Automated Data Processing for Future Physics Experiments

