Electron-Ion Collider, Brookhaven National Laboratory			
Doc No. EIC-ORG-PLN-029	**Author:** P. Berrutti	**Effective Date:** December 4, 2023	**Review Frequency:** 5 years
Plan: EIC International Governance and Communication Strategy			**Revision:** 00

Electron-Ion Collider Plan

Electron-Ion Collider International Governance and Communication Strategy

December 4, 2023

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REVISION HISTORY

Revision #	Effective Date	List of Reviewers	Summary of Change
00	12/04/2023	L. Lari, J. Fast, R. Ent, E. Aschenauer, A.Seryi, S. Nagaitsev	First version

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LIST OF ACRONYMS

BNL	Brookhaven National Laboratory
CCB	Change Control Board
DAC	Detector Advisory Committee
DOE	U.S. Department of Energy
EAB	EIC Advisory Board
EIC	Electron-Ion Collider
EIEB	EIC In-Kind Contribution Execution Board
ES&H	Environment, Safety, and Health
ICAC	Infrastructure Construction Advisory Committee
IKC	In-kind Contribution
L2M	Level 2 WBS Manager
L3M	Level 3 WBS Manager
MAC	Machine Advisory Committee
PAC	Project Advisory Committee
PR	Principal Representative
PD	Project Director
PPEP	Preliminary Project Execution Plan
PM	Project Manager
QA	Quality Assurance
QAP	Quality Assurance Plan
SBMS	Standards Based Management System
SEMP	Systems Engineering Management Plan
SM	System Manager
SOW	Scope of Work
SPC	Sub-Project Coordinator
SPCL	Sub-Project Coordinator Lead
SPM	Sub-Project Manager
SPM	Sub-Project Manager Lead
TR	Technical Representative
TJNAF	Thomas Jefferson National Accelerator Facility
TPC	Total Project Cost
WBS	Work Breakdown Structure

EIC International Governance and Communication Strategy

1. PROJECT OVERVIEW

The Electron-Ion Collider (EIC) Project scope is to design, build, and install the accelerator hardware for a new electron storage ring, an electron injector, and modifications to the Relativistic Heavy Ion Collider (RHIC) hadron ring required to produce an electron-ion collider. The Project will leverage the accelerator tunnels and related existing buildings constructed for RHIC. Smaller buildings, referred to as "Alcove" buildings, will be added outside of the berm and tunnel profile and will house power supplies serving magnet systems within the tunnel. The two largest EIC buildings will house the electron injection linear accelerator ("Linac"), the electron "gun" and related laser equipment, as well as the Radio Frequency (RF) power supplies for the Linac RF cavities. EIC will include one Interaction Region (IR), with an allowance for a second, and one detector. The facility is designed to ensure high reliability and availability for the user program. In-Kind Contributions (IKC) from domestic (including New York State) and international collaborators are being finalized.

1.1. Purpose and Scope

The purpose of this EIC International Governance and Communication Strategy is to establish a systematic and effective governance, communication, and coordination structure for the EIC Project with respect to its International Partners. This model supports the EIC Project governance and communication goals which support the delivery of the technical scope of work supplied by the Department of Energy (DOE) and by International Partners in a consistent, effective, and efficient manner.

2. ROLES AND RESPONSIBILITIES

The EIC PMP fully describes the roles and responsibilities of all the management positions down to Level 2 and Control Account Managers. This section is intended to highlight some of them in relation with IKC.

2.1. EIC Project Director

The EIC Project Director reports to the BNL Director and is responsible for the direction of the EIC research and development, design, construction, and commissioning activities including coordination of BNL and Partner Lab activities contained in the approved Project baseline. The EIC Project Director has the following responsibilities with regards to IKCs:

- Directs overall planning and execution of the EIC Project.

- In consultation with DOE and the BNL Director, has the authority to establish and modify the EIC governance and communication model at any point during the lifecycle of the EIC Project.
- Responsible for the successful execution of the EIC Project in conformance with the requirements of the DOE O 413.3b and other applicable Orders.
- Serves as the U.S. Technical Representative (TR) and primary point of contact between the EIC Project and the BNL Directorate, the DOE Program Manager and Federal Project Director (FPD), and external institutions engaged in the Project.
- Responsible for Project Planning Document Parts 1 and 2 (PPD) framework/structure, initiation of revisions, approvals, and signatures.
- Responsible for executing and improving the governance and communication model throughout the EIC Project.

2.2. **EIC Project Manager**

The EIC Project Manager reports to the EIC Project Director and is the principal point-of-contact for Project management of the EIC. The EIC Project Manager holds responsibility and authority for ensuring the Project is completed on schedule and within the approved funding and scope. The EIC Project Manager has the following responsibilities for IKCs:

- Leads general administration, planning, organization, and control on a day-to-day basis to complete the Project safely, on schedule, on budget, withing the agreed upon scope, and in conformance with the requirements of DOE O 413.3B.
- Oversees Project planning, scheduling, budgeting, and configuration control managed through the EIC Project Office. This includes to ensures implementation of effective management systems including Project controls and earned-value management, finance, procurement, risk, QA/QC, safety, and information technology/document management.
- Support the EIC Project Director in the coordination and expectations (scope and schedule) of IKC related activities.
- Has the authority to establish and modify the Project Management framework.
- Responsible for developing the PMP and communicating it to the Project staff.
- Responsible for supporting the EIC Project Director in communicating overall Project management direction with stakeholders.
- Responsible for reporting cost, schedule, and risk management aspects of the Project.
- Responsible for escalating and communicating to the Federal Project Director and EIC Project Director any significant issues that could prevent meeting key milestones.

2.3. EIC Technical Director

The EIC Technical Director reports to the EIC Project Director and is the EIC principal point-of-contact for the technical performance of the EIC scope of work and is responsible for ensuring that the Project produces systems and components that meet technical specifications. The EIC Technical Director has the following responsibilities pertinent to IKCs:

- Has the authority to define and modify the EIC Project Systems Engineering principles defined in the EIC Systems Engineering Management Plan and to establish these principals throughout the Project consistent with the roles and responsibilities defined in the EIC PPEP.
- Manages the Technical Integration Office that holds the responsibility for communicating any significant technical issues that could impact milestones, interfaces, or the Partner scope
- Responsible for supporting the EIC Project Director in guiding overall technical direction of the Project and communicating with various stakeholders on all technical aspects of the Project.
- Manages the Technical Support and Integration Office that supports the Level 2 Managers and Level 3 Managers with the management and execution of requirements and interfaces, from design to installation and commissioning, including configuration management.
- Serves as chair of the EIC In-Kind Contribution Execution Board (EIEB).

2.4. EIC Associate Project Manager

The EIC Associate Project Manager reports to the EIC Project Director and works in collaboration with the EIC Project Manager. The EIC Associate Project Manager is the EIC principal point-of-contact for the Partnership with TJNAF and leads the TJNAF EIC effort. The EIC Associate Project Manager has the following responsibilities pertinent to IKCs:

- Serves as a key member of the EIC Project leadership team with substantive role in Project decision-making and in developing the Project cost, schedule, and scope.
- Support the EIC Project Director and the EIC Project Manager in the coordination and expectations (scope and schedule) of IKC related activities.
- Has overall responsibility for managing and delivering on the TJNAF commitments for the EIC Project.
- Responsible for developing and has final approval on all TJNAF commitments for the EIC Project.
- Establishes and manages the TJNAF internal Project organization that supports the EIC Project.
- Participates as a member of the EIC Change Control Board.
- Serves as a member of the Integrated Project Team.

2.5. EIC Associate Director for Accelerator Systems and International Partnerships

The EIC Associate Director for Accelerator Systems and International Partnership reports to the EIC Project Director and is the EIC primary point-of-contact for EIC Partners on the EIC accelerator. The EIC

Associate Director for Accelerator Systems and International Partnership has the following responsibilities pertinent to IKCs:

- Initiates and pursues contacts with prospective international or domestic Partners for development of EIC accelerator Partnerships.
- Serves as primary interface between the EIC Project and Partners for development of IKCs on the EIC accelerator.
- Initiates and chairs the EIC collaboration meetings focused on development of EIC accelerator Partnerships.
- Coordinates the technical integration of accelerator IKC, via interaction with potential Partners, the EIC Technical Director, and the L2 managers/deputies.

2.6. EIC Co-Associate Directors for Experimental Systems

The EIC Co-Associate Directors for Experimental System report to the EIC Project Director and are the EIC principal points-of-contact for the EIC experimental program. The EIC Co-Associate Directors for Experimental System have the following responsibilities pertinent to IKCs:

- Promote the maximum engagement of the EIC user community on the realization of the EIC experimental program.
- Serve as primary interface between the EIC Project and Partners for development of EIC detector partnerships and IKCs.
- Coordinate the Partner institutions with the development and implementation of the EIC experimental program including R&D, design, construction, and commissioning of the EIC detectors.
- Coordinate support for the EIC experimental program in the US and at institutions that are involved with delivery of IKC.

2.7. EIC Technical Support and Integration Team

The Technical Support and Integration Team reports to the Technical Director and develops the management systems for ensuring a common approach to managing the technical scope of the project. The team includes but is not limited to the Deputy Technical Director, the Chief Engineer, the Chief Systems Engineer, the Superconducting Magnets Production Manager and the Associate Project Engineer. Detailed responsibilities for the members of the team are addressed in supporting documents. The EIC Technical Support and Integration Team will be engaged during all phases of the EIC project IKC execution.

2.8. EIC In-Kind Contributions Engineer

The EIC IKC Engineer reports to the EIC Project Manager has the following responsibilities pertinent to IKCs:

- Support EIC Project Partners and technical leads with development of Project planning documents and related technical documentation, including verification activities required to coordinate international Partnerships.
- Serves as primary interface between the EIC Technical Support and Integration office and Partners for information related to IKCs.
- Works with Partners and EIC technical leads to ensure requirements, specifications, and interfaces for IKC deliverables are coordinated and achieved.
- Tracks and updates IKC deliverable milestones, working together with Partners and EIC CAMs.
- Tracks progress of IKC deliverables and works with Partners on corrective action plans for variances.
- Facilitate Partner corrective actions plans.
- Produces monthly status and other progress reports for IKC deliverables.
- Responsible for organizing the EIC In-Kind Contribution Execution Board (EIEB).

2.9. EIC Level 2 WBS Managers (L2Ms)

The EIC L2 WBS Managers have the following responsibilities with pertinent to IKCs:

- Have the authority to define the lines of communication within their System
- Responsible for managing and executing a specific scope of deliverables, including IKC deliverables, assuring technical requirements, schedule and budget are met, and effectively communicating with stakeholders' issues, risks, and successes
- Responsible for organizing forums to facilitate the necessary communication within their systems, including the engagement of Partners and other stakeholders.

2.10. EIC Level 3 WBS Managers (L3Ms)

The EIC L3 WBS Managers have the following responsibilities pertinent to IKCs:

- Responsible for the successful delivery of subsystems, components, and activities, including those that are IKC
- Responsible for organizing forums to facilitate the necessary communication within their subsystems, including the engagement of Partners and other stakeholders.

3. SHARED ROLES AND RESPONSIBILITIES

3.1. EIC Principal Representatives (PR)

The EIC Principal Representatives represent IKC partners and have the following responsibilities:

- Have the authority to represent the EIC international Partner funding agencies at the EIC governing bodies

- Has principal oversight of the EIC Project on behalf of their respective funding agencies
- Responsible for developing and executing agency-level agreements between DOE and Partner funding agency
- Generally responsible for planning and coordinating cooperative activities, co-chairing joint meetings
- Serve on either of the Boards for the first level of management: the Resource Review Board (RRB) and the EIC Advisory Board (EAB).

3.2. **EIC Technical Representatives (TR)**

Each Partner Laboratory Director/Agency Director will appoint a Technical Representative (TR). The TR is the primary point-of-contact for all EIC matters at the Partner institution for the respective scope of work, described in the PPD. Additional responsibilities of Partner Lab TRs are:

- Responsible for the overall management and execution of the scope of work as described in Parts 1 and 2 of the Project Planning Document (PPD), including the collaborative program, schedule, and coordination.
- Responsible for compliance with acceptance criteria and plan of all the deliverables included in the full scope of work described in the PPDs.
- Serve as the primary point of contact for high-level issues concerning the Partner and the EIC Project.
- Serve on the EIC In-Kind Contribution Execution Board (EIEB) .
- Overall coordination and facilitation of Partner Lab's activities in support of the EIC Project, from design phase through delivery of components and systems.
- Secure staffing necessary to execute the Partner Lab work plan.
- Work with the Primary Interfaces of the EIC Project (Sections 3.5 and 3.6) to propose a work scope package (for accelerator and/or detector scope) and identify the appropriate resources to meet the Project's specifications in terms of cost, schedule, and technical performance.
- Ensure the accuracy of the Partner Lab monthly status and financial reporting.
- Ensure an efficient interface with EIC Project office systems, including, but not limited to, earned value management, financial reporting, advanced procurement planning, procurement clearance requests, as well as regular monthly status reporting.
- Ensure the work scope meets EIC quality standards and that proper document management and record keeping are maintained.
- Ensure that EIC business sensitive information is protected and not disclosed to unauthorized parties for a term of five years after the date of disclosure.
- Participate as a member of the EIC Technical/Change Control Board, if their respective scope of work is affected.

3.3. EIC Sub-Project Manager Leaders (SPML)

The EIC Sub-Project Manager Leaders are the L2 or L3 managers identified in the EIC Project Organization. They have the following responsibilities pertinent to IKCs:

- Serve as the principal technical team leader with the international Partners for a designated sub-Project.
- Coordinate and supervise all Sub-Project Managers contributing to the scope of work for which they are directly responsible according to the EIC Project WBS.
- Directly responsible for enabling successful IKC delivery as part of scope owned at Level 2 or Level 3.
- Responsible for communicating to SPCLs proposed technical changes impacting Partner's scope.

3.4. EIC Sub-Project Managers (SPM)

The EIC Sub-Project Managers are identified technical experts at BNL or TJNAF. They have the following responsibilities pertinent to IKCs :

- Serve as the principal technical point of contact with the international Partners for a designated sub-Project.
- Responsible for organizing and hosting periodic meetings with IKC Sub-Project Coordinator (SPC) counterparts.
- Responsible for communicating change requests originating from Partners to respective SPML.
- Responsible for communicating to SPCs proposed technical changes impacting counterpart SPC scope.

SPML and SPM roles will be defined and used throughout the Project life cycle. These roles will evolve as the EIC progresses and they may increase or reduce in number as needed. SPML and SPM roles can be executed by the same person when it is deemed that two layers of management and communication are not necessary.

3.5. EIC Sub-Project Coordinators Leaders (SPCL)

The EIC Sub-Project Coordinator Leader are appointed by the Partner institution TR. Their responsibilities are:

- Coordinate and supervise all Sub-Project Coordinators contributing to the scope of work for which the SPCLs are responsible, according to the organization defined by the TR.
- Serve as the principal technical team leader for a designated sub-Project at the Partner institution.
- Responsible for organizing and hosting periodic meetings with IKC SPML counterparts.
- For the experimental program the SPCL are likely identical to the ePIC collaboration detector subsystem leads.

3.6. **EIC Sub-Project Coordinators (SPC)**

The EIC Sub-Project Coordinator roles are identified in technical experts at the Partner institution. They have the following responsibilities:

- Serves as the principal technical point of contact for a designated sub-Project at the Partner institution.
- Responsible for organizing and hosting periodic meetings with IKC Sub-Project Manager (SPM) counterparts.
- Responsible for communicating change requests originating from Partners to respective SPM.
- For the experimental program the SPC are likely identical to the ePIC collaboration detector subsystem technical coordinators

SPCL and SPC roles will be defined and used throughout the Project life cycle, these roles will evolve as the EIC progresses and they may increase or reduce in number as needed. SPCL and SPC roles can be executed by the same person when is deemed that two layers of management and communication are not necessary.

3.7. **All EIC Project Personnel**

Responsible for adhering to the requirements and expectations established in this EIC International Governance and Communication Strategy.

4. **EIC GOVERNANCE STRUCTURE**

Brookhaven National Laboratory plans to keep a well-defined management interface and regular communication with all the EIC Partners at multiple levels. The communication, management, and oversight structure for the execution of the scope of work contributed by the Partners (described in individual PPDs, Parts 1 and 2, between the EIC Project team and each Partner institution), is indicated schematically in Figure 1.

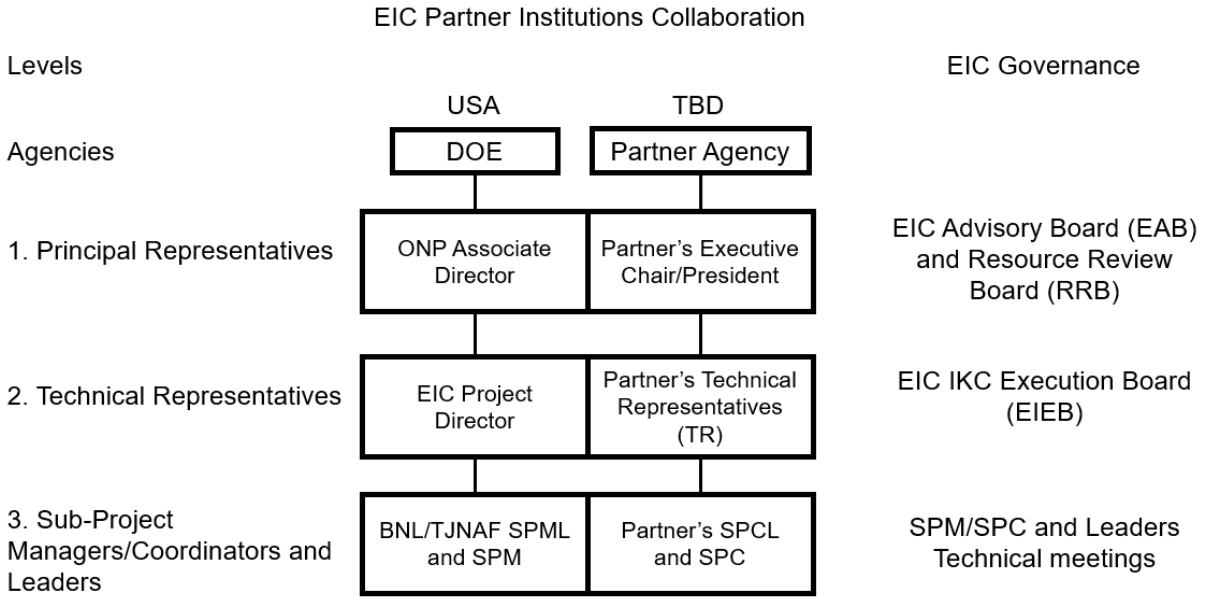

Figure 1: Organization and governance of EIC Partner Institutions and BNL/TJNAF.

The organizational structures of DOE and the Partner agencies for overall governance of the EIC Project are planned to take roughly parallel forms, with commensurate responsibilities within each level. Figure 1 also identifies the interfaces and the communication scheme for the top two levels of the EIC Project.

4.1. Oversight and Advisory Boards

The EIC governance approach has two levels (funding agencies and Project), corresponding directly to management levels 1 and 2 above. This tiered governance approach is designed to facilitate communication and coordination, allow for escalation of issue and conflict resolution, and provide multi-layered influence and motivation.

- **Level 1 Oversight Boards (Funding agencies of Partner labs)** represent the highest-level governing body for the DOE concerning the EIC:
    - **EIC Advisory Board (EAB)** is chaired by the TJNAF Director and advises the BNL Director. The Board is composed of senior leaders of laboratories and institutions making significant contributions to the facility. Observers to Board meetings may include prospective Partners with common accelerator science and technology interests, DOE, and other funding agencies. The Board collectively provides advice on the construction of the facility and provides a forum for high-level planning, communication, coordination, and resolution of issues affecting the facility.

      The Board will address issues affecting scope and/or resource allocation for the EIC Project at BNL and the Partner Labs and optimize EIC Project resources with other Partner Lab

activities. The Board will establish and regularly review important "hand-off" milestones between institutions during Project execution and at Project completion. The Board will be active through EIC Project completion and possibly the construction of a 2nd Interaction Region and detector. Partner Lab Directors jointly review the findings and actions of the Board with the BNL and TJNAF Directors, and initiate adjustments in program direction as needed. The Directors will ensure that issues raised by the Board are addressed in a timely manner. The EAB Charter is available in ANNEX A.

- **EIC Resource Review Board (RRB)** serves the purpose of providing coordination among the different funding Partners during both the detector development and construction phase of the Project and during the operations of the experiments that follow. The RRB shall provide oversight of resources utilized for detector construction and planning. The RRB will function as the body that reaches agreement on scope entailed in common Projects, as appropriate, which shall be funded by members of the RRB. The RRB will be responsible for annually agreeing on and endorsing detector financial commitments from the members. The RRB will monitor progress toward overall detector funding and construction. At the appropriate time, the RRB will include in its purview common computing needs of the EIC detector(s). The RRB shall consist of one representative from each funding agency supporting institutions who collaborate on the EIC detector(s). In this initial phase, flexibility will be applied to membership on the RRB, with likely contributors to the detectors and experiments being candidates for initial membership. The RRB will be co-chaired by either the BNL ALD for Nuclear and Particle Physics or the TJNAF Deputy Director for Science and a non-DOE funding agency. The RRB Charter is available in ANNEX B.

- **Level 2 Oversight Board (Project Director and TR): EIC In-Kind Contribution Execution Board (EIEB)** brings together the Project leadership and all of the Technical Representative of each Partner Laboratory and/or Agency and provides Project-wide planning information, coordination, communication, and issue resolution during all phases of the Project, with a focus of emphasizing commonalities and standardization across the EIC project and IKC partners. Meetings typically consist of two sessions: an open session that can be attended by all the EIC collaboration members, and an executive session that is limited to the EIC project leadership and TR from International Partners. The EIEB is a forum to discuss integrated Safety, Risk, and Quality Assurance Management, including applying a graded approach to resolve non-conformances. The EIEB differs from the RRB and the EAB as its executive session is dedicated solely to EIC project leadership and to TRs from Partners with PPD in place. The EIEB is notified of all changes to the Project baseline scope, technical performance, cost, or schedule that have been recommended by

the EIC Management Team. EIEB evaluates changes impacting Partner scope or schedule and makes a recommendation for the Technical CCB and/or the Change Control Board (CCB), that approves or disapproves the change following the procedure reported in the CMP. This board looks for commonalities and standardization across the EIC Project and opportunities to increase effectiveness and efficiencies between the DOE-led EIC Project and Partners. The EIEB is a forum for sharing information (technical, Project management), experiences, concerns, and lessons learnt, especially how restrictions, like export control or others impact the effective execution of delivering the in-kind scope It allows discussing the impact of safety issues or incidents reported across the lab, and Partner sites to ensure proper work controls are in place in all areas of the EIC Project. The EIEB is an advisory board, chaired by the EIC Project Director, and composed of the Technical Representatives of all EIC Partner institutions. In matters that require decision making, the EIEB strives to reach consensus. If consensus cannot be reached, the EIC Project Director makes the final decision. The EIEB meets at least twice a year, or more often as needed, mostly via videoconferencing. Ad hoc meetings may be held to address special circumstances. In-person meetings are expected to rotate around Partner locations.

4.2. **Advisory Committees**

The Electron-Ion Collider Project office will be advised by four different committees:

- **The EIC Project Advisory Committee (PAC)** provides advice to the Brookhaven National Laboratory (BNL) Director on the EIC Project. The advice from the PAC is used to develop strategies for planning and executing the Project. This includes relations with the user community, inter-laboratory collaborations, international engagement, and the interplay with NY-state funded activities. The PAC includes six to eight members with relevant experience in the delivery of large complex science Projects including in particular DOE Office of Science Projects.

- **The EIC Machine Advisory Committee (MAC)** is composed of well-known and experienced experts on collider beam physics, relevant accelerator technology and accelerator construction. The committee reports to the EIC Project Director and is established to provide advice on accelerator R&D, design, and construction to the EIC Executive Management Team.

- **The EIC Detector Advisory Committee (DAC)** reports to the EIC Project Director and is established to provide advice to the EIC Executive Management Team on the experimental equipment and the scientific collaboration. This includes advice on the suitability of the experimental equipment for the EIC science, on cost, schedule and technical risk of detector components and design choices, and relative importance of technical tasks, on evaluation of complementary EIC detector technologies and the complete detector proposals, on collaboration

formation, on detector integration, detector-interaction region integration, and detector commissioning, and on EIC-related detector R&D.

- **The EIC Infrastructure Construction Advisory Committee (ICAC)** provides advice on the planning and execution of the EIC infrastructure. The committee includes six to eight members with experience in the delivery of infrastructure Projects, particularly at DOE laboratories, and with DOE Office of Science Projects. A specific charge for ICAC meetings tailored to the needs of the EIC infrastructure team.

4.3. EIC Policies and Procedures

The EIC policies and procedures are applicable to work being performed at BNL and TJNAF. EIC Project Planning Documents intend to highlight the policies and procedures that will govern the EIC related work being performed at Partner institutions and vendors including the respective Quality Assurance Plan.

4.3.1. Project Planning Documents

The purpose of a Project Planning Document (PPD) is to describe mutual understandings between the EIC Project and International Partners regarding the Scope of Work (SoW), deliverables, and conditions of acceptance of the planned IKC to the EIC Project. The PPD is jointly developed between EIC Project and the Partner and consists of two parts: The PPD – Part 1 and Part 2. PPD – Part 1 describes the management and oversight structure, EIC Technical Review Plan, Project Phases and Project Management principles applicable to the proposed IKC to the EIC Project. These principles are mutually understood as the requirements and specifications of Project Management. PPD – Part 2 describes the Statement of Work required to complete the proposed contribution to the EIC Project, which includes components and technical documentation. It covers a technical description of the deliverables, Project activities, schedule, and key milestones. Not all IKCs will require PPDs to be in place between the EIC Project and a Partner Institution, the sufficient condition to have PPDs in place is subsists when either one of the criteria listed below is satisfied:

1. Criticality of the hardware, and its performance, part of the IKC deliverable
2. High cost in TPC units of the item(s) part of the IKC deliverable

4.4. Procurement and In-Kind Contributions

The EIC activities undertaken at Partners follow the respective Partner procurement policies and procedures. Authorized representatives of the EIC Project may visit the Partners' or Vendors' premises/facilities and those of the Partner or Vendors' suppliers during the procurement and/or vendor during any phase of execution the EIC deliverables with Partner approval. The visits may be required to ensure the items or services being rendered are done in accordance with requirements. The Partner or Vendor shall make available any records or documentation necessary for this assurance activity.

4.5. **Environmental, Safety, and Health (ESH)**

Safety is paramount for all EIC Contributors, Partners and Institutions. There is an expectation for IKCs Partners to hold safety with the same regard. The Project complies with the BNL ES&H policies and guides, and all applicable regulatory requirements including Department of Energy (DOE) Title 10 Code of Federal Regulations (CFR) Part 851, Workers Safety and Health Program for work performed at the BNL and TJNAF sites and is committed to enforcing these requirements in all our work. The approach to Project safety is described for BNL, TJNAF and the Partners in the EIC Integrated Safety Plan. The EIC Project will ensure that procedures are established to support the following ES&H policy statements. Line managers are responsible for environmental stewardship and personal safety at the EIC work site. Line managers, supported by the EIC, BNL and TJNAF, will provide consistent guidance and enforcement of the ES&H program that governs the activities of workers at each site where work is being performed. Incidents, whether they involve personal injuries or other losses, can be prevented through proper planning. All EIC Project work is planned. Workers are involved in the work planning process and continuous improvement, including the identification of hazards and controls. Working safely and in compliance with requirements is vital to a safe work environment. Line managers will enforce disciplinary policies for violations of safety rules.

4.6. **Quality Assurance (QA)**

To assure the success of the EIC Project, the integration of quality is critical throughout the Project lifecycle. Quality Assurance (QA) is an integral part of all aspects and phases of the Project such as research and development, design, procurement, fabrication, construction, transportation, installation, commissioning as well as Project management. The Project has a defined QA Plan (QAP) in the EIC Quality Assurance Plan that provides guidance for assuring the quality of work on the EIC Project, meet the expectations of the U.S. Department of Energy, and fulfill contractual obligations. Moreover, the Quality Plan provides the structure for assuring that EIC requirements will be met and the risks of not meeting requirements will be minimized. Each Partner is expected to submit a QA Plan as part of the expectations established by the PPD. These plans will be reviewed and key stakeholders and approved by the EIC QA Manager. Changes or updates to the plan must be communicated to the Project prior to the implementation of the change for review and acceptance.

Systems Engineering Management Plan (SEMP) that establishes the Systems Engineering approach that ensures that safety, quality, and integration are addressed and controlled throughout the Project lifecycle. There will be an integration of these elements in Partner deliverables where applicable.

5. COMMUNICATION

Effective communication is a critical component across the EIC Project. The following structure highlights the framework for communication.

5.1. Communication across Top Management Levels

Regular meetings of the three governing boards ensure communication across the top three EIC management levels.

Governance Committees				
Committee Name	**Function**	**Communication format/Channel**	**Frequency**	**Scope**
EAB and RRB	L1 Oversight	In person or teleconference meetings	Yearly or more frequently as needed	Coordination and oversight at Partner agencies level
EIEB	L2 Oversight	In person (twice per year) or teleconference	Quarterly or as needed	During execution: mitigate risks, resolve issues, meeting minutes captured

5.2. Communication across Working Levels

The EIC Project has agreed on a communication plan with the Partners that propagates from the Principal Representative (PR)/Technical Representative (TR) level to the working level. Since SPMLs and SPCLs are responsible for the coordination of all the SPMs and SPCs respectively, a Sub-Project Leader is supposed to communicate with their team and their counterpart as often as needed. SPMs and SPCs are also expected to communicate with their counterparts as often as needed. Communication between SPMs, SPCs and their respective Leaders may happen multiple times in a day to assure proper Project coordination and execution. The Sub-Project Leaders should report to the TR as often as necessary.

6. RECORDS AND RECORD RETENTION SCHEDULE

All records associated with this document are stored and they will be stored throughout the life of the related systems/subsystems, assemblies, and components. All records and their retention schedule are done in accordance with the plan described in the Management of EIC Documents and Records.

7. REFERENECES

7.1. EIC-ORG-PLN-013, EIC Preliminary Project Execution Plan (PPEP)
7.2. EIC-ORG-PLN-026, EIC Project Management Plan (PMP)
7.3. DOE Order 413.3B Chg 7, https://www.directives.doe.gov/directives-documents/400-series/0413.3-BOrder-B-chg7-ltdchg
7.4. EIC-SEG-PLN-022, EIC Systems Engineering Management Plan (SEMP)
7.5. EIC Organizational Chart, https://www.bnl.gov/orgcharts/ec.pdf
7.6. Department of Energy (DOE) Title 10 Code of Federal Regulations (CFR) Part 851, Workers Safety and Health Program, https://www.ecfr.gov/current/title-10/chapter-III/part-851
7.7. EIC-ESH-PLN-007, EIC Integrated Safety Management Plan
7.8. BNL Standards-Based Management System (SBMS), Available at: https://sbms.bnl.gov/
BNL ESH guides: https://intranet.bnl.gov/esh/guides/
7.9. EIC-QAG-PLN-002, EIC Quality Assurance Plan
7.10. EIC-ORG-PLN-025, EIC Configuration Management Plan (CMP)
7.11. EIC-ISG-PDN-001, Management of EIC Documents and Records
7.12. EIC-ORG-RSI-026, EIC Code of Records

ANNEX A: EIC ADVISORY BOARD CHARTER

Electron-Ion Collider Advisory Board Charter – Approved 06/29/2023

Purpose

The purpose of the Electron Ion Collider Advisory Board (EAB) is to provide guidance and advice to the BNL Director on the design and construction of the EIC accelerator facility and on the efforts to establish partnerships, international and domestic, with institutions collaborating on the facility. The EAB provides a forum for high-level planning, communication, coordination, and resolution of issues affecting the EIC facility, appropriate at the level of the Laboratory Directors. The EAB will consider issues affecting the scope and/or resource allocations at BNL and the participant institutions.

The EAB Charter will be reviewed as the EIC moves from construction into operations, and as the needs of the program evolve.

Membership

Membership includes Laboratory Directors (or senior leadership) of institutions participating in the design and construction of the EIC accelerator facility. Board members may also include leaders of institutions with common accelerator Science and Technology interests. EAB members may delegate participation for a given meeting.

The BNL Laboratory Director will appoint the members of the EAB, and the EAB chair.

The EIC Project Director will be an ex-officio member of the EAB.

Chair

The EAB Chair, supported by the scientific secretary, shall convene meetings, set meeting agendas, and determine objectives for the EAB. The Chair shall report to the BNL Laboratory Director on the activities and recommendations of the EAB and keep the EIC Resources Review Board informed of significant issues and developments.

Meetings

The EAB will meet quarterly, typically by videoconference, during the initial phases of the project. Special meetings of the EAB may be called if needed.

The meetings will provide an opportunity for members to conduct the business of the EAB and meeting minutes will be prepared and distributed to the EAB members.

The co-Chairs of the EIC Resources Review Board will be invited to the EAB meetings.

Charter Approval and Amendments

Electron-Ion Collider Advisory Board Charter – Approved 06/29/2023

The EAB Charter and any amendments to the Charter will be established by a supermajority (2/3) of EAB members.

Approved on June 29th, 2023.

ANNEX B: RESOURCE REVIEW BOARD CHARTER

Electron-Ion Collider Resources Review Board Charter – April 2023

Purpose

The purpose of the Electron-Ion Collider Resources Review Board (EIC-RRB) is to provide coordination among the different funding partners during both the detector development and construction phase of the project and during the operations of the experiments that follow. In its early years, the RRB will focus on the construction, commissioning, and initial operations. The RRB shall provide oversight of resources utilized for detector construction and planning, which is the ePIC detector in the EIC project scope. The RRB will function as the body that reaches agreement on scope entailed in common projects, as appropriate, which shall be funded by members of the RRB. The RRB will be responsible for annually agreeing on and endorsing ePIC detector commitments from the members. The RRB will monitor progress toward overall ePIC detector funding and construction. At the appropriate time, the RRB will include in its purview common computing needs of the EIC detector(s).

The RRB Charter should be reviewed and updated as the EIC moves from construction towards operations, and as the needs of the program evolve.

Membership

BNL and TJNAF, as the co-hosts for the EIC Experimental Program, will invite funding agencies to appoint delegates to serve as members of the RRB during the construction phase of the project. The EIC Project Director shall be ex officio on the RRB.

The RRB shall consist of one representative from each funding agency that supports institutions who collaborate on the EIC detector(s) including software and computing (e.g., in-kind and/or workforce). In this initial phase, flexibility will be applied to membership on the RRB, with likely contributors to the detectors and experiments being candidates for initial membership.

RRB members may delegate participation for a given meeting. Members may also designate one Principal Investigator as an observer at each RRB meeting.

The BNL Associate Laboratory Director (ALD) for Nuclear and Particle Physics and the TJNAF Deputy Director for Science will serve as standing members of the RRB.

Co-Chairs

The Co-Chairs shall convene meetings, set meeting agendas, and determine objectives for the RRB. The Co-Chairs shall report to the EIC Project Director on the activities and recommendations of the RRB and keep the EIC Advisory Board informed.

The US Co-Chair shall serve two-year terms, and shall rotate between the BNL ALD for Nuclear and Particle Physics and the TJNAF Deputy Director for Science.

There will also be one Co-Chair from a non-DOE funding agency. International partner agencies shall decide on their election/rotational scheme for the international Co-Chair. A chair-line will be established for the international funding agencies (consisting of a Co-Chair and a Co-Chair-

Elect). The first international Co-Chair will assume the role by the invitation of BNL and TJNAF as co-hosts for the EIC Experimental Program.

Meetings

The RRB will meet twice per year; at least one of these meetings will be in person and will be held in Washington, DC, or a location near BNL or TJNAF during initial phases of the project. The meetings will consist of open sessions and executive (member-only) sessions. Special meetings of the RRB may be called as needed.

Meetings will provide an opportunity for members to conduct the business of the RRB, as described in the Purpose above. Minutes of these meetings will be distributed to the EIC Project and to the EIC Advisory Board. The EIC project staff at BNL and/or TJNAF provides administrative support to the RRB Co-Chairs and meetings.

The Chair of the EIC Advisory Board will be invited to the RRB meetings.

Charter Approval and Amendments

The Charter will be established at the initial meeting of the EIC-RRB. A supermajority (2/3) of RRB members will approve the Charter and amendments.

Approved on April 3rd, 2023.