

EIC INTERNATIONAL COMPUTING ORGANIZATION

EICO Technical Forum

Goals and kick-off highlights

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Who are we?

The Technical Forum is the place inside EICO where the **computing centers** — the upcoming Echelon-1 and Echelon-2 sites — discuss, plan and shape the EIC computing infrastructure.

Part of EICO

EICO provides computing resources, infrastructure and services for the EIC; today its focus is ePIC

Resource-provider view

Every topic is framed by how it affects the sites that host and operate the resources

Site operations first

Tools and services that touch sites: metrics, data and workflow management, networking

EICO= EIC International Computing Organization

Four roles of the Technical Forum

01

Exchange information

Between sites, EICO and the experiment(s)

02

Discuss and plan

From the resource-provider view: schedules, resource use, technical solutions, challenges and site requirements

03

Propose to the Management Board

Organize discussions on production systems, middleware and services

04

Shape the technical roadmap

For the evolution of EIC facilities and services

How the Forum works

Open meetings

Open to all interested members of EIC computing; other parties invited for topical discussions

Chairs

Appointed by the MB for two years; extension with full concurrence of the OB

Seat on the MB

The TF chair is an ex officio member of the EICO Management Board

Reports to the MB

Regular updates on TF activity

Working groups

Started and stopped as needed to address specific technical issues

Meeting cadence

Regular meetings with specific topics

MB: Management Board · OB: Overview Board

ePIC computing WGs and the Technical Forum

	ePIC Production & Streaming Computing WGs	EICO Technical Forum
Perspective	The experiment: what ePIC needs	The resource providers: how sites deliver and operate it
Owns	The requirements, plus the computing model (with host-lab concurrence) and multi-year resource plans	Site-level implementation, operations and the technical roadmap of facilities
Typical topics	Workflows, production campaigns, streaming readout and processing	Networking, site metrics, operations, support
Reports to	ePIC collaboration	EICO Management Board

How the two complement each other



Working principles

- Requirements are discussed in ePIC; how sites meet them is discussed in the TF
- Cross-participation and short liaison reports in both directions, no duplicated agendas
- Site feedback (capacity, constraints, operational issues) flows back to ePIC planning

Kick-off meeting highlights

Agenda

- Technical Forum goals
- ECSJI and EICO (A. Klimentov, D. Lawrence)
- ePIC computing overview (M. Diefenthaler)
- EIC networking and LHCONE (ESnet, BNL)
- Next steps (round table)

ECSJI and EICO roles

ECSJI: the BNL–JLab joint institute for EIC computing and software. Single interface to ePIC, the EIC Project, DOE and international partners.

EICO: provides computing resources, infrastructure and services for the EIC with international partners. Echelon-1 (BNL, JLab) deployment starts in 2027.

ECSJI: EIC Computing and Software Joint Institute

ePIC needs and the capability envelope

Scale and roles

- ~1M core-years and ~350 PB per year of data*
- Comparable to ATLAS and CMS today
- Echelon-1: low-latency streaming workflows
- Echelon-2: all other use cases
- Common interfaces: PanDA, Rucio, XRootD, tokens

Capability envelope

- Minimum a site must meet in every dimension: compute, storage, network, I/O, reliability
- Qualification: does the site meet the envelope?
- Contribution: its share of the global workload
- Threshold under discussion, e.g. 10–20% of needs

Needs further discussion How the envelope and threshold are defined, from the site perspective

* 2034 , based on $L = 1 \times 10^{33} \text{ cm}^{-2} \text{ s}^{-1}$

Benefits of joining LHCONE

Performance

Dedicated, site-configured path (Science DMZ model) with flexible routing between LHCONE sites

Security and visibility

Only member sites in the overlay; prefix-based filtering without throttling; packet marking for traffic accounting

Lower cost and operational burden

Reuse of existing infrastructure, governance, operational model and monitoring instead of building new ones

Community and funding

Large international community for expertise and leverage with central IT; some paths funded by physics money

Requirement Commitment to IPv6: dual-stack, then IPv6-only before HL-LHC (2030)

Drawbacks of not joining or a mixed setup

Higher costs

Duplicated dedicated network infrastructure at BNL, JLab and partner institutions

Lower performance

Traffic outside LHCONE passes campus firewalls; DUNE saw 5–6× lower rates from CERN to a non-LHCONE site

Operational overhead

EIC must build its own governance, operational model, and end-to-end monitoring and troubleshooting

Echelon-2 and distributed computing

Extra complexity for Echelon-2 sites already on LHCONE; as with RHIC, less distributed computing beyond Echelon-1

Bottom line LHCONE lets EIC reuse an established ecosystem instead of re-creating one

Topics ahead

09/29/2026 · KICK-OFF

Networking and LHCONE

ESnet, LHCONE, IPv6

NEXT (two part)

Data and compute

CPU, GPU and storage at the sites

NEXT

User and site support

Ticketing and escalation, e.g. GGUS

NEXT

Site metrics and monitoring

Common metrics and dashboards

* Order and topics might change