

## SiD Engineering R&D Plans

Goal -->Conceptual Design report by 2012

R&D to Achieve the Goal:

### MDI

- Continues to understand compatiability/differences issues with ILD
- Understand vibration/stability issues
- Build small test stand to verify calculations
- Understand Detector access
- Plan Detector assembly
- Beam pipe issues
- Layout Cryogenic System and Gas Systems
- Understand Push-Pull Issues

### Muon

- Understand Barrel Structure Module units
- End Wall Structure magnetic force deflections acceptable
- Understand End Wall Module units
- Understand Muon Detector Modules
- Determine Detector and Structure cracks and dead space
- Understand Detector alignment/supports
- Prototype a Barrel and end wall module
- Understand gas piping and signal/HV routing
- Understand Return Flux Issues

### Solenoid

- Understand Superconductor issues and whether larger safety margin can be achieved
- Prototype Superconductor
- Procurement specification
- Solenoid Supports to Muon System

### Hcal

- Understand Barrel Structure Module unit
- Understand End Wall Module units
- Conclude a Baseline Hcal Detector
- Understand Hcal Detector Modules
- Understand Detector alignment/supports
- Understand Module Supports to other modules and to Solenoid/Muon end wall
- Determine Detector and Structure cracks and dead space
- Prototype a Barrel and end wall module
- Understand gas piping and signal/HV routing....deadspace

### Ecal

- Understand Tungsten issues
- Understand Barrel Structure Module unit
- Understand End Wall Module unit
- Understand Detector alignment/supports
- Prototype a barrel module
- Understand Module Supports to other modules and to Hcal
- Understand cooling and signal /HV routing

### Tracker

- Understand Barrel Structure cylinders

- Understand endcap structures
- Understand module holders
- Understand Module Supports to barrels and endcap structures
- Determine support material required
- Understand Detector alignment
- Prototype a module holder
- Understand pulse power with 5 T magnetic field
- Understand air purge piping and signal/HV routing....deadspace

#### Forward Detectors

- Understand Barrel Structure cylinders
- Understand endcap structures
- Understand module holders
- Understand Module Supports to barrels and
- Determine support material required
- Prototype a module holder
- Understand air purge piping and signal/HV routing....deadspace

#### Management Duties

- Coordination
- Management Plan
- Cost Estimate

#### Manpower effort

Roughly ----- .5 FTE Physicist, .5 FTE Engineer, .25FTE Designer,.1 FTE Tech per year for each of the 8 major subsystems above