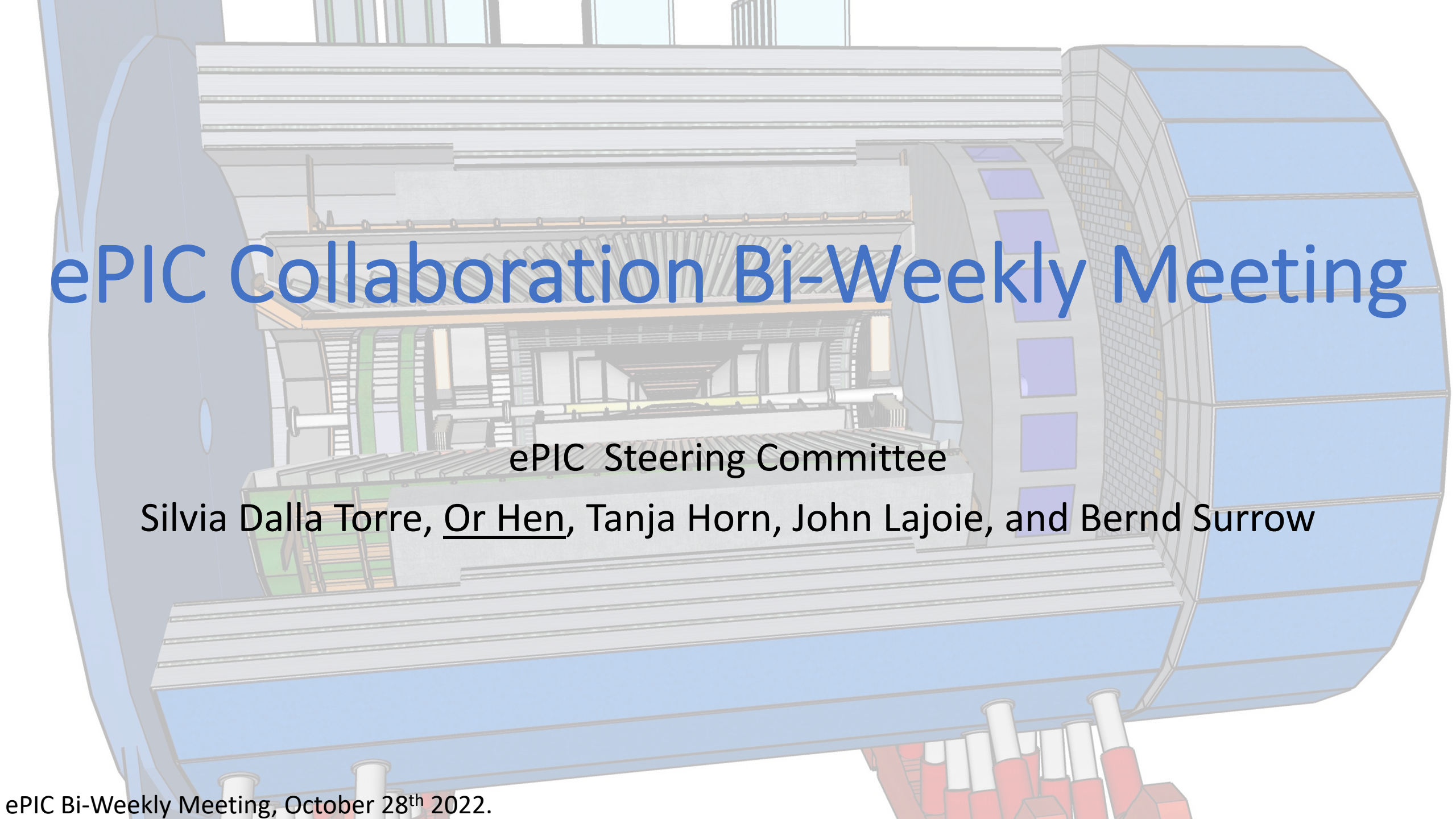


ePIC Collaboration Bi-Weekly Meeting

ePIC Steering Committee

Silvia Dalla Torre, Or Hen, Tanja Horn, John Lajoie, and Bernd Surrow

Lots of meetings and reviews…

- October 12-13 – “Resource Review Board”-like kickoff meeting (called by the PM)
  - Planning for first RRB meeting April 2023

- October 18-19 – 60% Magnet Review @ JLab
  - We implemented the design change to go to six layers of conductor – with thanks to our CEA Saclay colleagues to help us out. This should allow a robust 1.7 Tesla magnet with stretch goal of 2 T.
  - Five engineers from CEA Saclay attended in person. The meeting will be hybrid as the reviewers and further engineers/designers will be remote.
  - The reviewers will be the same as for the earlier 30% design review and are confirmed – Ruben Fair (PPPL) –chair, Vladimir Kashikhin (FNAL), GianLuca Sabbi (LBNL).

- October 19-21 – Detector Advisory Committee meeting
  - EIC project update
  - Update on the EPIC detector, the steps following the DPAP process
  - and as main part of the meeting reports on the status of the various project detector R&D projects and FY23 plans/requests
  - https://indico.bnl.gov/event/17159/

… And lots more to come

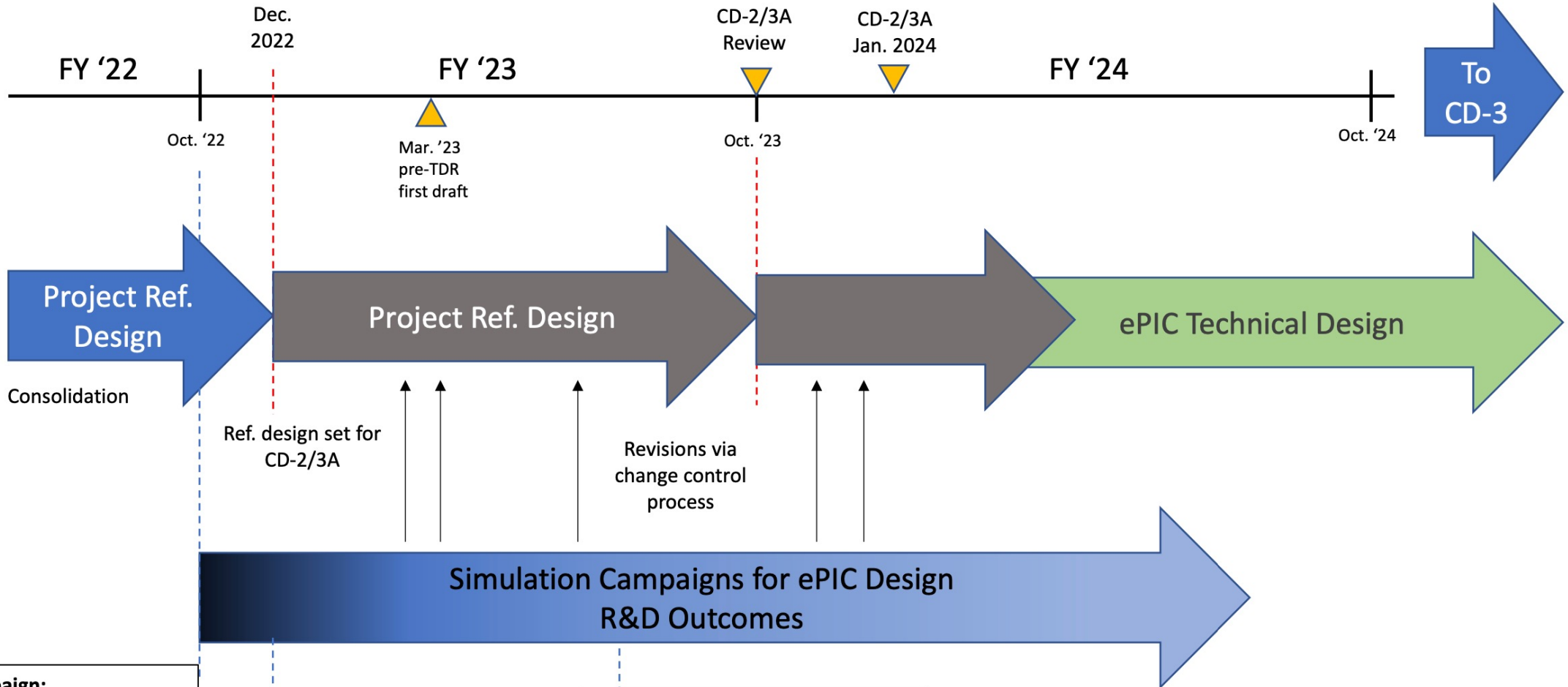
- October-December – EIC Subsystem Status Reviews on Tracking, Particle Identification Systems, Electromagnetic Calorimetry, Hadronic Calorimetry, Infrastructure/Installation, Polarimetry
  - already completed
    - Magnet Incremental Design and Safety Review (6.10.07) – Preliminary 30% Design
    - IR Integration and Ancillary detectors (6.10.11)
    - Electronics/Computing Subsystem Status Review (6.10.08 & 6.10.09)
    - Magnet Incremental Design and Safety Review (6.10.07) – 60% Design
  - in planning stage
    - Calorimetry Review (6.10.05 & 6.10.06) – **First two weeks December**
    - Polarimetry Review (6.10.14) – **Aim before end of CY**
    - Incremental Integration/Installation Review – waiting for sPHENIX installation schedule
  - To do beyond
    - Tracking Review (6.10.03)
    - Particle Identification Review (6.10.04)
    - Infrastructure Review (6.10.10)
    - Magnet Incremental Design and Safety Review (6.10.07) – 90% Design ~September 2023
- OPA Status Review – January 31-February 02, 2023
- Preliminary Design Complete & Review May 2023

From Oct. 6th bi-weekly

ePIC Design Towards CD-2/3A

- The Project must move forward with an ePIC reference design in order to prepare for CD-2/3A and allow for a ~60% design completion
- Nevertheless, ***the ePIC design optimization process will continue and is not expected to be completed by the end of 2022***
  - The ePIC design optimization process will proceed through a series of simulation campaigns.
  - The reference design will be updated through the project change control process
  - The change control process is important – changes must be justified by performance, cost and risk!
    - Changes should be the *exception*, not the rule.
    - Example: changing from SiPM readout to LAPPDs (technology change) or a change in detector acceptance (design change)
- This effort will result in an *ePIC Technical Design* going into CD-3

From Oct. 6th bi-weekly



First Campaign:
- Commission software stack
- Two configurations to compare large-scale variations
- Background embedding and tracking development

Second Campaign:
- Focus on single, integrated ePIC design
- Targeted subsystem design studies/variations

Additional Campaigns:
- As needed
- Refine detector design to include frames, etc. to assess physics impact

• • •

From Oct. 6th bi-weekly

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We continue according to June 2022 consolidation plan

We **will not** rush decisions to meet and end-of-2022 deadline

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From Oct. 6th bi-weekly

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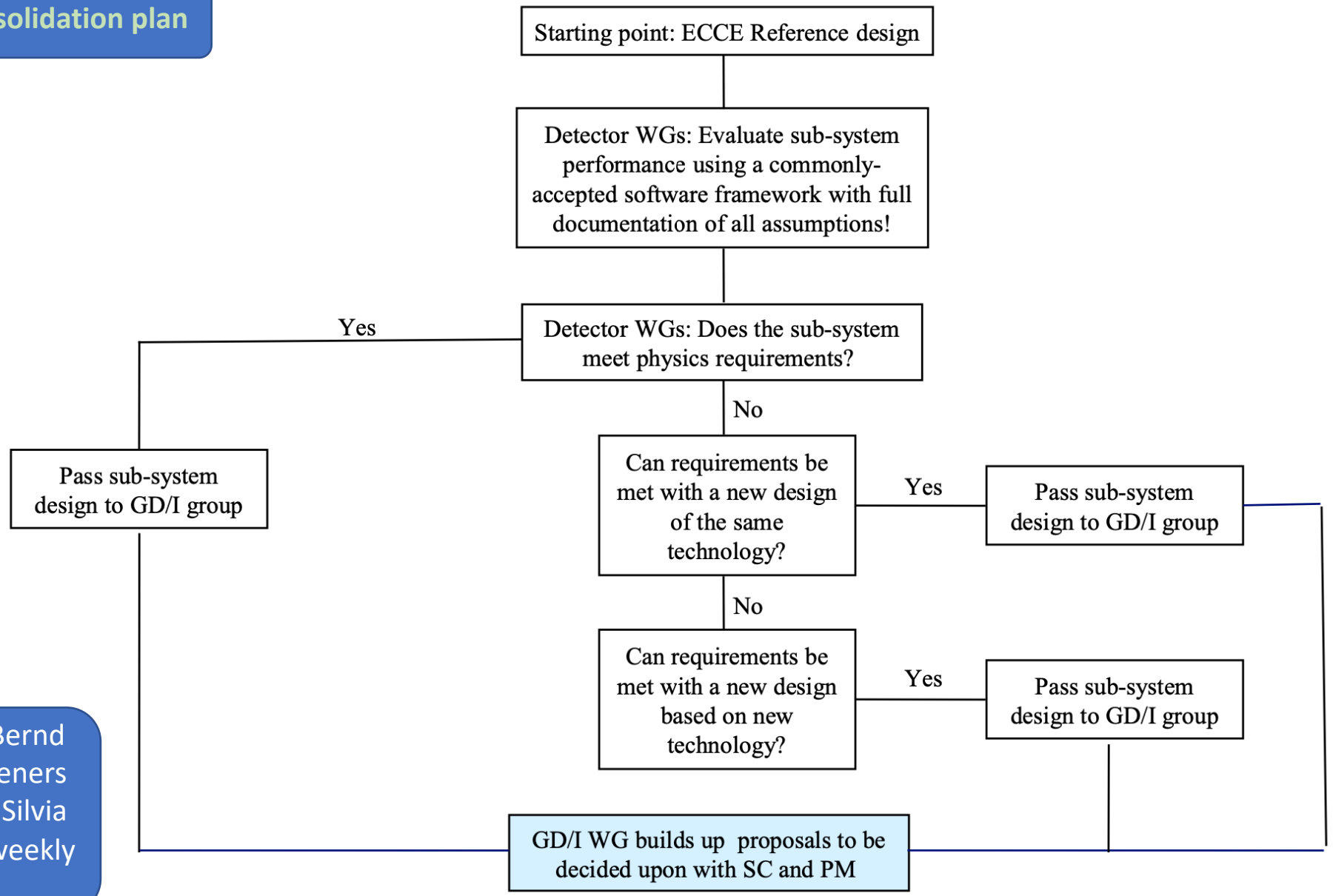
Change control process is a formalized procedure that requires thorough documentation and review of all relevant factors – performance, cost and risk.

Asking the project to present on this in coming weeks

- This effort will result in an *ePIC Technical Design* going into CD-

Consolidation Roadmap: Detector WGs

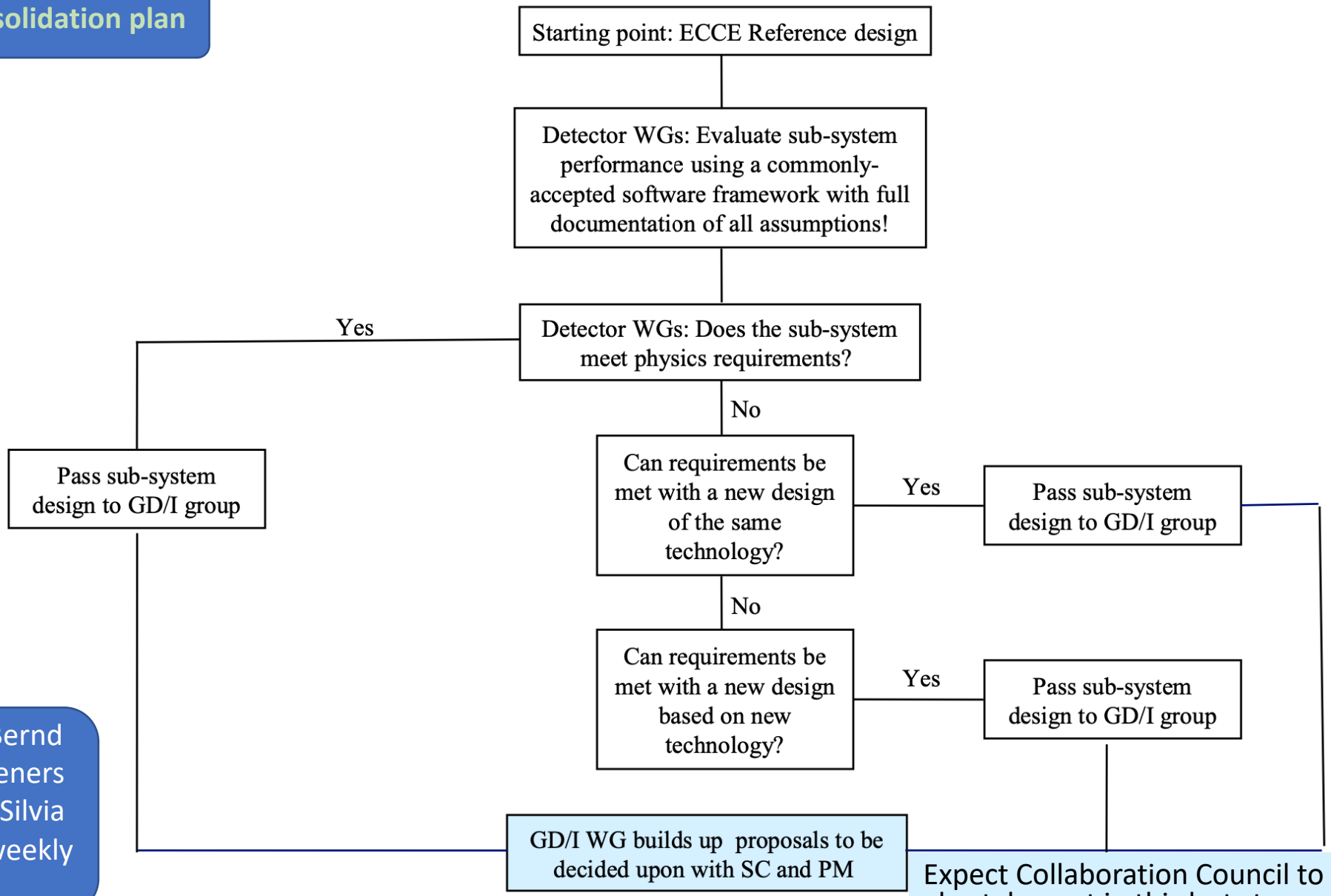
June 2022 consolidation plan



Slide shown by Bernd on June 3rd conveners meeting, and by Silvia on June 24th bi-weekly meeting, …

Consolidation Roadmap: Detector WGs

June 2022 consolidation plan



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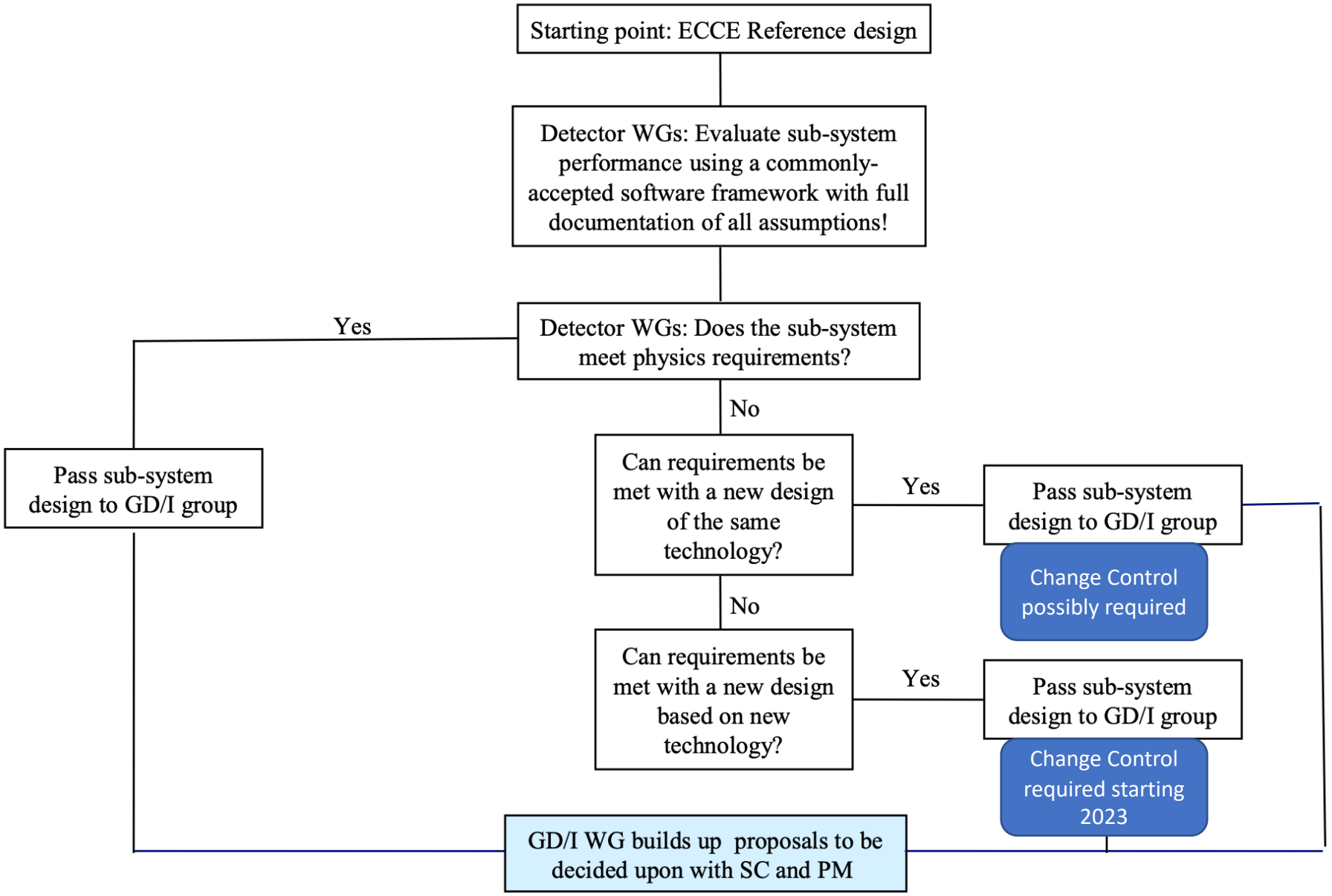
Expect Collaboration Council to also take part in this last step.

Consolidation Roadmap: Detector WGs



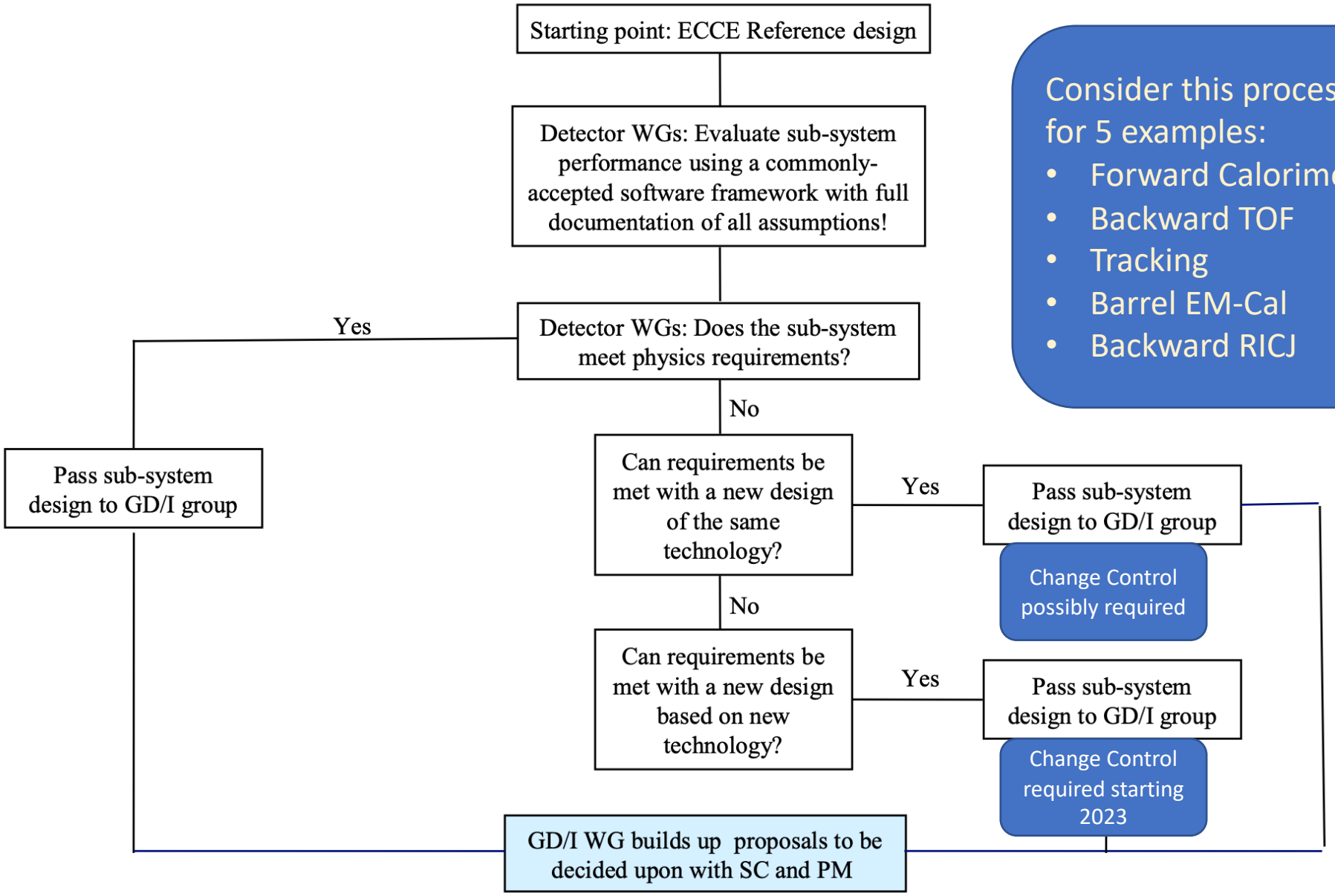
Several studies will not be done before 2023

- ePIC simulations effort is nothing short for a remarkable undertaking!
- Groups are making progress, and things progress in a reasonable timescale
- Not likely to have complete physics analysis of simulation data before the end of 2022

➔ Will have to use results from available studies (simulation and integration studies) to make decisions until the end of 2022, and then fix reference design technologies for CD-2/3a

(fix = require change control to change)

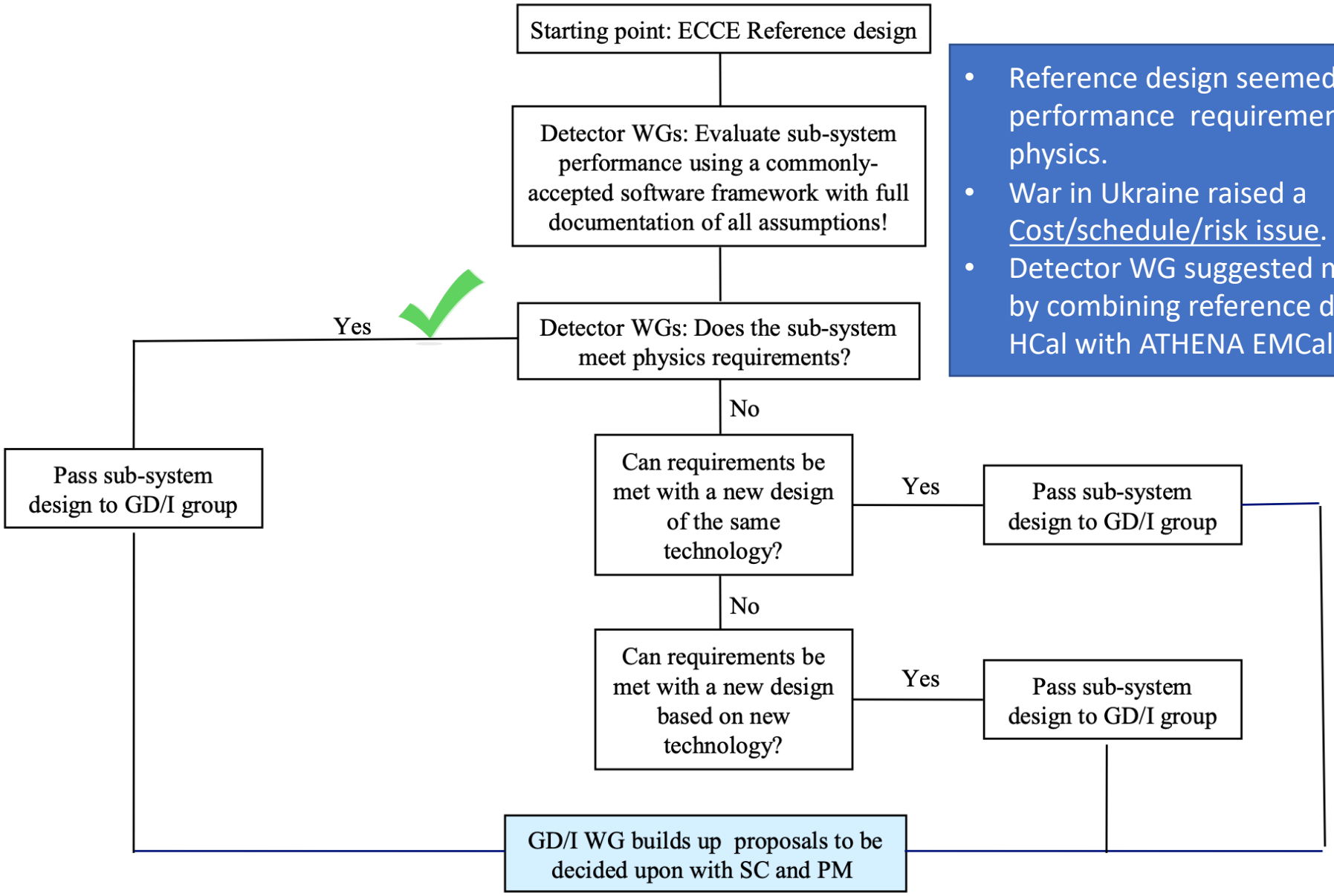
Consolidation Roadmap: Detector WGs



Consider this process for 5 examples:

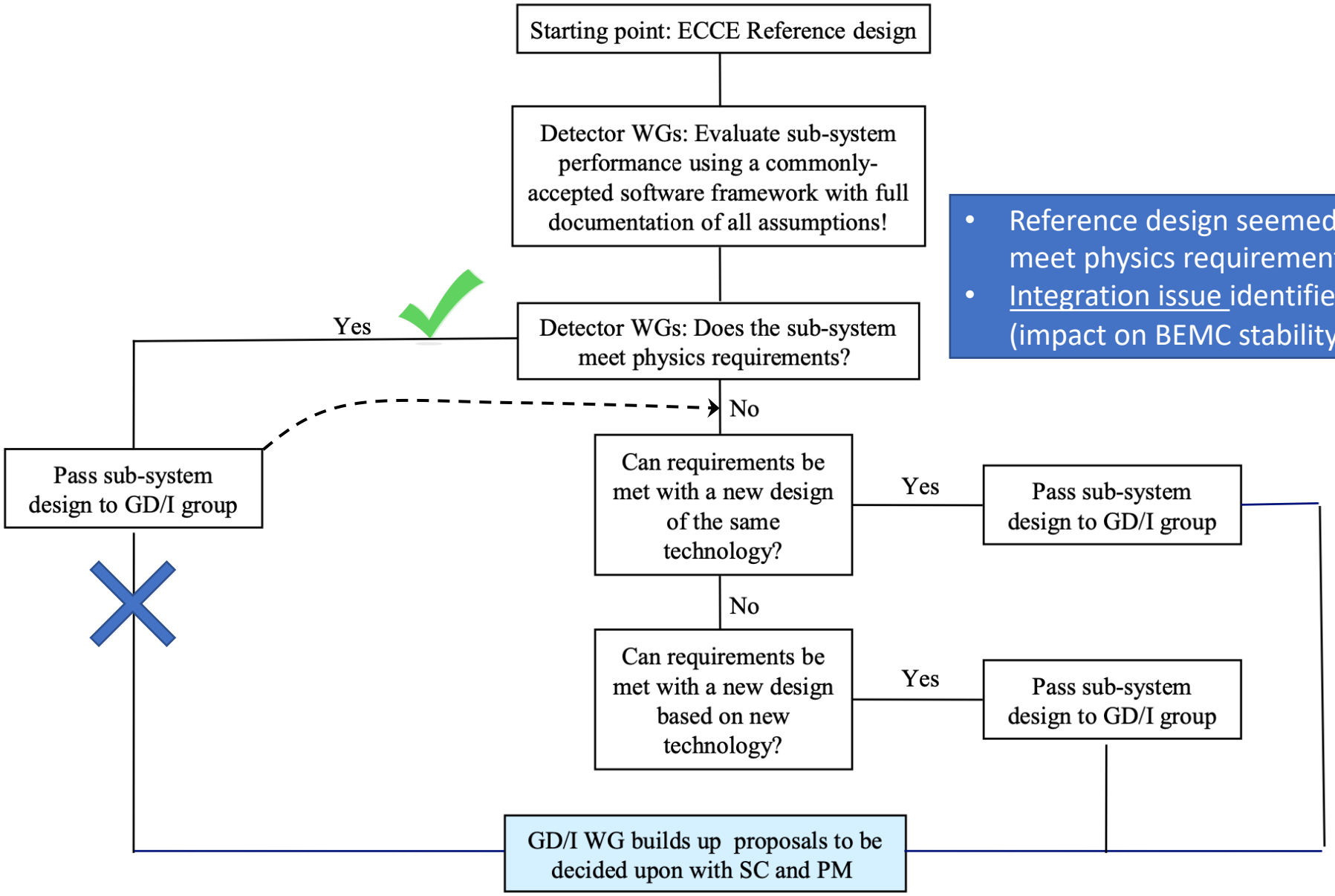
- Forward Calorimeter
- Backward TOF
- Tracking
- Barrel EM-Cal
- Backward RICJ

Consolidation Roadmap: Forward Calorimeters



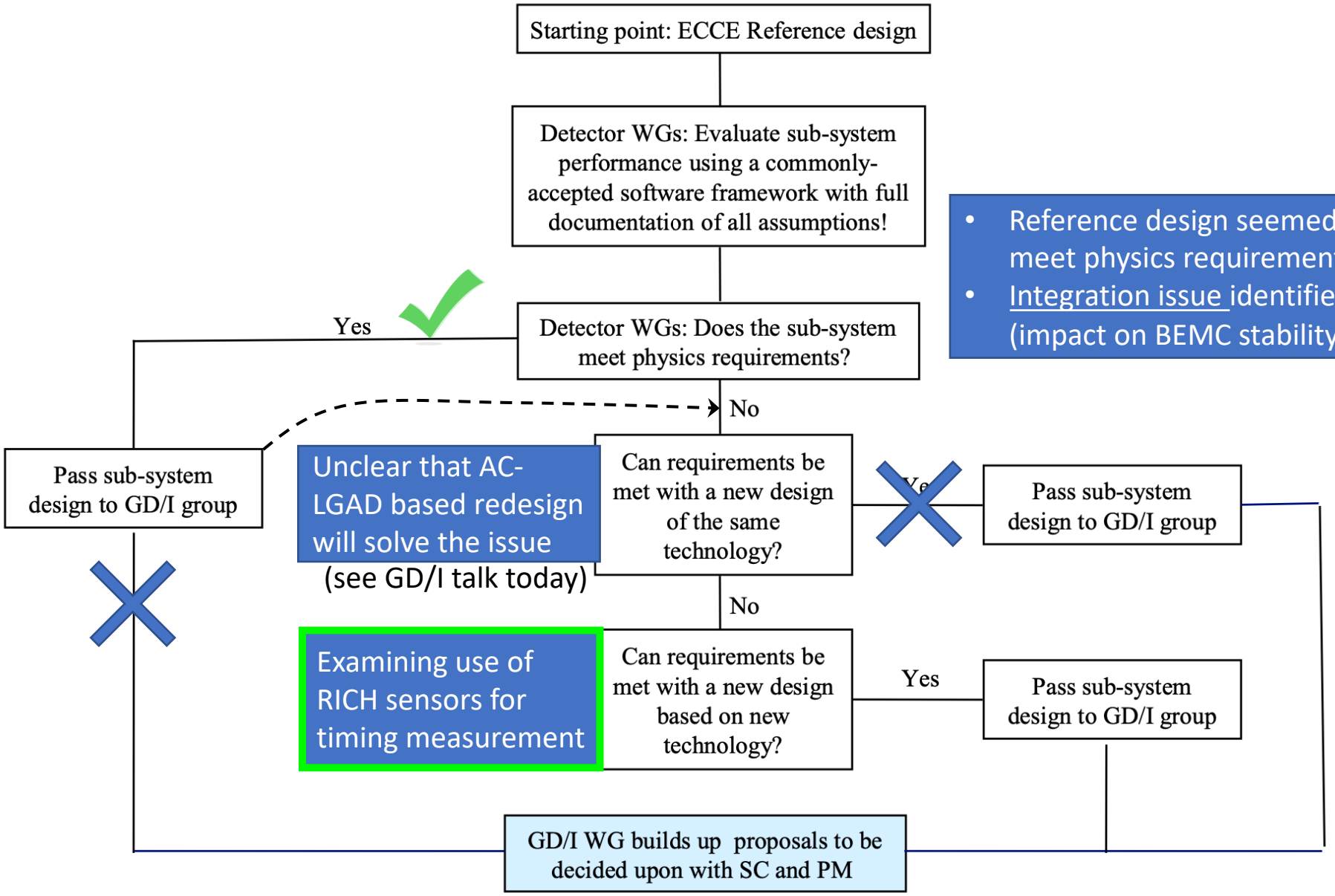
- Reference design seemed to meet performance requirements for physics.
- War in Ukraine raised a Cost/schedule/risk issue.
- Detector WG suggested mitigation by combining reference design HCal with ATHENA EMCal

Consolidation Roadmap: Backward TOF



- Reference design seemed to meet physics requirements.
- Integration issue identified (impact on BEMC stability).

Consolidation Roadmap: Backward TOF



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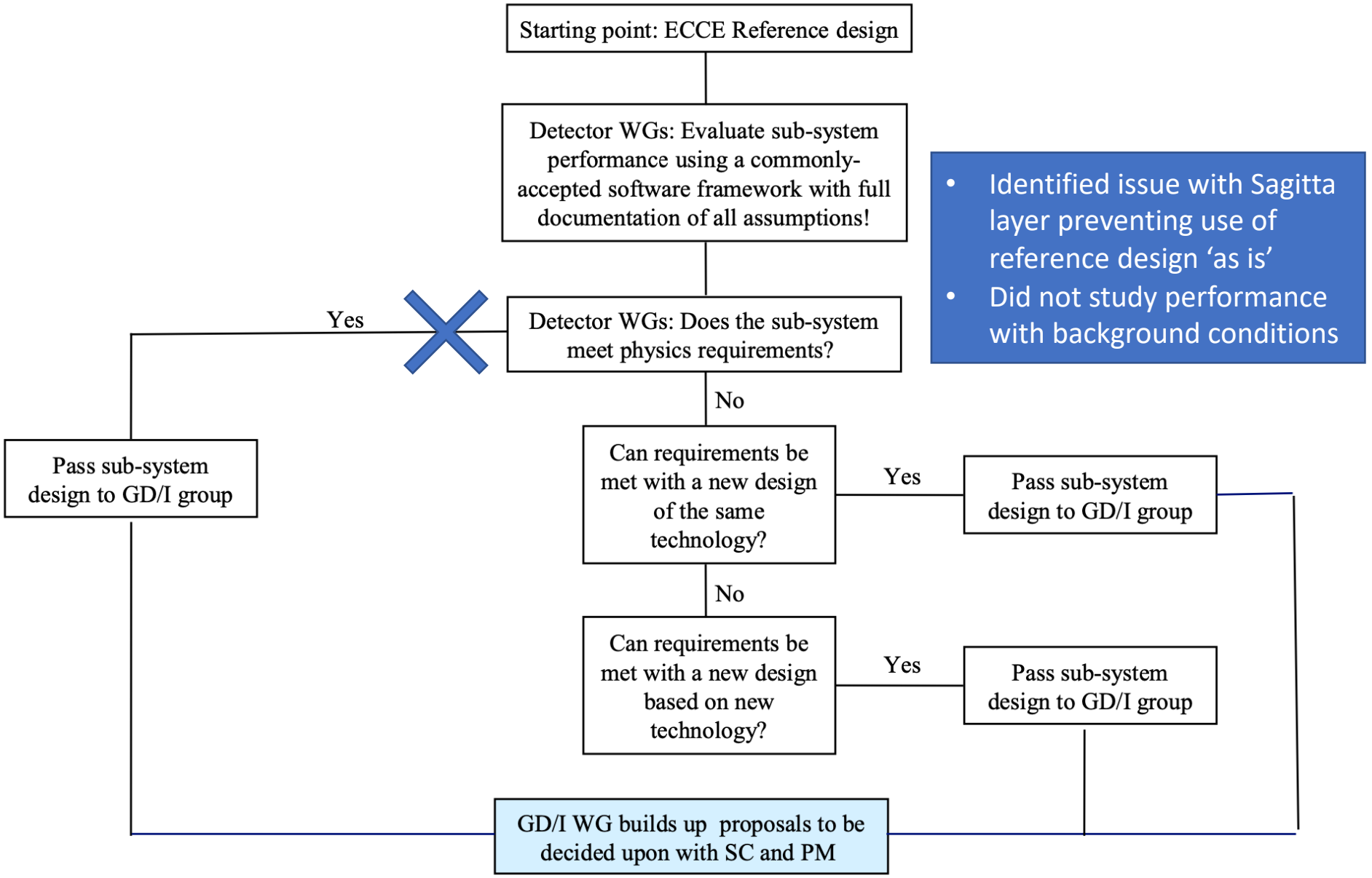
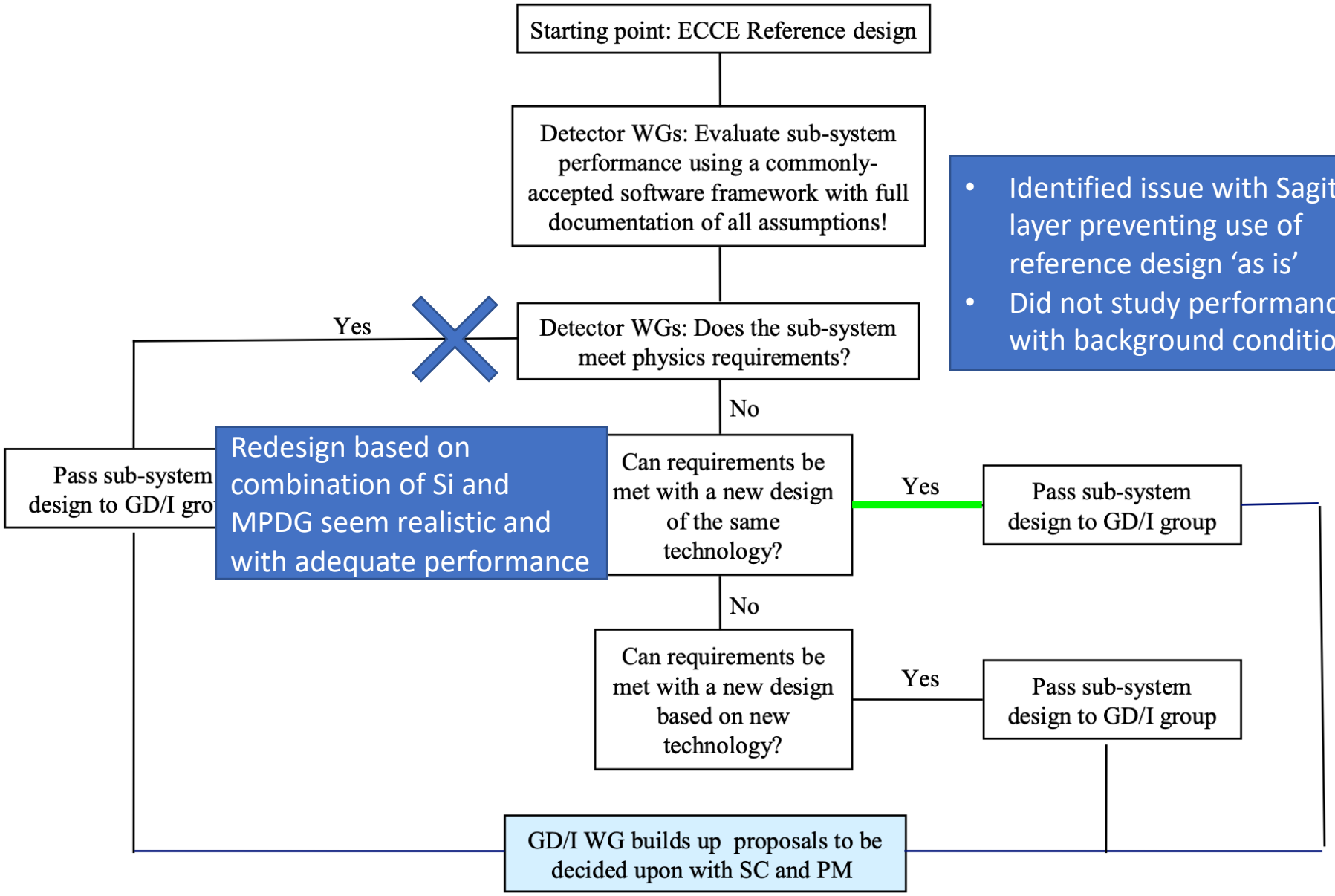
Consolidation Roadmap: Tracking



- Identified issue with Sagitta layer preventing use of reference design 'as is'
- Did not study performance with background conditions

Consolidation Roadmap: Tracking



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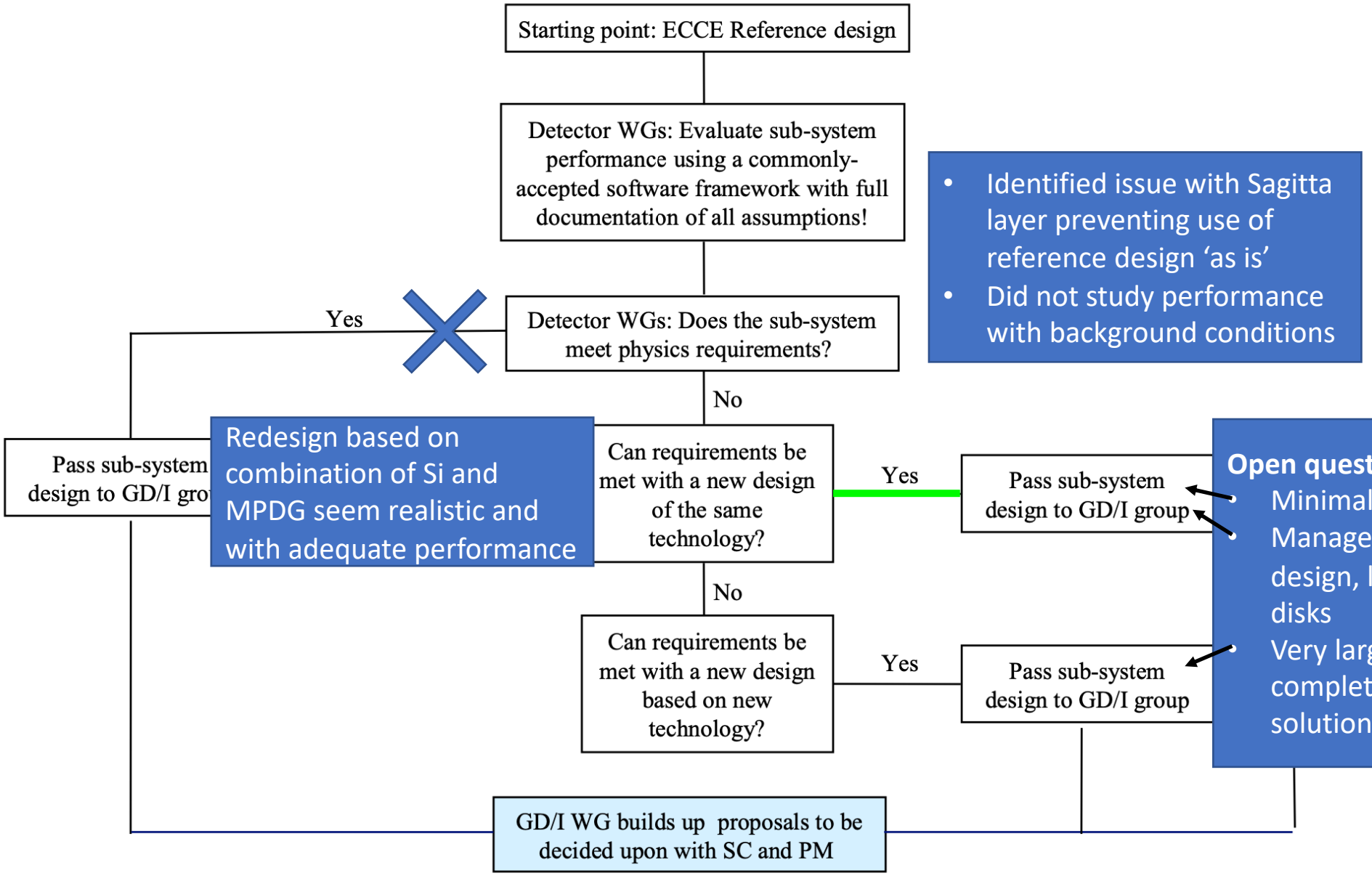


- Identified issue with Sagitta layer preventing use of reference design 'as is'
- Did not study performance with background conditions

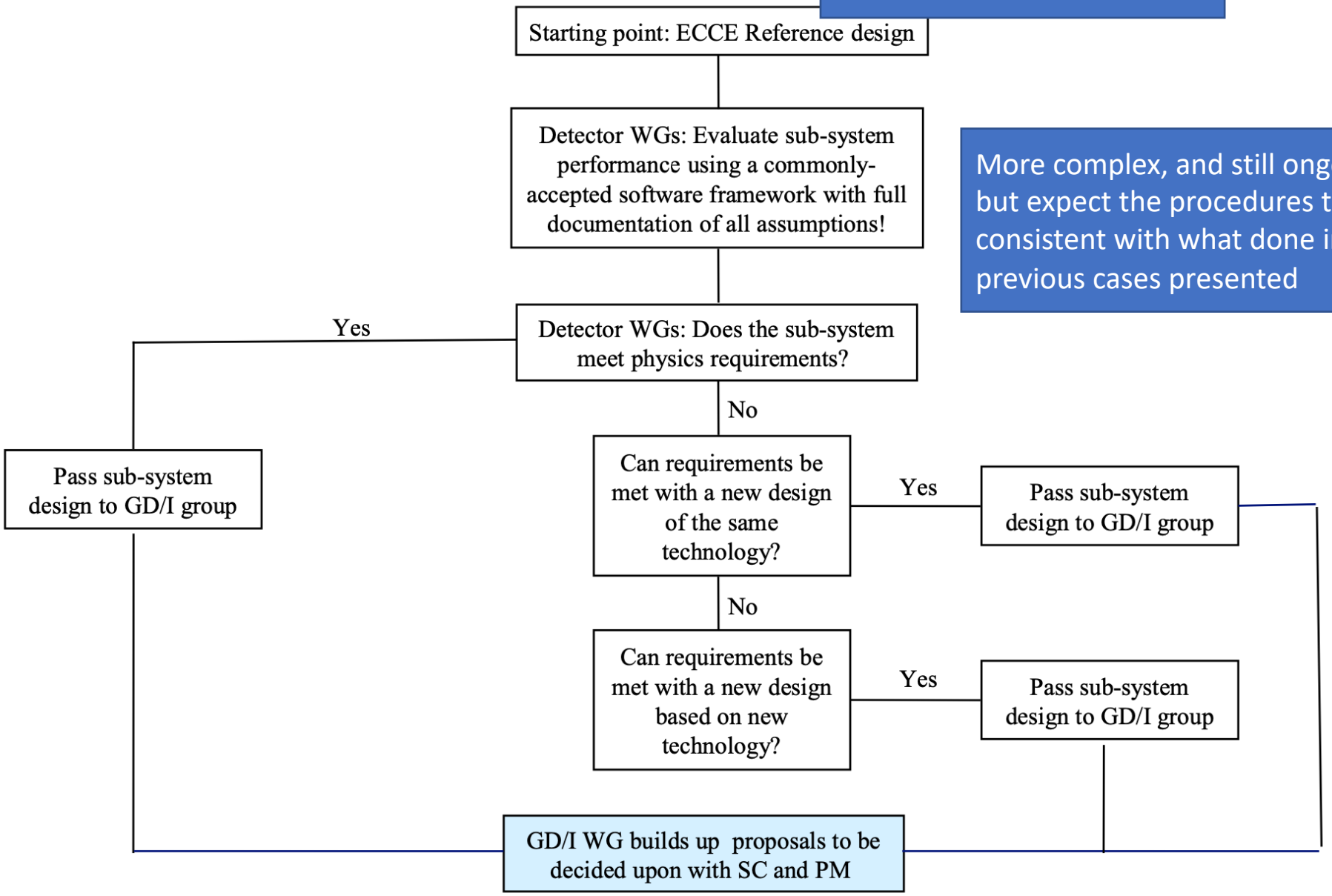
Open question: background

- Minimal: continue as now
- Manageable: similar design, likely w\ added disks
- Very large: might need a completely different solution

Consolidation Roadmap:

Barrel EMCal

Backward RICH



More complex, and still ongoing, but expect the procedures to be consistent with what done in the previous cases presented

Using reference design for systems not changed 12/31/2022

Where would change control be possibly needed for the examples we discussed?

Certainly:

- Barrel EMCal: SciGlass to Imaging
- Tracking solution that goes beyond Si+MPGD (if needed due to background)

Likely:

- Tracking solution that uses Si+MPGD, but with significantly increased cost
- Changing backward RICH readout from SiPM to LAPPD

Possibly:

- Backward RICH: mRICH to pfRICH

Changes adopted before end of 2022 (e.g Backward TOF) will be part of reference design

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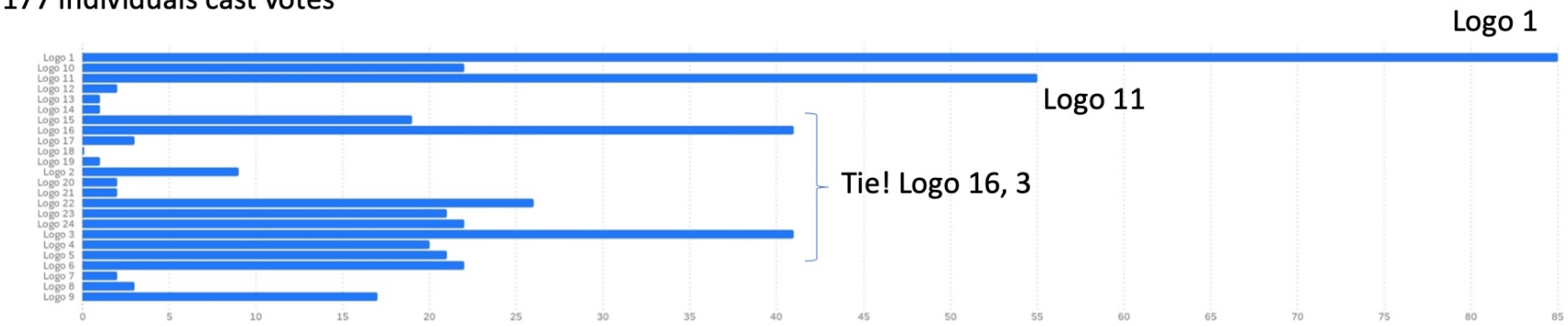
Expected schedule for ePIC internal processes:

- End of November: WGs+GD/I+SC issue list of internal systems reviews, including clear charge for what is included in each review.
- Second half of February: Internal ePIC reviews, possibly with help of external expert reviewers and project as needed.

Working with project to provide designer time for final four logos!

First Round Voting Results

177 individuals cast votes



Logo 1

Logo 11

Logo 16

Logo 3

Electron Proton-Ion Collider Experiment

Shown in August 25th bi-weekly

ePIC Interim Plots / Talks Policy

- The WG conveners are responsible for the approval of results for public presentation outside of EPIC WG meetings (talks, conferences, etc.)
- For purposes of this policy, “results” are represented by specific plots – approving a result means approving a specific plot. If old results are re-plotted with additional information (like adding new data or additional curves to the plot) this will require re-approval by the WG conveners.
  - Approved plots should be stored on the EPCI Wiki, including the following:
  - At least a high-resolution PDF of the plot, potentially along with other file formats (PNG, JPEG, etc.)
  - The plot should include the EPIC Logo and the words “EPIC Preliminary”
  - Each plot should include a description that includes the following:
    - The name of the person who produced the plot, along with the date
    - A description of what is in the plot, including the quantities on each axis, as well as the provenance of the data (simulation campaign, or tag, etc.)
- Ideally, newly approved plots should be highlighted in status reports at General Meetings so the full collaboration is aware of their existence.
- Talks that are specific to a WG’s purview should be circulated on the WG mailing list at least a week before the conference or workshop to allow review. Ideally, either a practice-run or walk-through of the talk should be schedule for a WG meeting prior to the conference or workshop.
- Global talks (on the EPIC detector/physics as a whole, for example) should be circulated to the collaboration mailing list at least a week before the conference or workshop to allow review. When necessary the SC may schedule practice talk/dry-run.

Time difference shift

Next week Europe will be moving to Winter time,
while EST will still use Summer time.

Meetings stay fixed to EST.

When in doubt about the time, ask google: