Draft LOI charge and considerations

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Cold QCD Topical Group Meeting
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Original message from Berndt Mueller

Dear Gunther & Dave:

As you know, the eRHIC design team is close to completing the pre-conceptual design report, the NAS Study Panel is expected to publish its assessment of the value of a US based EIC in the May time frame, and DOE may declare CD-0 for an EIC sometime in the second half of 2018. In this context it will be important that we have a clear and up-to-date understanding of the value of sPHENIX as the basis of a Day-1 eRHIC detector. The ePHENIX Letter of Intent now is four years old and urgently requires an update that takes into account the developments in detector technology and interaction region design.

For this reason, I ask you to establish a task force within the sPHENIX collaboration that can update the ePHENIX Letter of Intent in the context of the eRHIC pre-CDR and perform a cost estimate of the construction costs in FY2018 dollars. This estimate should be performed with the methodology that Diane Hatton has developed for EIC and that Elke Aschenauer and her group is using to develop a cost estimate for a generic EIC detector in conjunction with the ongoing pre-CDR cost estimation process. It would be useful if the Letter of Intent would contain an outline of the expected physics program for ePHENIX in the first five years of its operation using estimates of the luminosity development that Ferdinand Willeke can provide.

I would like to schedule a brief presentation on ePHENIX at the PAC meeting in June; thus, it would be ideal if at least a first draft of the updated LoI and the updated cost estimate would be ready internally to the collaboration. The complete version of the LoI should be ready at the time of this year’s RHIC Site Visit, which will probably be held in the second part of September 2018. I will ask Maria Chamizo-Llatas to schedule a review, similar to the one we held in 2014, when the complete versions of the LoI and cost estimate are available.

These are exciting times for all those interested in the physics of an EIC. The facility is finally at the doorstep from concept onto the path toward realization. I hope that this request will build on and further strengthen the excitement of all those within the sPHENIX collaboration who are looking forward to participation in a future EIC physics program.

Best regards

Berndt
Some considerations and concerns

- We do not have sufficient manpower within sPHENIX to put together a strong LOI by September
- There are individuals/groups who might be interested in exploring the possibilities of an EIC detector based on sPHENIX as a starting point but who do not wish to, or are not in a position to, join sPHENIX
- It’s unfeasible to put together any kind of cost estimates by the June PAC meeting
  - Berndt has already agreed with Gunther and Dave that only physics capabilities and no cost estimates should be presented to the PAC in June, but this should be clear in the final written charge
A proposed revised charge – for discussion

New text – significant changes in red

You are asked to establish a detector study group consisting of members of sPHENIX and any individuals interested in EIC science from outside the sPHENIX collaboration that can update the Letter of Intent for an EIC detector built around the BaBar solenoid in the context of the eRHIC pre-CDR and perform a cost estimate of the construction costs in FY2018 dollars. This estimate should be performed with the methodology that Diane Hatton has developed for EIC and that Elke Aschenauer and her group is using to develop a cost estimate for a generic EIC detector in conjunction with the ongoing pre-CDR cost estimation process. The Letter of Intent should contain an outline of the expected physics program for the detector in the first five years of running using estimates of the luminosity development anticipated for initial EIC operation.

A brief presentation on the physics capabilities of the detector should be prepared for the PAC meeting in June. The complete version of the updated LoI and the updated cost estimate should be ready at the time of this year’s RHIC Site Visit, tentatively expected in the second part of September 2018. When the complete versions of the LoI and cost estimate are available, a review will be scheduled, similar to the one held in 2014.

Original text

For this reason, I ask you to establish a task force within the sPHENIX collaboration that can update the ePHENIX Letter of Intent in the context of the eRHIC pre-CDR and perform a cost estimate of the construction costs in FY2018 dollars. This estimate should be performed with the methodology that Diane Hatton has developed for EIC and that Elke Aschenauer and her group is using to develop a cost estimate for a generic EIC detector in conjunction with the ongoing pre-CDR cost estimation process. It would be useful if the Letter of Intent would contain an outline of the expected physics program for ePHENIX in the first five years of its operation using estimates of the luminosity development that Ferdinand Willeke can provide.

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Comments

• The language “update the Letter of Intent for an EIC detector built around the BaBar solenoid” has been taken directly from the title of the previous LOI

• “ePHENIX” no longer appears in the charge

• A “task force” vs. a “detector study group”
  • While there is an immediate task to accomplish (prepare the LOI), creating a “detector study group” leaves open the possibility that the group continue activities after completion of the LOI.
  • It may also be more natural to include e.g. young students performing some of the simulations for the LOI as members of a “detector study group” than as formal members of a dedicated “task force.”
Comments (cont.)

• The new language makes clear that no cost estimates are expected by the PAC meeting.

• Being more explicit about the review process for the completed LOI could be helpful. Details of the 2014 review process should be dug up so that we can consider trying to include more specific language in the present charge.

• Comments from others?
Further thoughts based on Friday’s discussion (included in minutes)

Items for further discussion to consider for additional modifications to the charge:

• “using sPHENIX as a basis” (term in the opening paragraph of Berndt’s original e-mail) – Should consider language that is clearer about what “sPHENIX” is assumed to be, e.g. including MVTX or not? Descoped EMCal or not? Perhaps refer to the “reference configuration” that served as the reference for the 2016 descoping charge. Also don’t want language in the charge that could be construed as constraining us to reuse every single component of sPHENIX.

• Timescale – RHIC Site Visit in September believed to be somewhat arbitrary. Important thing is likely to be ready with a document and cost estimate in hand whenever CD-0 may be granted to EIC. Should we consider proposing alternative language in the charge regarding timescale? E.g. “end of September”?

• Review of LoI and cost estimates when they are complete – The 2014 for the previous LoI was not in fact a BNL review! BNL did NOT take action to review that LoI, and PHENIX had to organize its own review. We should add more explicit language in the charge about the review process that will follow delivery of the LoI and updated cost estimates.
Next steps to finalize charge

- Iterate on language with Dave and Gunther to address remaining open points
- Dave and Gunther propose revised charge to Berndt
- Iterate further if Berndt has concerns . . .

- While some work can begin before charge is finalized, really need final charge to approach some individuals/groups about contributing, so it’s important to settle the charge quickly