

EIC Silicon Consortium Mtg.

October 24, 2022

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Project R&D Review

Three consortium proposals submitted past September 30 / October 1, 2022:

- eRD104 — service reduction, continuation from FY22
- eRD111 — mechanics, continuation from FY22
- eRD113 — sensor development and characterization, new for FY23

All proposals may be found at: <https://wiki.bnl.gov/conferences/index.php/ProjectRandDFY23>

Presented at the review last week in a single presentation by Laura Gonella,

<https://indico.bnl.gov/event/17159/>

We circulated the proposals as initially submitted via the mailing list past October 3, 2022.

Discussions with the project prior to the review led to revised proposals, submitted just prior to the review itself.

- principally, resource requests were shifted from R&D to Project Engineering and Design (PED) requests, where the work was well-aligned with engineering and design,
- support requests for scientific staff and postdoc effort in the U.S. had to be cut; as discussed before the initial submissions, the assumptions so far have been that such effort would be contributed (as it is and has been in most cases),
- one element was descoped from eRD104 and eRD113.

A relevant document going forward is the EIC project detector R&D plan:

<https://indico.bnl.gov/event/10974/contributions/53172/>

Project R&D Review - Close-Out

Close-out was past Friday by DAC chair Ed Kinney — slides are available at,
<https://indico.bnl.gov/event/17159/>

What follows are a few pertinent slides with a few points highlighted:

Charge to DAC

For the October 2022 DAC meeting we welcome your guidance and advice on the following topics:

- The status and progress of the EIC Project.
- The status and progress of the EPIC detector and collaboration following the consolidation and optimization process after the DPAP.
- The status, progress and plans for the EIC project detector R&D that has been initiated recently (eRD101-105, eRD108, eRD110-112).
- The plans for the EIC project detector R&D that have not been started yet, for various reasons (eRD106-107, eRD109, and the new eRD113)
- Further planning for the outyears of the EIC Project detector R&D as documented in the “Assessment of R&D Needs for an EIC Detector” (EIC Detector R&D) document.
- What do you see as priorities for the proposed EIC-related Project detector R&D?

Status of EPIC Detector and Collaboration

- Congratulations on rapid consolidation of EIC experimentalist efforts and creation of a new vibrant collaboration
- Enormous progress is developing a coherent design for detector to carry out EIC research goals, with well defined open questions
- Critical creation of common simulation environment with October Simulation Campaign
- Impressive Progress in integration of readout software/framework at early stage
 - Recommend close monitoring of manpower and commitment to EIC
- Overall, appear mostly on-track with planned timeline

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What follows are a few pertinent slides with a few points highlighted:

Tracking: eRD104/eRD111/(eRD113) -Silicon

- Large effort with progress on many fronts, including tools to study impact of design choices on physics capabilities
- Strong in-kind contributions by many institutes of consortium
- Development of working design for the MAPS barrel and disk trackers
- Strongly tied to ITS3/ALICE R&D; ties to foundry seem intact
- **ITS2 appears to be close to no longer being a fallback solution**
(development effort commensurate with ITS3)
- Necessary progress appears achievable by CD2
- **Recommend continued efforts to become more deeply involved in ALICE/CERN ITS3 development with attention to EIC specific needs**
- Recommend study of reliability/stability of new 65nm MAPS

Global Recommendations

- Again, congratulations to all on enormous progress in short time!
- Continue workshops to have good communication between overlapping development efforts
- Many projects are at test beam stage; overall coordination might be very useful
- At next review important to hear how R&D is being used in development of final design, especially critical design choices
- **Aggressive effort needed to keep to project timeline**
- Important to move from R&D activites to detector specific design
- **Important to expand manpower as soon as possible to keep on track**
- Recommend more direction of effort towards final detector development for CD2/3a

Report anticipated in a few (~2) weeks.

Project R&D - Next steps

Three consortium proposals for FY23:

- eRD104 – contact person: Laura Gonella

Table 1: Institutions involved and institutional contacts

Topic	Institute	Institutional contact
Powering System	Birmingham	Laura Gonella
	RAL	Fergus Wilson
Readout System	ORNL	Jo Schambach
	BNL	Grzegorz Deptuch

- eRD111 – contact person: Nicole Apadula

Table 1: The breakdown of EICSC institutions involved and the respective contact person for the activities.

Topic	institute involved	institute contact
modules	INFN groups UK institutes (Birmingham, Daresbury, Lancaster, Liverpool)	Giacomo Contin Roy Lemmon, Peter Jones
barrel & discs	LANL LBNL ORNL UK institutes (Birmingham, Daresbury, Lancaster, Liverpool)	Walter Sondheim Nicole Apadula Ken Read Roy Lemmon, Peter Jones
mechanics, infrastructure, & cooling	LANL LBNL ORNL	Walter Sondheim Nicole Apadula Ken Read

- eRD113 – contact person: Grzegorz Deptuch

Table 4: Institutions involved and institutional contacts

Topic	Institution	Institutional contact
Sensor Development	RAL	Iain Sedgwick
	BNL	Grzegorz Deptuch
	LBNL	Carl Grace
Sensor Characterization	INFN	Domenico Elia
	UK institutes	Laura Gonella
	LBNL	Yuan Mei
	ORNL	Jo Schambach
	LANL	Xuan Li

Statements of Work were a contributing factor to FY22 funding delays; let's be more expedient going forward,

Updates at bi-weekly meetings — we will want to schedule further ahead and with an eye on upcoming milestones.