

EIC Computing and Software Joint Institute



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EIC Computing and Software Joint Institute

- The EIC Computing and Software Joint Institute (ECSJI)
 - Presented to the EIC RRB on Dec 7, 2023 ([ECSJI scope and panels](#))
 - Provides is a single entity, based in the host labs, to interface with the EIC program and the ePIC collaboration on computing and software issues.
 - Provides a venue for coordination on resources to leverage the unique strengths of both labs
 - The Institute Management [two co-directors, each nominated by one lab]
 - ECSJI co-directors have regular meetings with host labs management
 - To discuss how Computing and Software activities (personpower and resources) are supported by Labs
 - ECSJI co-directors have regular meetings with ePIC (spokesperson and deputy, SW&C coordinator) and EIC Management (Co-Associate Directors for the EIC Experimental Program)
 - Typically, bi-weekly – address host Labs < == > ePIC and host Labs < == > EIC project issues

EIC Computing and Software Joint Institute

- Brookhaven National Laboratory and Thomas Jefferson National Accelerator Facility, as Electron-Ion Collider host labs, have established a collaborative entity, the **EIC Computing and Software Joint Institute (ECSJI)**. The Institute reports to the host Labs and the host Labs delegate functions to ECSJI (for instance, organize SW&C review)
 - This joint institute is designed to support the computing and software needs and activities of the EIC.
 - The Institute was created fall of 2023
- ECSJI leverages **complementary expertise at the two labs** and provides needed visibility to the respective lab management and stakeholders.
 - *The advantages of such a structure also include increased reliability and availability of resources for the ePIC collaboration and other future collaborations.*
- The success of the EIC, an international scientific endeavor, benefits from contributions from international partners towards its computing effort.
- To facilitate efficient coordination, the Institute will administer the EIC International Computing Organization (EICO), which will include all the contributors to the EIC computing effort.

EIC Computing Organization & Governance.

- **Computing Council¹** (ECC)

- Review the ECSJI strategic direction and support leadership in managing effective interfaces of the ECSJI to the EIC project and ePIC collaboration.
- Authority: Approve the ECSJI strategic direction, leadership changes, annual budgets, resource allocations, and performance milestones.

- **The Institute Management²** [two co-directors, each nominated by one lab]

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- Duties and accountability:
 - The management is responsible for organizing the Institute to deliver defined responsibilities.
 - The management will maintain a multi-year operation plan for the host labs, providing matrixed staff members to support activities.
 - Institute management will provide a yearly report to the host labs' management.

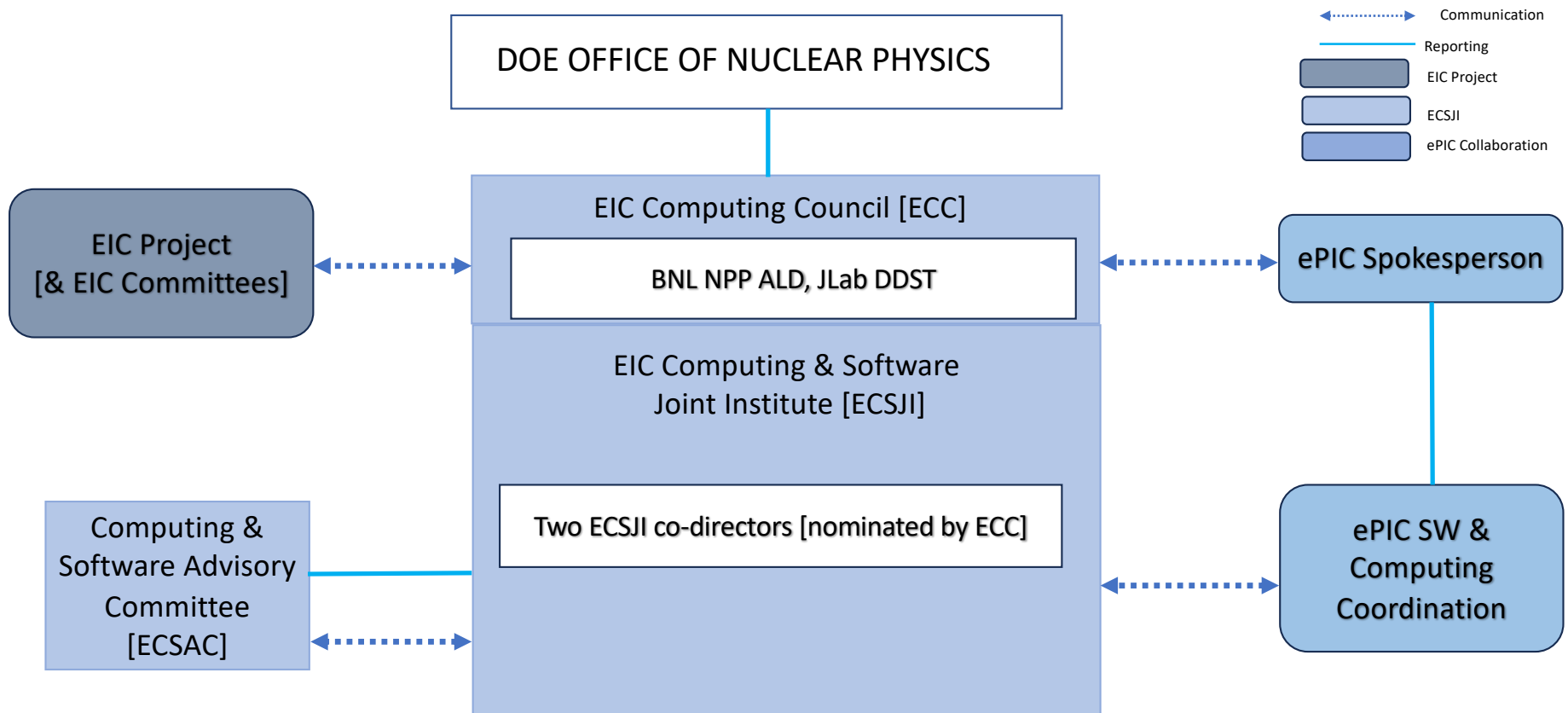
ESCJI : Scope

The Institute provides for EIC computing and software matters:

- 1) A single entity to interface with the EIC project, the ePIC collaboration, theoreticians, and future collaborators.
- 2) Execution of host lab responsibilities.
- 3) Maintenance of service level agreements and statements of work outlining the host labs' contribution to the ePIC collaboration concerning computing resources, services, and personnel assigned to work on ePIC computing and software deliverables.
- 4) **A coordinating body for interacting with international partners**, providing computing resources as in-kind contributions, including:
 - Assessing resources.
 - Managing the agreements with the sites delivering resources (including service levels).
 - Facilitating and assessing the delivery against the agreements.

The scope may evolve over time and the organization of the institute as well

EIC Computing, DOE Context



v0.25 May 27, 2025

EIC International Computing Organization

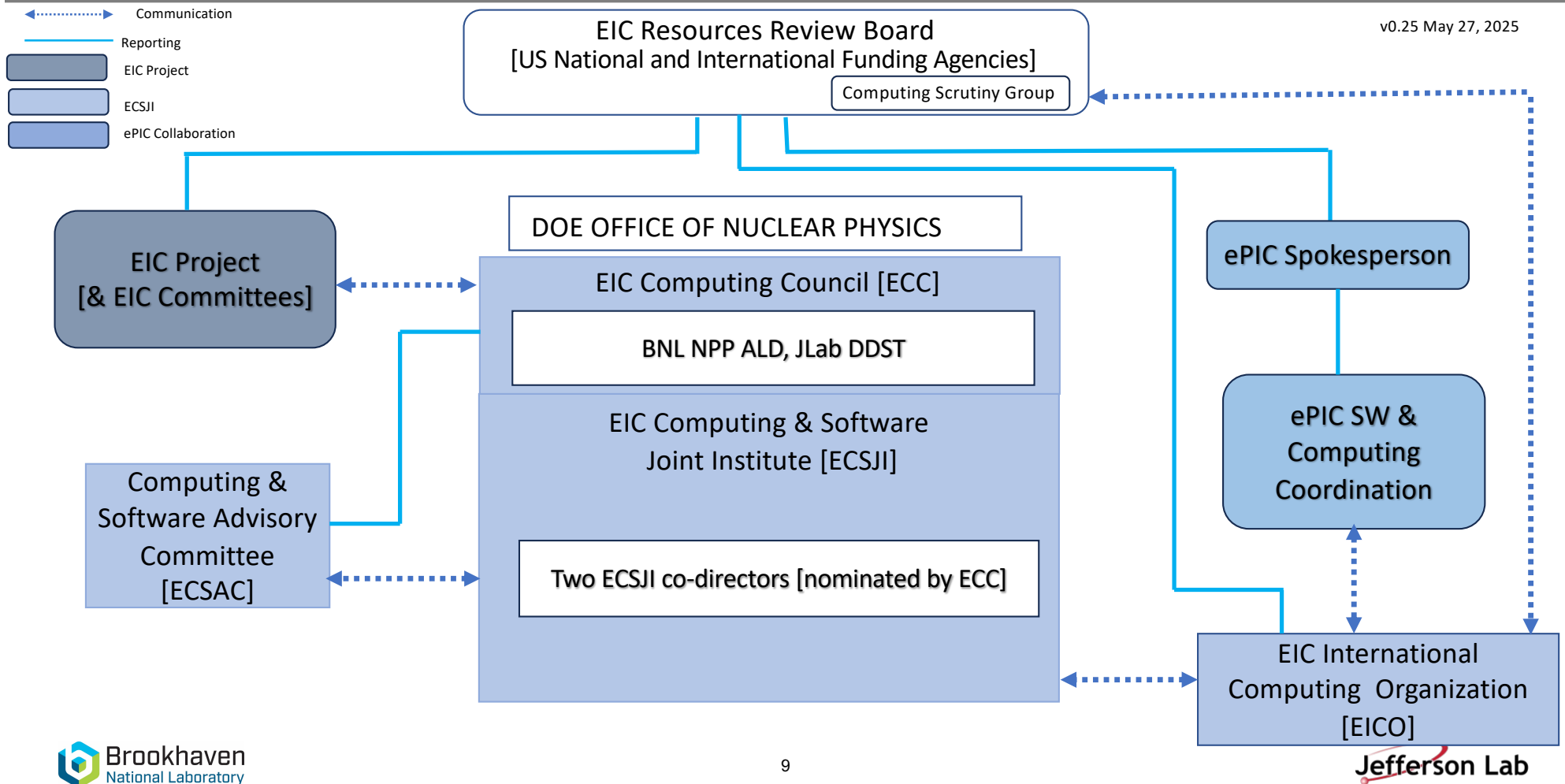
- International Contributions for the EIC extraordinary computing needs were discussed in the RRB meetings in 2024 - 2026
- The proposed mechanism for managing the contributions at a technical level is the EIC International Computing Organization (EICO) to include representatives of the organizations contributing resources,
- EICO kick-off meeting in October 2024. Regular EICO/ECSJI meetings in 2024/26. These meetings are held every two weeks. EICO WG : Representatives of CA, FR, JP, IT, TW, UK, and ECSJI/ePIC.
 - The following points have been discussed in October 2024 – May 2025:
 - Organization of funding for Nuclear Physics computing at the national level.
 - Structure of computing for the EIC and for ePIC within each respective country.
 - Existing support and commitment for EIC computing.
 - ePIC Streaming Computing Model
 - EIC Computing in global context (WLCG, OSG, DUNE, SKA,...)
 - EICO boards and forums
 - EICO and RRB communication
 - Intellectual property

EIC International Computing Organization. Cont'd

- In-person meeting in April 2-3, 2025 at BNL¹ to complete first draft
 - *Drafting committee:*
 - A.Boehnlein (Jlab), M.Diefenthaler (Jlab), A.Klimentov, (BNL)
 - A.Bressan(INFN)
 - R.W.L.Jones (Lancaster U)
 - T.Gunji (Tokyo U)
 - C. Munoz Camacho (ORSAY)
 - E. Yen (ASGC)
- Addressed comments from IT and CA FA at EICO working group – 2nd draft of comments
- Addressed comments from EIC and ePIC stakeholders – 3rd draft out for comments
- Addressed comments from DOE NP – 4th draft out of comment
- The EICO may apply for observer status to the WLCG
 - It was discussed with WLCG and WLCG is in favor of this
 - EICO Overview Board Chairs will be PoC to WLCG
 - Utilization of WLCG network infrastructure by EIC computing is one of the topics to be addressed
- EICO charter was approved by RRB in November 2025

¹ the first day was co-located with Echelon0/1 mini-WS organized by ECSJI and ePIC SW&C

EIC Computing, International Context



Major Elements from the Charter

- **EIC International Computing Organization** is led by the Institute's co-directors and administered by the ECSJI. This organization exists to provide computing resources, infrastructure, and services related to the EIC. The current focus is on the ePIC experiment. This will be extended to other foci as endorsed by the EIC RRB. Funding agencies will indicate the activities and services they will provide, and this will be approved by RRB. The EICO structure is formally documented in this charter.
- **EICO Overview Board.** The Overview Board (OB) oversees the functioning of the EICO. It is composed of a representative of each Institution that is a member of the EICO, the ECSJI directors and the Spokesperson(s) of each EIC Experiment with voting rights. The OB is co-chaired by EIC Computing Council Members (or one of ECSJI directors), which include a member of the OB appointed as a co-chair.
 - OB approves the report that details the accomplishments of the EICO, and the individual site metrics outlined in the cooperation agreement.
 - The OB has the responsibility to manage external relationships with partner organizations, such as WLCG
 - The OB also provides a resolution path for institutional issues relative to the cooperation agreement.

Major Elements from the Charter. EICO Management Board

- **EICO Management Board** : The Management Board (MB) organizes the work of the EIC Computing as a set of formal activities. It maintains the overall program of work and all other planning data necessary to ensure the smooth execution of the work of the EIC Computing. It provides half-year progress and status reports to the OB. The MB membership includes the ECSJI directors, the Technical Heads of the Echelon 0, Echelon 1 and Echelon 2 Centers, the leaders of the major activities and projects managed by the Board, the Computing Coordinator of each EIC experiment, the Chair of the Technical Forum, a Scientific Secretary and other members as decided from time to time by the Board. MB meetings are held on a regular basis (usually monthly). MB has several roles, including :
 - To broker and manage agreements between the resource centres and the experiment(s). In practice, this will require background agreements with other organisations that run various parts of the infrastructure, such as fabrics and storage operations, certificate authorities, network providers, etc.;
 - to broker and manage agreements between resource centres, and between resource centres and EIC host labs;
 - to review schedules, service performance, resource utilisation, etc. and decide about tools to be used to assess centers reliability and availability;
 - to oversee publications, communications, conference submissions, and speakers, where it concerns software and computing activities that are not completely within EIC experiment(s).

ECSAC 2025 recommendations related to WLCG and EICO OB and MB

Major Elements from the Charter. EICO Technical Forum

EICO Technical Forum : The Technical Forum (TF) is part of the EICO and represents in particular the computing centers (including Echelon 1 centers). The TF has several roles, including:

- to exchange information;
 - to act as a forum for technical discussions and planning, including schedules, resources utilization and technical solutions, challenges and requirements;
 - to organize technical discussions related to production system and middleware, etc and make proposals to the MB;
 - discuss technical roadmap for the evolution of EIC facilities and services;
- The TF meetings are open to all interested members of the EIC computing.
 - Other parties may be invited for topical discussions.
 - The TF chairperson is appointed by MB for a two-year period.
 - Extension is possible with full concurrence of OB. The TF reports to the MB.
 - The chair of the TF is an ex officio member of the EICO Management Board.
 - The TF may start and stop working groups when needed to address technical issues.
 - TF shall provide regular (bi-monthly) updates on its activity to MB.

Glossary and Abbreviations

- AHM – All Hands Meeting
- CM – Computing Model
- E0, E1, E2 – Echelon0, 1, 2 sites according to ePIC computing model
- ECC - EIC Computing Council
- ECSAC – EIC Computing and Software Advisory Committee
- EICO – EIC International Computing Organization
- ECSJI – EIC Software and Computing Joint Institute
- HL-LHC – High Luminosity LHC Run
- IKC – in-kind contribution
- MB – Management Board
- OB – Overview Board
- OSG - Open Science Grid (NSF supported computing consortium)
- SLA – Service Level Agreement
- SW&C – Software and Computing
- TF – Technical Forum
- WLCG – World LHC Computing Grid