

# Moving Ahead with the SiD Conceptual Design



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# How Should SiD Respond to WWS Roadmap?

Roadmap calls for ½ year “open and intense” review of all concepts, guided by working groups on PFA, cal, tracking, vertexing, etc. Hope for spontaneous generation of two new, complementary concepts, growing out of the existing ideas. Four become two. Voila!

What do we do?:

- Participate in WWS Concept Reviews
- Step up recruitment/engagement of new collaborators, especially Asian and Europeans. Give them part of the action; get real contributions to CDR from them. (Harry will talk more about this)
- Get moving on the SiD CDR right after Beijing.

# Why SiD needs a CDR

- Optimize the global design already. Make sure it works. This has been our goal from the start; we are close to being able to do it.
- Develop an integrated design. This is the best way to see what subsystem R&D is really needed, what technologies to select.
- Preparing a CDR gives SiD a chance to engage new collaborators, give them a real entry, and go after new funding.
- Be ready to move to a Detector EDR soon after the Machine EDR (2010). Need to start now.

# Key Pieces of the CDR

(See Harry's Workshop Talk)

- Optimize global design. Fix B, R, Z.
- Define subsystem parameters/ Develop designs for all subsystems. Move beyond the DOD.  
No. of layers, pixel sizes, materials, dimensions,...  
Get to the level of the SiD tracker design. Needs engineering.
- Select subsystem technologies.  
Be definite, but allow alternatives where necessary.  
Identify needed R&D
- Develop the integrated detector design.  
Consider assembly, access, services, support, calibration, alignment,...  
Needs coordinated engineering.
- Prove it Works.  
Document subdetector performance  
Benchmark integrated physics performance

# Some Prereqs

Nearly there, but need to finish up.

- **Tools Ready**  
PFA's ready for global optimization  
Tracker pat rec code ready
- **Full MC Physics Analyses running**
- **New level of detail in SiD Simulation**  
e.g. Digitization and Tracker Modules  
More realistic geometry.

# Homework

- Subgroups prepare R&D Plans  
(HCal Group has done so. WWS Detector Reviews need this too)

Detail subsystem design

Characterize performance and costs of possible technologies

Develop Roadmap for technology choices

- Get SiD Engineering Started.
- Optimize the SiD Design

# Possible Milestones

(we need to agree on these)

- **SiD Workshop in April**  
Tools ready; R&D Plans developed; CDR kickoff
- **ALCPG Fermilab**  
Report on optimization, R&D progress.
- **SiD Fall Workshop**  
Design Frozen. Technologies selected.
- **Winter 08**  
MC Updated. Performance studied. Start writing.
- **Spring 08**  
CDR Draft ready
- **Summer 08**  
CDR complete