The EIC Computing and Joint Software Institute

Charter Agreement

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The Partnership

- Brookhaven National Laboratory (**BNL**) and Thomas Jefferson National Accelerator Facility (**JLab**), as Electron-Ion Collider host labs, are creating a joint structure, the EIC Computing and Software Joint Institute (**ECSJI**), incorporating parts of BNL and JLab facilities to support the EIC and computing and software needs and activities.
- ECSJI will leverage complementary expertise at the two labs and provide 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.
- The success of the EIC, an international scientific endeavor, will benefit 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 computing effort.

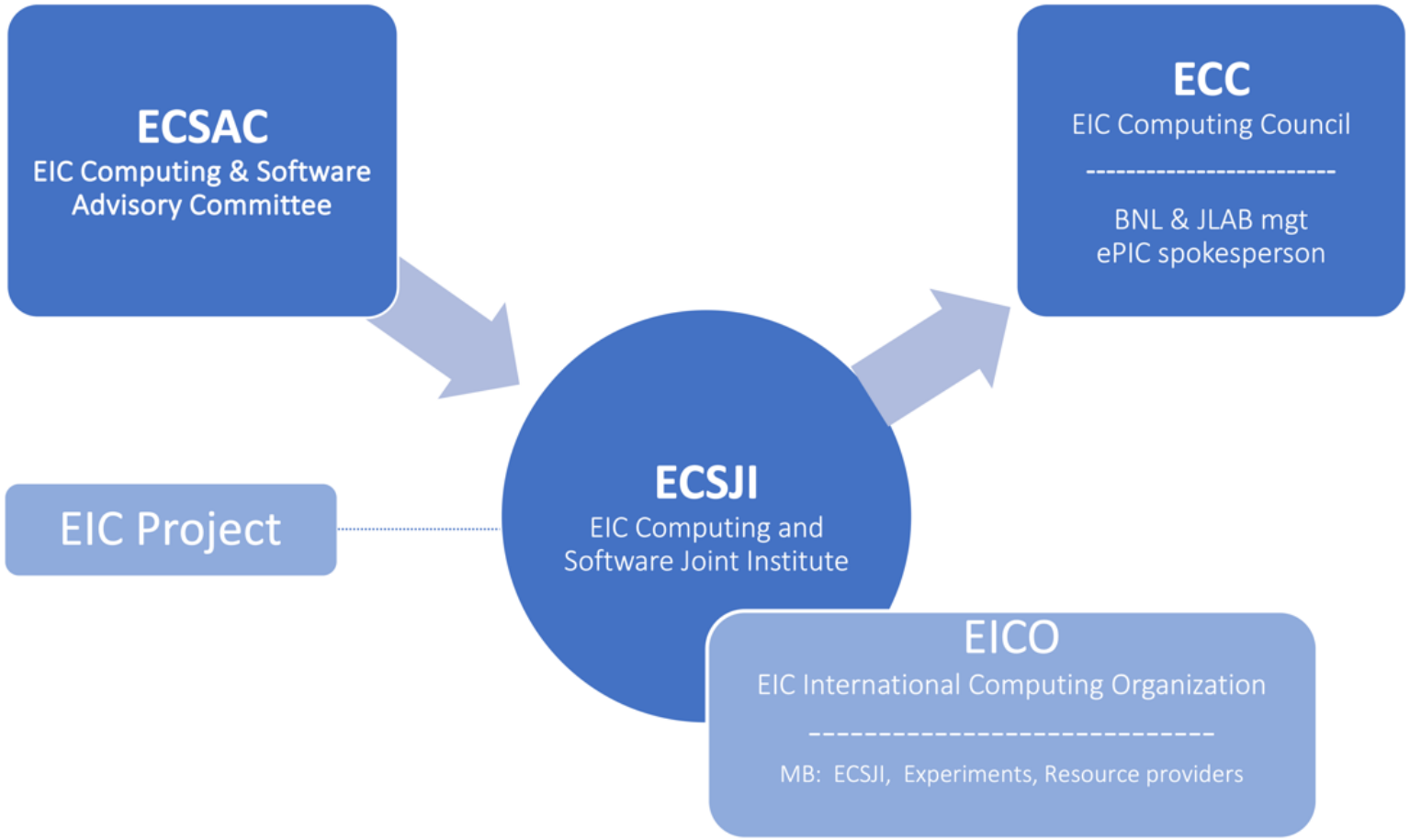
The Scope

The Institute will provide for EIC computing and software matters:

1) A single entity to interface with the EIC project and the ePIC collaboration.
2) 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.
3) A coordinating body for interacting with international partners, providing computing resources as in-kind contributions, including:
   - Assessing resources.
   - Managing the MOUs with the sites delivering resources (including service levels).
   - Facilitating and assessing the delivery against the MOUs.
4) Execution of host lab responsibilities.

Organization & Governance

- The Institute aims to provide efficient support to the EIC while acknowledging organizational differences at the two labs.
- The proposed governance model ensures that EIC experiments are well supported in matters of computing and software, the Institute's performance is monitored, and reporting is clearly defined.



The proposed governance structure is composed of two central bodies, designed to facilitate communication, coordination, escalation of issues, and conflict resolution.

Institute Management

- **Composition**: Management will comprise two co-directors, each nominated by one lab. The co-directors are currently Eric Lancon (BNL) and Amber Boehnlein (JLab).
- **Reporting**: The Institute's management will report jointly to host lab management.
- **Duties and accountability**:
  - The management will be responsible for organizing the Institute to deliver on the previously 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.

EIC Computing and Software Advisory Committee

The **ECSAC** is chartered to propose advice, guidance, and counsel on the strategy and objectives of the Institute and of the EIC International Computing Organization.

The committee reports to the ECSJI management. The ECSAC chair and committee members include external managers and experts in the field appointed by Institute management in consultation with host lab management. It will meet at least twice a year.

Proposed responsibilities:

- Review the strategy and objectives of the Institute to support EIC Computing and Software.
- Evaluate the adequacy of the infrastructure and resources to meet the computing requirements of the ePIC collaboration.
- Evaluate proposed technical solutions and their implementation.
- Identify opportunities to increase effectiveness and efficiency.
- Provide recommendations on technical and organizational matters.
- If conflicting requirements affect operation, planning, or budget, the ECSAC will be asked to provide recommendations.

EIC Computing Council

The ECC is chaired in alternation by the Associate Laboratory Director for Nuclear and Particle Physics of BNL and the Deputy Director for Science of JLab. It comprises the ALDs/ADs and deputies involved in the EIC science program and Institute management. The ePIC collaboration spokesperson or deputy is an ex officio member.

- **Responsibility**: 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.

Additional proposed responsibilities:

- Oversee the development and implementation of EIC Computing and Software and review future computing needs.
- Oversee synergies between the host Labs in EIC scientific computing area and provide institutional strategic direction.
- Resolve high-level issues between stakeholders.
- Meet at least twice a year and hear reports from Institute management.

EIC International Computing Organization

The EICO is led by the Institute's co-directors and administered by the ECSJI. It exists to provide computing resources and infrastructure to the ePIC collaboration and potentially other EIC computing needs.

As the EICO becomes established, its structure will be formally documented in an EICO charter. The EICO is managed by a board that includes representatives from ePIC and international partners. The board will meet at least quarterly and hear regular reports from the ePIC experiment.

Proposed responsibilities:

- Document and maintain agreements with international contributors to EIC computing.
- Collect requirements from the ePIC collaboration.
- Produce accounting reports of EIC computing.
- Accounting report to the EIC Resource Review Board (EIC-RRB), detailing service delivery with respect to agreements.
- Supervise service level agreements.
- Propose ECSAC members.

EICO next steps

- ECSJI will partner with ePIC management to establish a clear definition of 'external partners' and incorporate it into the forthcoming EICO charter. This charter will address various aspects, including:
  - Standards for expected service quality.
  - Specific criteria for functionality requirements.
  - Determination of contribution size.
  - Formalized procedure for the inclusion of external partners

- EIC is already using the OSG and anticipating the inclusion of significant external partners from WLCG-affiliated institutions. We expect to integrate some of the WLCG services into EIC computing operations
  - Over the next year, the ECSJI plans to apply for observer status to the WLCG

Responsibilities: Host Labs

- Oversight for ePIC software and computing designs and execution to provide assurance functions for the host labs and DOE.
- Provisioning and operating standard infrastructure solutions consistent with supported lab infrastructures and community best practices.
- Support for the EICO.
- Interface for local resources and policies at the respective labs.
- Ongoing computing operations in support of the accelerator and detectors design and construction.
- Operational support functions for:
  - Experimental data curation.
  - First-pass processing.
  - Data analysis.
  - Support of collaboration(s) and users.
  - Accelerator and detector simulations.

Responsibilities: ePIC Collaboration

The ePIC collaboration responsibilities include and are not limited to the following:

- Developing and documenting a cost-effective computing model tailored to the experiment's needs, with the concurrence of the host labs.
- Developing and maintaining multi-year resource plans.
- Reporting ePIC status in computing and software to the EIC-RRB.
- Identifying, with input from the host labs, a computing and software coordinator who serves as point of contact to ECSJI.
- Developments of software algorithms.
- Production operations.

Resource needs for EIC Computing

- BNL & JLAB have jointly worked, providing estimates for EIC hardware needs and effort for the NSAC long-range planning
- Over the next few years, resources are required to support EIC. Estimates for each Lab are:
  - Dedicated CPU (mostly): EIC is currently allowed opportunistic usage only at the Labs, ~$100k/year
  - Effort: about 1.5 FTE has been identified for various tasks
- These needs are in addition to currently supported programs.