Electron-Ion Collider, Brookhaven National Laboratory			
Doc No. EIC-SEG-PLN-016	**Author:** James Rochford	**Effective Date:** April 15, 2022	**Review Frequency:** 5 years
Plan: Requirements Management Plan			**Revision:** 01

Electron-Ion Collider Plan

Requirements Management Plan

April 15, 2022

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REVISION HISTORY

Revision #	Effective Date	List of Reviewers	Summary of Change
00	November 29, 2021	W. Akers, K. Baggett, C. Cullen, T. Russo, A. Lung, K. Smith, J. Tuozzolo	Initial Release
01	April 15, 2022	W. Akers, K. Baggett, C. Cullen, T. Russo, A. Lung, K. Smith, J. Tuozzolo	Added section 4.6 to describe the development, review, and approval of requirements documents. Clarified language and punctuation.

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LIST OF ACRONYMS

CDR	Conceptual Design Report
DET	EIC Detector
EIC	Electron-Ion Collider
ESR	Electron Storage Ring
FRD	Functional Requirements Document
GLRD	Global Requirements Document
GRD	General Requirements Document
GRD	General Requirements Document
HSR	Hadron Storage Ring
ICD	Interface Control Document
IDD	Interface Definition Document
IR	Interaction Region
IRD	Interface Requirement Document
L2M	Level 2 managers (Own the General and Functional Requirements)
L3M	Level 3 managers (Own the Performance Requirements and contribute to defining the Functional Requirements)
PRD	Performance Requirement Document
RCS	Rapid Cycling Synchrotron (Electron Injection)
RMP	Requirements Management Plan (This Document)
RTD	Requirements Traceability Database
SEG	EIC Systems Engineering Group
SHC	Strong Hadron Cooling
TCCB	Technical Change Control Board
TLE	Technical Lead Engineer (Engineer responsible for delivery of final system/component design)
TS	Technical Specification
WBS	Work Breakdown Structure

Requirements Management Plan

1. PURPOSE AND SCOPE

The purpose of the EIC Requirements Management Plan (RMP) is to define the process for managing the requirements of the Electron-Ion Collider (EIC) project. The RMP provides a process to control, identify, manage, review, approve, release, and revise all the requirements for the EIC. The requirement management process is needed to ensure the EIC design, once complete, will meet the EIC Global Requirements Document (GLRD) [4]. Thus, fulfilling the mission need [2] and satisfying the scientific need proposed by the National Academy of Science (NAS) requirements [1]. An additional part of the RMP which deals specifically with the requirements management process for the EIC detector system can be found in [6].

2. DEFINITIONS

None.

3. ROLES AND RESPONSIBILITIES

EIC Level 2 managers (L2M) are project design authorities for their respective systems and are responsible to define, review and approve the requirements for any system in their respective scope. They are responsible for defining the General and Functional Requirements and formally capturing them in the General Requirements Document (GRD) and Functional Requirements Document (FRD) respectively. Note General Requirements will also include any EIC machine physics requirements needed by the system.

EIC Level 3 managers (L3M) with the guidance of the L2M are responsible to assist in identifying and defining the Functional Requirements, which flow down from the GRD for any system in their scope. They are responsible to identify any Interface Requirement for the system and capturing them in an Interface Requirement Document (IRD) as needed. They are responsible for approving any Performance Requirement Documents (PRD) and Interface Control Documents (ICD) needed to deliver the final system/component for integration.

Technical Lead Engineers (TLE) oversee the design of systems/components in line with the requirements which flow down from the FRD, IRD under the guidance of the L2 and L3 managers. The Performance Requirement of these systems will be captured in the resulting Performance Requirement Document (PRD) and Interface Control Documents (ICD). These requirements will be sufficiently detailed to capture all the technical details needed to draft Technical Specifications to manufacturing the system/component or to obtain manufacturing quotes.

In the requirements management process, the EIC Systems Engineering Group (SEG) is responsible for the compilation, control, management, and release of all the project requirements documentation. The SEG will provide guidance and assist with reviewing requirements upon request and/or when appropriate. The SEG will also manage all requirements on a global level using appropriate requirement management tools. The systems engineering plan can be found in the Systems Engineering Plan document [7].

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4. PLAN

4.1. Requirements Flow Down

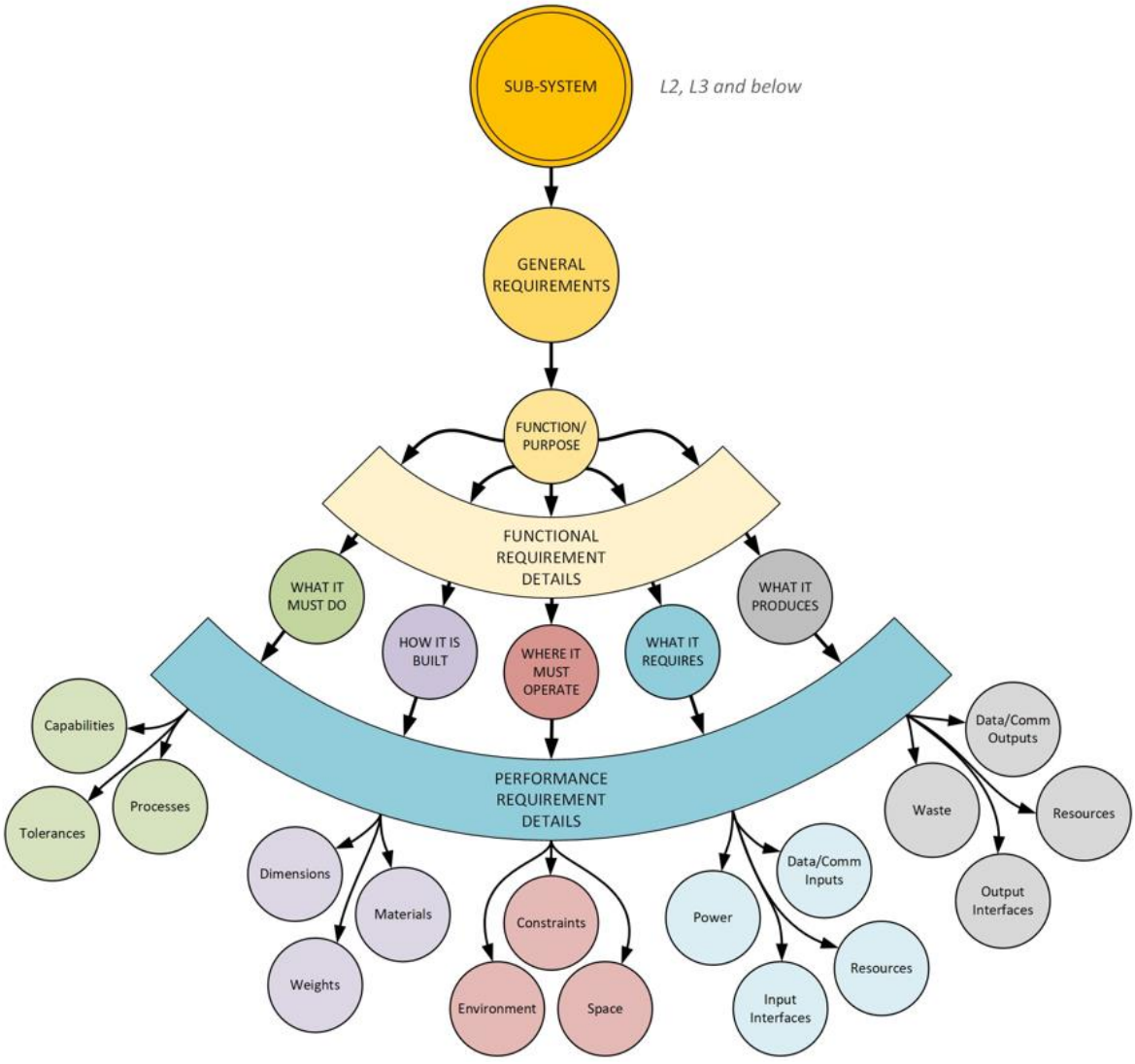

Figure 1. How the system General Requirements flow down to the Performance Requirements and what type of information is captured at the functional and technical requirement levels.

The requirements for any system in the EIC flow down from the system top level General Requirements to the Functional Requirements and finally to the Performance Requirements. Figure 1 illustrates the flow

down; it shows what types of typical requirements are needed at the Functional Requirement level and what final design criteria would typically be needed at the performance requirement level for any system. All these requirements are captured in a suite of related documents, the sections that follow provide more detail of the various documents.

4.2. **Requirement Documentation for the EIC**

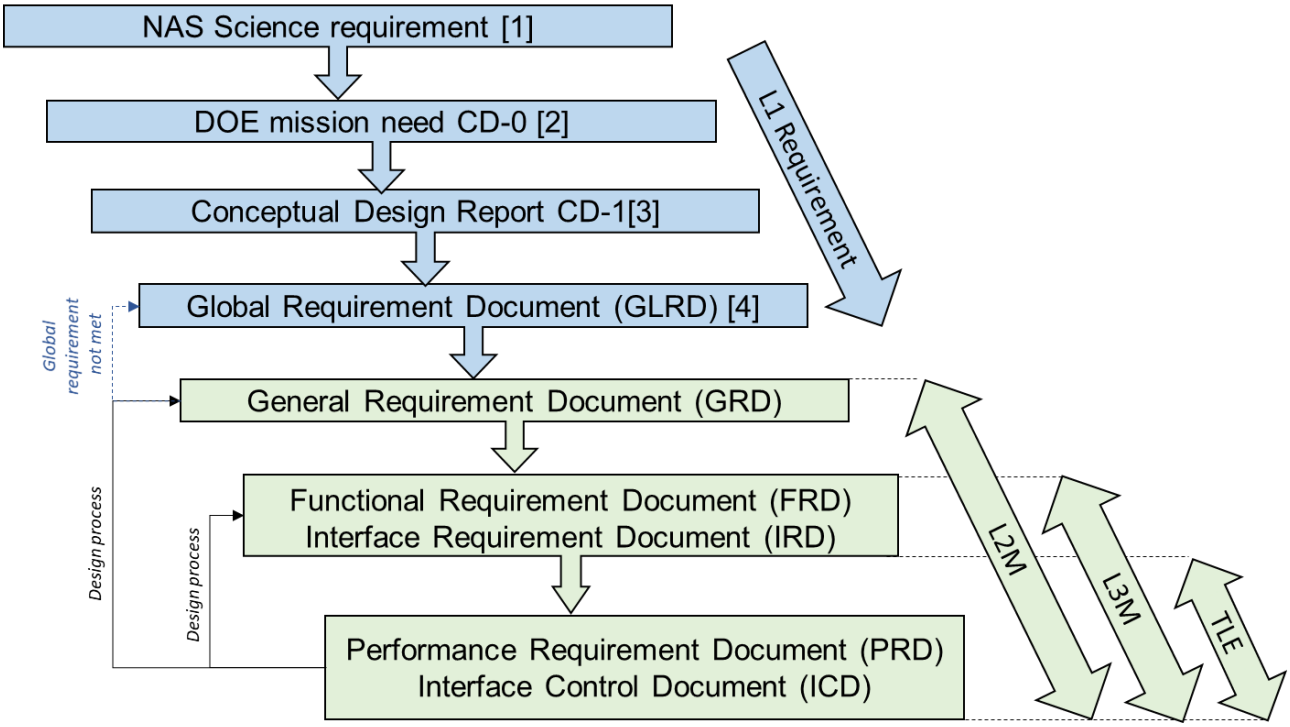

Figure 2. The Requirement documents flow-down, responsibilities and design iterations.

The Conceptual Design Report (CDR) set forth a conceptual design for the EIC which could meet NAS requirements. It was used to develop the high-level requirements contained in the Global Requirements Document (GLRD) [2]. The GLRD defines the highest-level Requirements for the EIC. These requirements flow-down to the GRD then to the lower level FRD, IRD, PRD and ICD. Figure 2 shows the flow down relationship of these documents. Note: The GRDs, FRDs, IRDs for any system may be captured in the same physical document or separate documents.

Each of the major systems described in the WBS are shown in Table 1. GRDs, FRDs, and IRDs are developed for each one of these major systems. Performance Requirement Documents (PRD) and Interface Control Documents (ICD) are developed for all the systems/sub-systems. Note GRDs do not necessarily follow the project WBS structure. They may contain parameters, configurations and specific topics that cross

boundaries between multiple systems. A complete list of systems engineering documents and their hierarchy can be found in Requirements Document Tree [5].

#	General Requirement Document	WBS Element
1	EIC Electron Storage Ring GRD	6.04
2	EIC Hadron Storage Ring GRD	6.05
3	EIC Interaction Region GRD	6.06
4	EIC Electron Injection GRD	6.03
5	EIC Strong Hadron Cooling GRD	6.05.07
6	EIC Detector GRD	6.10

Table 1 List of General Requirements Documents (GRDs)

4.2.1. General Requirement Document

The GRD defines the high-level General needs for each system in the EIC. These include any EIC machine physics requirements that must be satisfied by the system. The GRDs needed for the EIC are listed in Table 1.

4.2.2. Functional Requirements Document

Functional Requirements describe the basic functional needs of the system and flow down from the General Requirements. Functional Requirements are written for all systems, sub-systems, and sufficiently complex components. Each system/sub-system/component will have its Functional Requirements captured in a Functional Requirement Document (FRD). An FRD is a bridge between the higher-level General Requirements and the engineering design of the system. The FRDs help to establish a consensus among all stakeholders on the core functionality, operational parameters, and performance metrics necessary for a system to meet its General Requirements. FRDs are a prerequisite for all technical system designs.

4.2.3. Interface Requirement Documents

An IRD is required when the interface of one system/sub-system/component to another needs to be defined. The IRDs will contain all the requirements of the interface. The Interface Control Document (ICD) flows down from the IRD and is the Performance Requirement document for the interface. The management of interfaces is controlled by the Interface Management Plan (IMP) [9].

4.2.4. Performance Requirement Document

The PRD contains a comprehensive, structured set of individual Performance Requirements for all systems and complex components that affect the overall sub-system's performance. A Performance Requirement defines the technical characteristics the system/sub-system/component must have, or any constraint it must abide by. The PRD can either be a stand-alone comprehensive document for each sub-systems and/or component which then aggregates to the technical requirements of the entire system/sub-systems or an entire set of PRD written at a system/sub-system level. The PRD must be sufficient to ensure the engineering design of each sub-system/component will meet the Functional Requirements for that sub-system/component. These documents will be used to ensure that the Technical Specifications capture all the requirements needed by the system.

4.2.5. Interface Control Documents

The ICD contains a comprehensive, structured, set of individual Performance Requirements required to define any interface, which affects the overall system/sub-system/component performance in which it is contained see [9]. The ICD can either be a stand-alone comprehensive document for each interface which then aggregates to cover all interfaces of each system/sub-system/component or defined as an entire set of ICDs written at a system/sub-system/component level. The ICD must be sufficient to ensure the engineering design of any interface will meet the interface requirements defined for that interface. These documents will be used to ensure the Interface Definition Documents and\or Interface Technical Specifications capture all the requirements needed by the Interface.

4.2.6. Requirement Format

As mentioned previously, FRDs and IRDs are the centerpiece of the requirements management process since they bridge the gap between higher level project requirements GRDs and lower-level design specific technical requirements defined in the PRDs and ICDs. To provide consistency across the EIC project and to enable the traceability between all requirements, the requirements are written in a standardized format.

As an example, a Functional Requirement will use the prefix F (identifying it as a Functional Requirement), followed by an incremental index number x, i.e., F-ESR.1 is the 1st Functional Requirement for the ESR. Table 2 shows examples of the individual Functional Requirements format. Note the same format should be used for General Requirements and Performance Requirements but the F should be replaced by G or P; respectively. See section 10 for more details on PDR and PRD formats. Some examples are:

- G-ESR.1 refers to General Requirement 1 for the ESR
- F-RCS.5 refers to 5th Functional Requirement of the RCS.

- P-EI-PreInJ-Gun.12 Refers to Performance Requirement 12 for the Electron gun in the Pre-Injector for the Electron Injection system.
- Additional examples of formatting nomenclature are shown in Table 2.

Each requirement is phrased with the definitive word "shall". For example, "the ESR ***shall*** be built in the existing RHIC tunnel". Where possible, all requirements should be singular and identify an individual requirement of the system.

Requirement #	Requirement statement
Format required for all Major EIC systems	
F-HSR.#	Hadron Storage ring system Functional Requirement
F-ESR.#	Electron Storage ring system Functional Requirement
F-IR.#	Interaction Region system Functional Requirement
F-EI.#	Electron Injection system Functional Requirement
F-SHC.#	Strong Hadron Cooling Functional Requirement
Format required for EIC sub systems	
F-EI-DEP-[subsystem descriptor].#	Electron Injection sub-system detector Functional Requirement
F-EI-CTRL-gun.#	Electron Injection system gun controls Functional Requirement
P-EI-MAG-spin rotator.#	Electron Injection system spin rotator magnet Performance Requirement
G-IR-VAC-collision point.#	Interaction Region collision point vacuum General Requirement
P-EI-Inj-LINAC-RF.#	Electron Injection system Injection Linac RF system Performance Requirement
F-IR-INSP-forward side BPM.#	Interaction Region BPM instrumentation on the forward side Functional Requirement
SEG-	Is reserved for Systems Engineering management

Table 2 Example FRD Format. This is not an exhaustive list of all EIC systems but suggest acronyms for common ones.

4.3. Requirement Traceability

Requirement traceability is carried out at all levels using the Requirements Traceability Database (RTD). This is a database that tracks all project requirements. It may be as simple as a spreadsheet to track all the requirements for a given system, or a commercial software tool designed for the purpose of requirements

management. Each requirement will be recorded in this database, allowing it to be independently tracked. In essence it will link all the lower-level Performance Requirements and their high-level parent requirements. The RTD will have the following characteristics:

- List all the requirements individually with a unique requirement identifier label.
- Display the requirement description.
- Include a section to document all the parent General Requirements linked to the Requirement.
- Include a section to document which part of the GRD, drives the General Requirement.
- Include a section to document all children requirements and specifications linked to the upper-level requirement.
- Includes a section containing the verification information (description, method, timeline, status, etc.), needed to verify the requirement.

The RTD is generated as soon as the initial requirements are developed and then updated as requirements change over the lifetime of the project. Table 3 shows an example of what information the EIC RTD should contain.

Requirement	Traceability Info	Requirement, Specifications and Control Documents	
Level 1 GLRD	GLRD doc name	The EIC Conceptual Design Report	
	GLRD Section	3.5 Electron Storage Ring Design	
	Global Requirement statement	Shall be installed in the existing RHIC tunnel.....	
Level 2 GRD	GRD doc name	EIC ESR Requirements Document	
	General requirement Number	G-ESR.1	
	General requirement statement	Shall be installed in the existing RHIC tunnel.....	
Level 3 FRDs & IRDs	FRD\IRD Doc name	ESR functional Requirements	ESR Interface Requirements
	FR\IR Number	F-ESR-ARC-SEC.##	IO-CRYO-ESR-STRAIGHT-SEC.## (See [9])
	FR\IR statement	The arc section dipoles will operate at 4.2K.	The Arc section Dipoles magnet Cryo feed will use the 4.2K Helium feed from the straight section of the ESR .
Level 3 PRDs\ICDs	PRD\ICD Doc name	ESR Arc section specifications	ESR Arc section interfaces
	PRD\IC number	PRD-ESR-ARC-SEC.##	IC-ESR-ARC-SEC.##
	PRD\IC statement	The cooling circuit in the Arc section will use a 2inch dia , 0.1 inch wall pipe tack welded every 2 inches with 1 inch weld length along the length of the magnet cold mass.	The Arc section will connect to the 2inch 4.2K feed with a 0.1 inch wall 314sPRDt pipe.
Verification	Verification method	Measurement and Inspection	Measurement and Inspection
	Verification document	Supplier C of C	Installation WI for the Dipoles in the ESR
	Completion date	Fw 24 2025	Fw 24 2025
	Verification status	Open	Open

High level requirements

Functional requirements

Performance Requirement & control docs

Verification

Table 3 An example of the data base content for the EIC project.

Table 3 shows an example flowchart of how traceability flows from the upper Global Requirements to the General Requirements, through the FRD/IRD to the lower PRD/ICD. Some PRD/ICDs can be children of multiple parent FRD/IRDs. For example, the specification for vacuum quality can be a child of Cryogenic systems and RF systems. On a system level, this means that changing any requirement or specification may propagate through the system to affect other seemingly unrelated systems. It is key to systems management that these interactions and changes are identified and managed. The RTD provides the tool to do this. This process will be the responsibility of the SEG.

A key goal of the RTD is to capture the relationship of all lower-level requirements to the top level GLRD and GRD requirements, however there may be cases where there is no direct traceability to a given requirement. In these cases, one can choose to identify the parent as Self-Derived or Best Practice. An example of a self-derived requirement is where the requirement is more of a standard good practice approach to design and therefore is not explicitly described in any upper-level GRD or lower-level requirement documents. The GRD traceability section also includes a description of how the given GRD relates to the FRD/IRD and where specifically in the GLRD document this is detailed.

The traceability information that needs to be captured for each requirement is detailed below.

GLRD

- GLRD Document – Name of the Global Requirements Document, e.g. **"Shall be installed in the existing RHIC tunnel……"**
- GLRD System section – associated with the system from the GRD, e.g. **"3.5 Electron Storage Ring Design"**
- GLRD Statement – narrative statement of the specific content in the GRD related to the requirement, e.g. **"The electron storage ring will be installed in the existing RHIC accelerator tunnel."**

GRD

- GRD Document name– Name of the associated document in which the GRD's is defined **e.g., "Shall be installed in the existing RHIC tunnel…."**
- GRD name of the GRD, **e.g., G-ESR.1** *(Electron storage ring General Requirement 1)*
- GRD Statement – narrative statement of the specific content in the GRD related to the requirement. e.g., **"Be installed in the existing RHIC tunnel."**

FRD/IRD

- FRD/IRD Document name– Name of the associated document in which the requirement is defined **e.g., "ESR Functional Requirements"**
- FRD/IRD name of the requirement, **e.g. F-ESR-ARC-section.##** *(Electron storage ring arc section Functional Requirement ##)*
- FRD/IRD Statement – narrative statement of the specific content in the FRD/IRD related to the requirement. e.g., **"The arc section dipoles will operate at 4.2K."**

PRD/ICD

- PRD/ICD Document – associated document in which the PRD/ICD is defined, e.g., **"ESR Arc section magnet specifications."**
- PR/IC Name –i.e. the name of the Performance Requirement (or Interface control), e.g. **P-ESR-ARC-section-Dipole.##**
- PR/IC Statement – narrative statement of the specific content of the Performance Requirement (or Interface control), e.g. **"The cooling circuit in the Arc section Dipole will use a 2 inch dia, 0.1 inch wall pipe tack welded every 2 inches with 1 inch weld length along the length of the magnet.".**

4.4. Validation of Requirements

An important aspect of requirements management is the validation and review process. This determines how the requirements are validated to ensure the project meets the stakeholder expectations and the overall project objectives within any relevant constraints. Note the validation process is performed throughout the project lifecycle but is done primarily at the start of the project.

To validate in this context means to confirm that the requirements, once verified, will ensure the systems, sub-systems and components meet all the requirements needed to operate the EIC. Validation is the responsibility of all stakeholders from the SEG, system owners, sub-system, and component owners, down to the Technical Lead Engineers. Figure 3 shows a flowchart of the Functional Requirements management process.

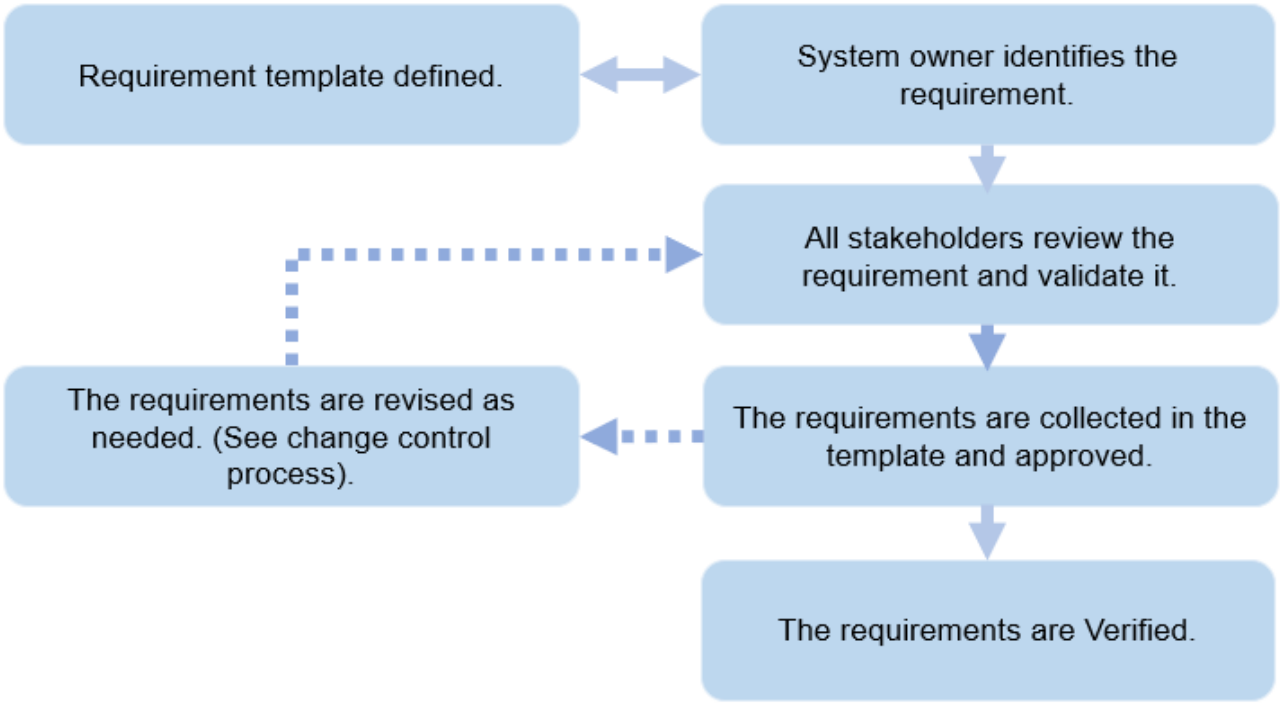

Figure 3 Requirements Management Process, note requirements can be functional and/or Interface requirements.

The validating process must ensure that each requirement has all the following characteristics:

- **Achievable** – the requirement must be technically achievable within the schedule and budget constraints of the project.
- **Clear** – the requirement must be unambiguous with only one meaning and must be capable of being met solely by the system being defined.
- **Complete** – the requirement must define all information necessary to successfully meet the objectives of the system being defined.
- **Consistent** – individual requirements must not conflict with each other.
- **Singular** – requirements must not combine functions, characteristics, or capabilities which are otherwise divisible.
- **Traceable** – requirements should be traced back to a parent/source or documented expectation in an approved document or identified as a self-derived requirement.
- **Verifiable** – the requirement must be defined in a way that can be verified by an objective metric (refer to the section on verification for more information).

Note that there is a distinct difference between validation and verification. In the context of requirements management, validation means to confirm that all requirements are written in the proper form and meet the objectives of the system and overall project. They are written in such a way that they can be checked for conformance to ensure all the requirements have been satisfied. Verification is the act of demonstrating the

requirement has been met. Verification may be established by demonstration, inspection, or analysis (see the Verification section).

4.5. Requirement Verification

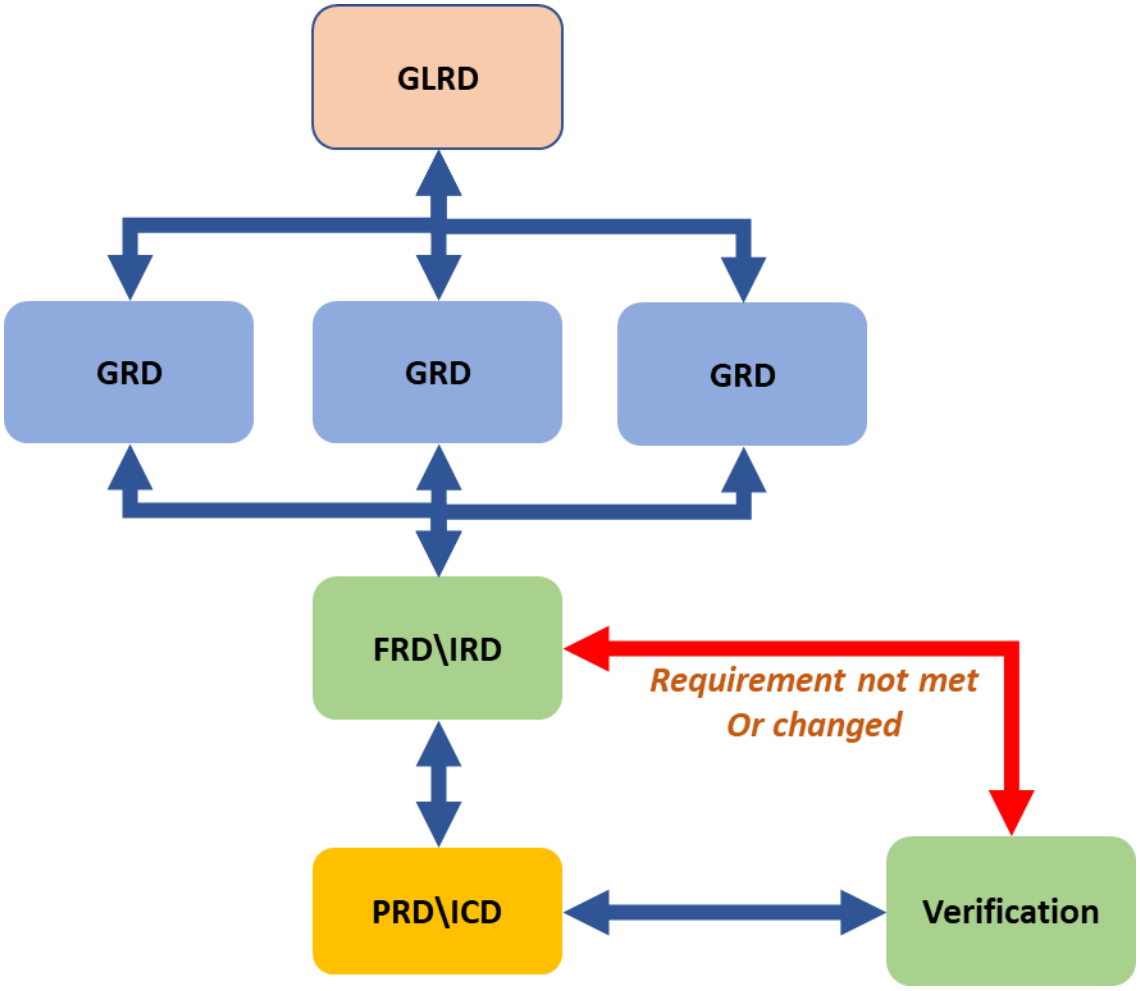

Figure 4 Requirements Traceability and Verification

Verification is the process that confirms that the given design and implementation meets the requirements. To facilitate this, requirements need to be written in a way which will allow for verification to be proven. When formulating requirements there are several questions that shall be considered:

- Can the system or design be tested, demonstrated, inspected, or analyzed to show that it satisfies the requirement?

- Can this be done at the level of the system at which the requirement is stated?
- Does a means exist to measure the accomplishment of the requirement and verify compliance?
- Are the requirements stated precisely to facilitate specification of system test success criteria and requirement?
- Are the requirements free of unverifiable terms, e.g., flexible, easy, sufficient, safe, adequate, accommodating, user-friendly, usable, when required, if required, appropriate, fast, portable, TBD, etc.?

Requirements are written in a hierarchical structure from the Global system level to the Functional Requirement level. Verification is needed at all the system levels from the high-level system down to the lowest sub level. Verification occurs at all stages of the project. Requirements are initially validated (see previous section on Validation) to ensure that the verification process identified for each one will satisfy the stated requirement. Verification shall be done when the design has matured to the point when verification is possible. Verification can be performed in any of the following three ways:

- **Inspection** – Inspection is the nondestructive examination of a component or system. It may require visual verification, simple physical manipulation, and measurements and/or use of drawings to show compliance.

- **Demonstration/Test** – Demonstration/Test is the operation of the component or system as it is intended to be used to verify that the results are as required. It can also be the verification of a component or system using a controlled and predefined series of inputs, data, or stimuli to ensure that the component or system will produce defined output as specified by the requirements. Examples of verification are a pressure test or electrical check, etc.

- **Analysis** – Analysis is the verification of a system or component using models, calculations and/or testing equipment. It is used when it may be cost prohibitive or impractical to verify the system by other means. Analysis allows someone to make predictive statements about the typical performance of a product or system based on the confirmed and reviewed calculations and test results of a system. For example, it may not be practical to perform a detailed heat leak test of a given component and, therefore, calculations or models predicting the heat leak performance can be used as verification. Another example may be verifying the structural integrity of a component through use of a reviewed finite element model and/or calculations.

Requirement verification will be carried out throughout the project. The requirements shall be continually reviewed by the SEG as part of the overall project monitoring and control process (see next section) and carried out in concert with the project QA process [12]. This includes a review of each requirement to determine if a given requirement continues to be valid or if it needs to be modified, as well as the verification

status of the requirement. Figure 4 shows a flowchart of how the process will work. Note the bi-directionality of the requirements process. They can be changed at the definition level, or they may not be met at the point of verification and will need to be reviewed and changed as required.

4.5.1. Requirement Verification Traceability

The verification section of the Requirement, Specifications and Control Documents identifies the traceability criteria needed for a given requirement, see Table 3. This should include the following

- Verification Method – method used to verify the requirement, see the next section.
- Verification Document/description # – associated verification document and/or description
- Verification Timeframe – estimated timeframe for the completion of the verification process.
- Verification Status – status of the verification

4.6. **Development, Review, and Approval**

The author of a Requirements Document shall develop the document using the templates provided in the EIC Document and Records Center and coordinate the document review. The minimum required reviewers include the System Engineer, the L3 Manager, and all L2 Managers. L2 Managers shall engage additional L3 Managers as required. Other additional reviewers can be added as necessary.

Once comments are resolved by the System Engineer and the L2 Manager, the document is routed for approval by the Information Services Group, using a signature workflow. Required approval signatures include the author, System Engineer, L3 Manager, L2 Manager, Deputy Project Director for TJNAF Partnership, and Deputy Project Director/Technical Director. In cases where the author is the System Engineer, at least one other System Engineer shall approve. Approved Requirements Documents are posted on the EIC Document and Records Center.

Affected personnel are notified by the Information Services Group by email that the approved document is posted on the EIC Document and Records Center. Distribution includes the Project Director, Deputy Project Director/Technical Director, Associate Directors, Project Manager, L2 Managers, L3 Managers, and Systems Engineers.

4.7. The Revision Process

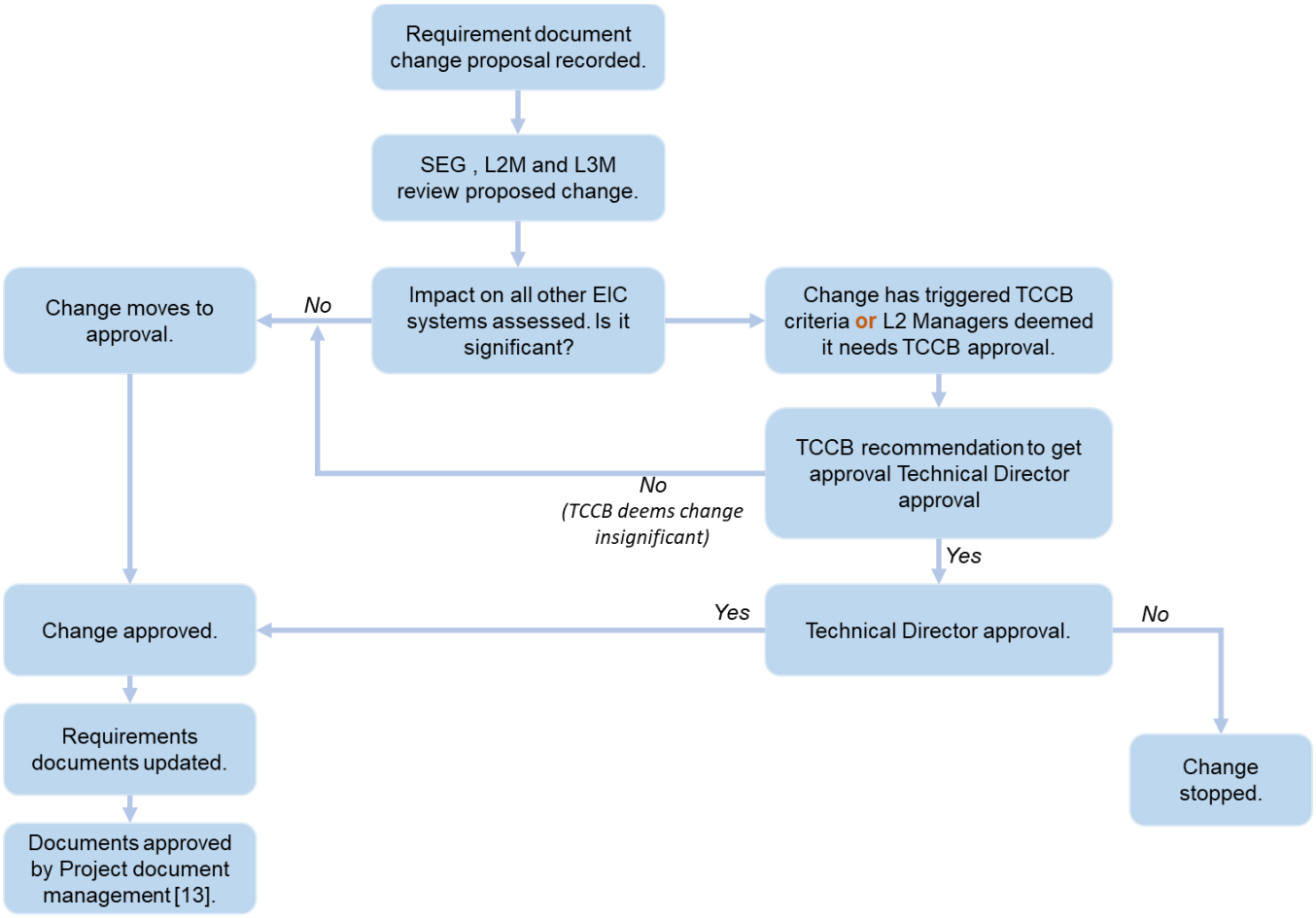

Figure 5 Requirements change approval process

Changes in requirements may occur at any time during the project lifecycle. The approval and revision process is needed to enable the project to handle these changes in a controlled fashion. A rigorous review and control process is shown in figure 5 to ensure that requirements remain up to date and to ensure the documentation is capturing any real world system changes. This process ensures changes are not made without formal review and authorization.

All proposed changes must be traceable and recorded. Most importantly, the SEG, in consultation with all L2 and L3 managers, will ensure that all proposed changes are evaluated to assess the impact on all EIC systems. The RTD will be used to assist in identifying all affected systems. If the change is agreed to, and it is assessed by the L2 managers that the nature and magnitude of the change is significant enough and/or

it meets the project Technical Change Control criteria, the change will be put before the EIC project Technical Change Control Board (TCCB) [11]. If the TCCB recommends the requested change to the Technical Director and the change is approved, all project requirement documents will then be changed accordingly. The RTD will be used to identify all appropriate requirement documents which are affected by the change. These will then be updated to reflect the new changed state. The change of the appropriate documents will be managed by the SEG in consultation with the L2 and L3 managers and carried out by the appropriate document owners as needed, in accordance with the requirements in section 4.6. The L2 will approve all the final revised documentation. It will then get released in the EIC Document and Records Center, and communicated in accordance with section 4.6.

5. REFERENCES

5.1. doi:10.17226/25171., *National Academies of Sciences, Engineering, and Medicine, "An Assessment of U.S.-Based Electron-Ion Collider Science", The National Academies Press, Washington, DC, 2018.*

5.2. Mission Need Statement for the EIC, *Dept of Energy EIC mission need CD-0 approval*

5.3. BNL-221006-2021-FORE, *EIC Conceptual Design Report CD-1*

5.4. EIC-ORG-PLN-010, *Electron-Ion Collider L1 Requirements (Global Requirements Document)*

5.5. EIC-SEG-TBD-TBD, *Requirements Document Tree*

5.6. EIC-SEG-PLN-017, *Requirements Management for Detector Systems*

5.7. EIC-SEG-PLN-TBD, *Systems Engineering Plan*

5.8. EIC-TBD-TBD, *Area Manager Responsibility*

5.9. https://sbms.bnl.gov, *Configuration Management Plan*

5.10. EIC Change control Process, *Change Control Process*

5.11. EIC-QAG-PLN-002, *Quality Assurance Plan for the EIC*

5.12. EIC-ISG-PDN-001, *Management of EIC Documents and Records*