Scientific Computing Task Force

April 30, 2010 Report

Phase 1

- Charge: “Develop a plan for integration of LCLS offline into a centrally-managed activity within CD”

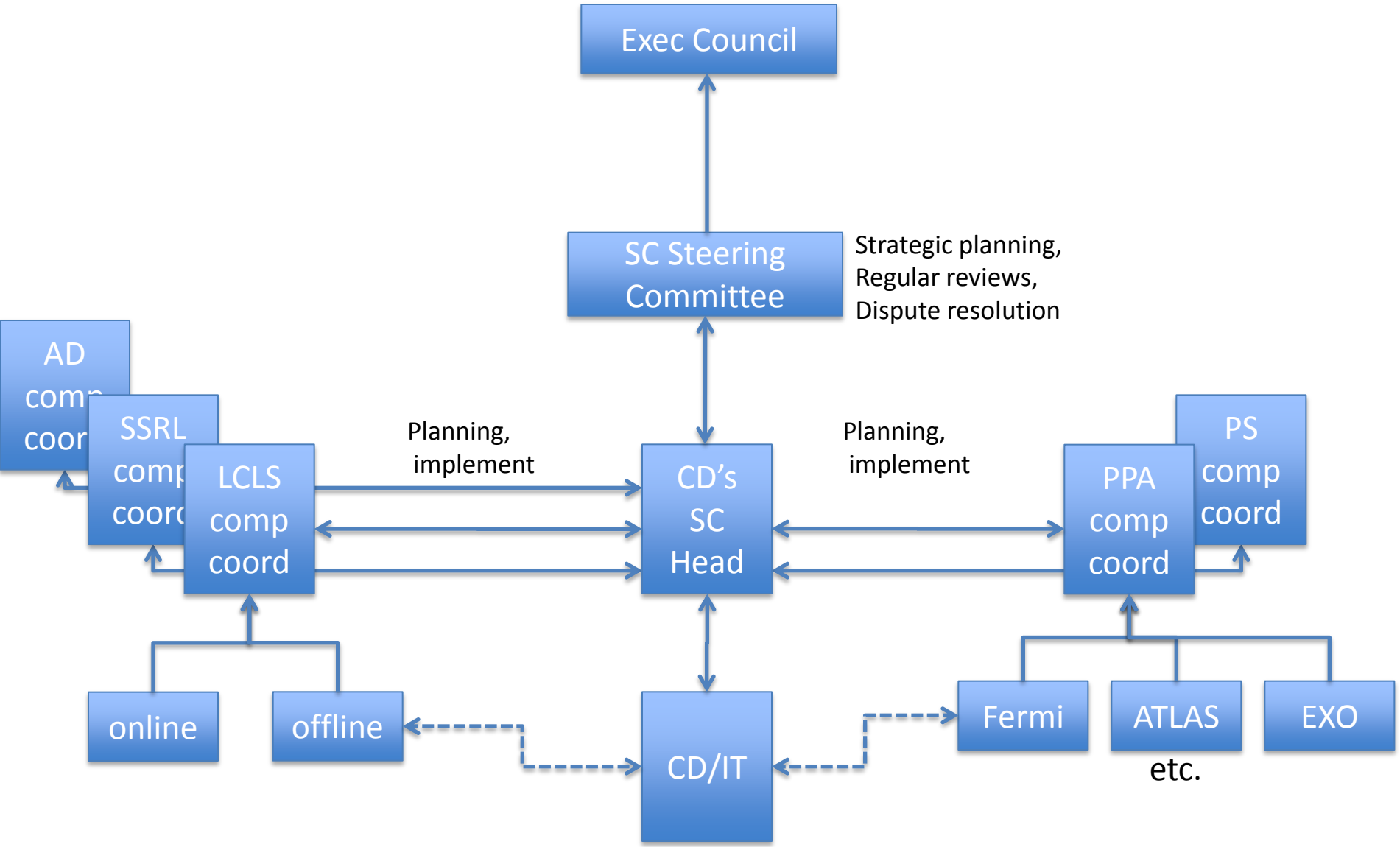
- LCLS and CD have partnered to design, acquire, implement and operate LCLS offline storage and processing

Phase 1 (cont.)

- LCLS offline designed and built with the goal to make transition to a centrally CD operated system seamless
  - Adopted technologies new to CD, but deemed of general interest to CD for future installations

- Currently using 2.5 FTE from CD; will be translated into the new recharge model once defined

Relationships Between Science Directorates and Computing Division


Exec Council
SC Steering Committee
Strategic planning,
Regular reviews,
Dispute resolution
AD comp coor
SSRL comp coord
LCLS comp coord
Planning, implement
CD's SC Head
Planning, implement
PPA comp coord
PS comp coord
online
offline
CD/IT
Fermi
ATLAS
EXO
etc.

Science Directorates

- Identify a Computing Coordinator as the point of contact with CD
- Propose overall plans for resources and technologies
- Define boundaries between online and offline if appropriate (e.g., LCLS)
- Define directorate-specific applications needed, and acquire staffing to implement them

Computing Division

- Scientific Computing Head works with Science Directorate Computing Coordinators to jointly plan resource volume and technology
- Coordinate development of the overall technology and resource roadmap
- Hardware acquisition, installation and support performed by CD personnel. Staffing levels result from regular (frequency TBD) roadmaps by SC Head. Recharge model must smoothly account for staffing needs

Computing Division (cont.)

- Project teams defined in CD work with Science Directorate client projects
- SC Head identifies technologies emerging from the Directorates as suitable for transition to CD
- Works with Science Directorates to identify the needed services and technology development areas by which CD provides value for money
- Critical to redefine the recharge model to achieve an affordable & fair division of costs

Coordination by CD SC Head

- Cross-lab sharing of ideas, techniques, etc.
  - Seminars, invited speakers
  - Training opportunities, e.g., GPU programming
  - Sharing software resources, e.g., licenses for tools
  - Sharing hardware resources, e.g., idle cycles
  - Funding partnerships, e.g., ASCR, LDRD
  - Technology and product investigation, e.g., low cost storage alternatives

Scientific Computing Steering Committee

- One member from each directorate; Operations directorate member from Computing Division
- Provides information and recommendations to SLAC Executive Council (Lab Director, ALDs, COO); and shares information with the CIO
- Reviews regular reports from CD's SC Head
- Attempts to resolve disputes, work out compromises, define priorities

Recharge

- Need new recharge model by end of June for FY11 budget planning
- Model needs more sophistication & transparency
  - Tiered charges based on complexity of systems
    - Some systems take much less effort than others
    - Includes a base that depends on the complexity of the system and a term that scales with size
    - Disk storage vs. tape storage
  - May need human evaluation to cost some cases
  - Set prices for “standard” configurations

Recharge Goals

- Encourage directorates to work with CD
- Encourage directorates to share resources
- Encourage CD to be innovative
- Encourage CD to provide a wider selection of services and expertise
- Allow small unfunded computational science efforts to explore, perhaps leading to new research funds

Next Steps

- Redesign the recharge model
  - Form a working group
- Implement the process model
  - Form the Scientific Computing Steering Committee
  - Select the CD Scientific Computing Head

Thanks

- Thanks to the task force members for all of their time and work for this report:
  - Yun Hai Cai, AD
  - Tom Devereaux, Photon Science
  - Richard Dubois, PPA
  - Gunther Haller, PPA
  - Don Lemma, CIO Operations
  - Amedeo Perazzo, LCLS
- Also thanks to Len Moss and Imre Kabai for organizational help