Annual PEMP reporting

Preparation of PEMP

- Continuing trend towards focused and succinct report
- Science editor engaged to help produce a uniform document
- No publication lists required, just bulleted responses
  - Goal Executive Summary for each program: A short introduction (1-2 paragraphs…Keep it short)
  - Accomplishments: Bullet items of performance accomplishments
  - Noteworthy performance and practices: Bullet items, if any are identified
  - Opportunities for improvements, major concerns or issues: Bullet items, if any are identified
- Deadlines! Grade/self evaluation: September 4; All science writing: September 11

Editorial assignments

- Editing for main PPA-related sections are divided into:
  - Accelerator Research [Tor Raubenheimer]
  - ILC [Tor Raubenheimer, Nan Phinney]
  - Elementary Particle Physics [David MacFarlane]
  - Astrophysics [Roger Blandford]
  - Scientific Computing [Steffen Luitz, Don Lemma]
- Input via SharePoint site
  - https://slacspace.slac.stanford.edu/sites/assurance/FY09PEMPSA/default.aspx

Goals 1-3

- Goal 1: Efficient and Effective Mission Accomplishment
  - Objective 1.1: Science and Technology Results Provide Meaningful Impact on the Field
  - Objective 1.2: Provide Quality Leadership in Science and Technology
  - Objective 1.3: Provide and Sustain Science and Technology Outputs that Advance Program Objectives and Goals
  - Objective 1.4: Provide for Effective Delivery of Science and Technology
- Goal 2: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities
  - Objective 2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., Activities Leading to CD-2)
  - Objective 2.3: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, Post CD-2 to CD-4)
  - Objective 2.3: Provide Efficient and Effective Operation of Facilities
  - Objective 2.4: Utilization of Facility to Grow and Support Lab's Research Base and External User Community

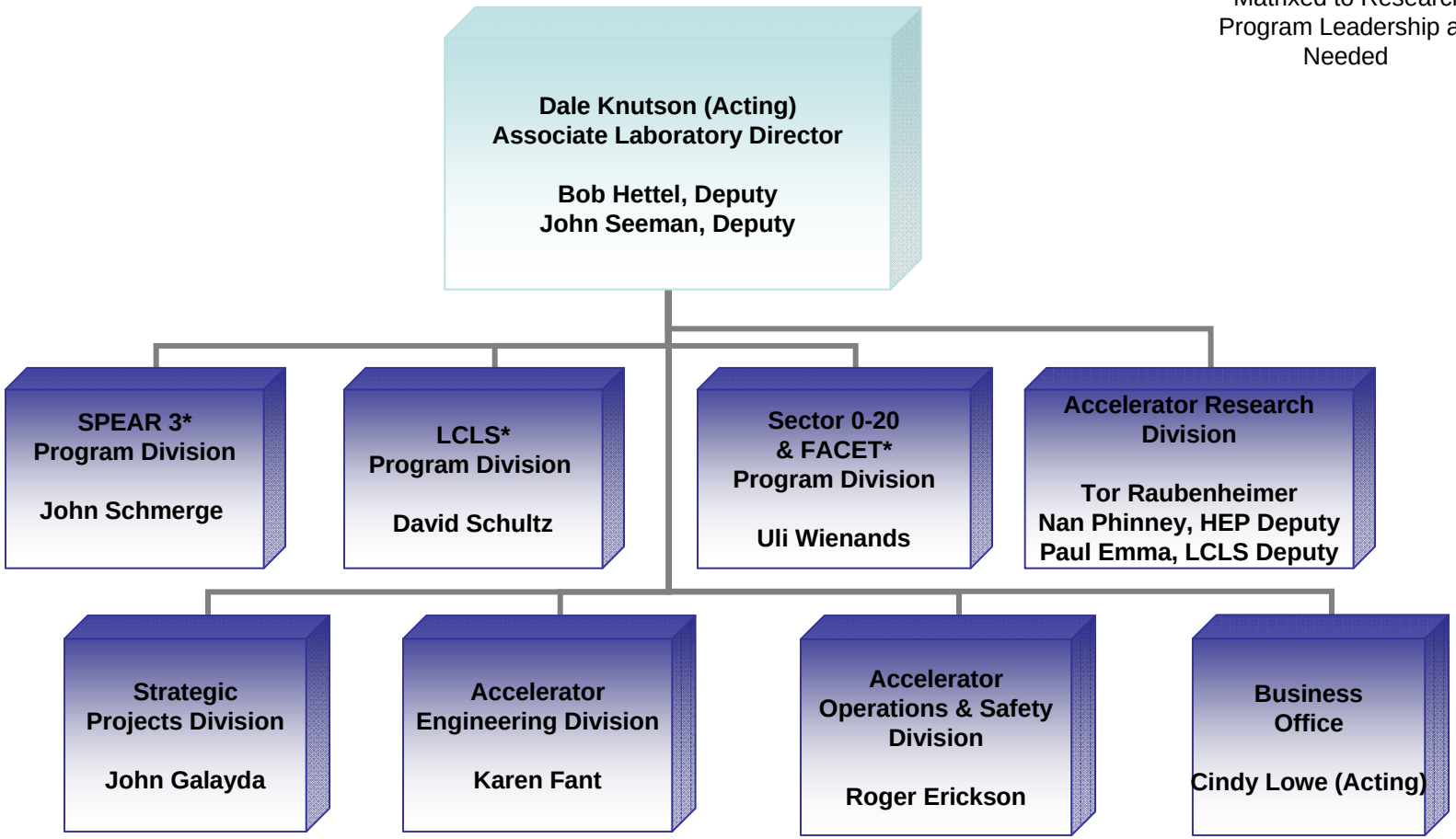
Goals 1-3

- Goal 3: Provide Efficient and Effective Science and Technology Program Management
  - Objective 3.1: Provide Effective and Efficient Stewardship of Scientific Capabilities and Program Vision
  - Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program Planning and Management
  - Objective 3.3: Provide Efficient and Effective communications and Responsiveness to Customer Needs

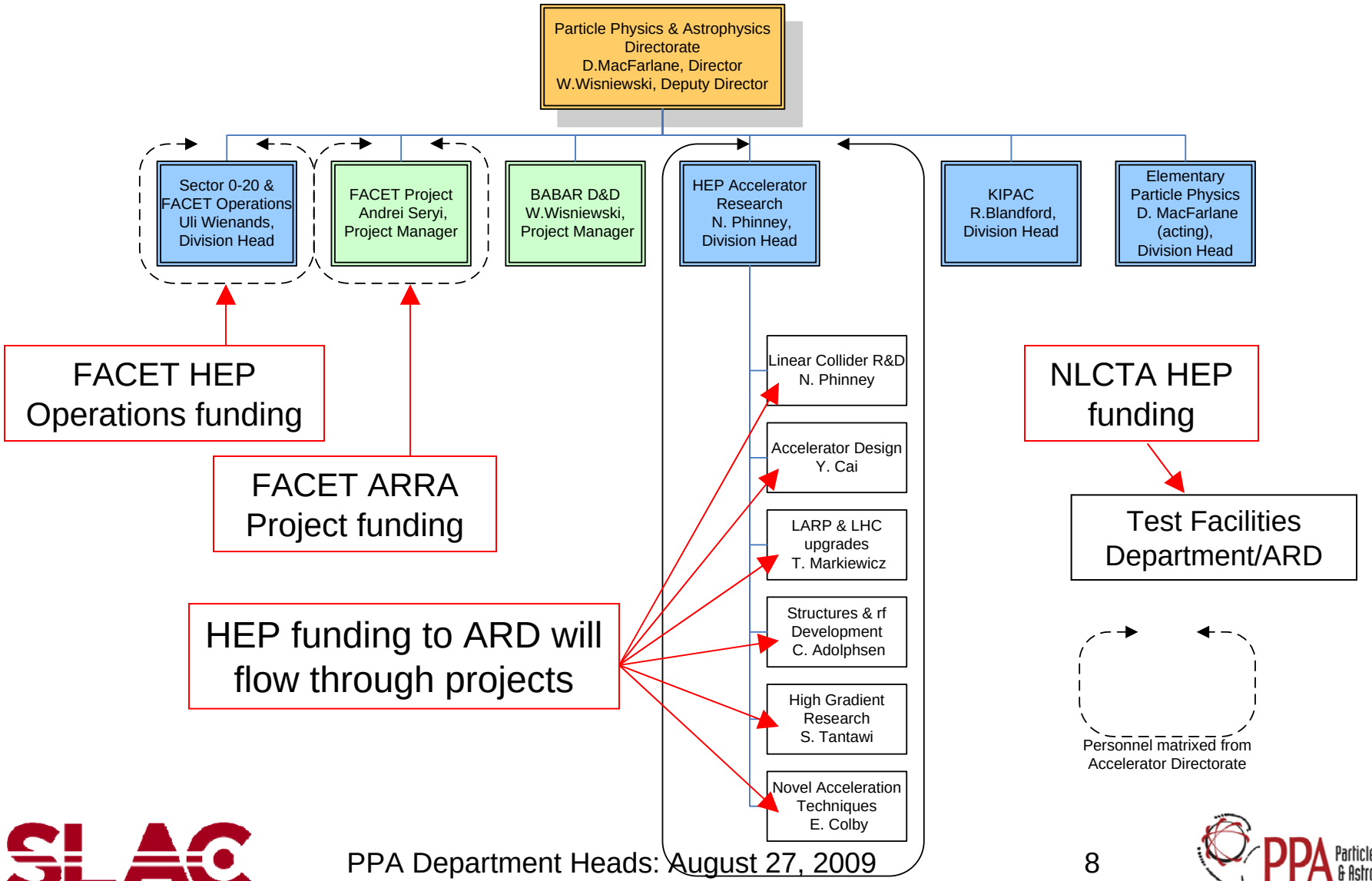
Update on Accelerator Directorate implications for PPA

AD Organization Chart

*Matrixed to Research Program Leadership as Needed



New PPA organization



Mapping of B&R codes and CAMs

Program	B&R codes	CAMs
Linear Collider R&D	ILC – KA1502021	Management, System Int, Acc Physics – CAM: Nan Phinney Damping Rings & Electron Cloud – CAM: Mauro Pivi Sources – CAM: John Sheppard Beam Delivery Systems – CAM: Andrei Seryi Global Systems – CAM: Ray Larsen
LARP LHC Upgrades	LARP – KA1102053 Acc Dev – KA1502011	LARP & LHC Upgrades – CAM: Tom Markiewicz
Accelerator Design	Acc Sci – KA1501020 Acc Dev – KA1502011	Beam Physics & Collective Effects – CAM: Yunhai Cai Accelerator Computation – CAM: Kwok Ko and Cho Ng SuperB Accelerator – CAM: Mike Sullivan LLRF and Feedback – CAM: John Fox
RF & Structure Development	ILC – KA1502021 Acc Dev – KA1502011	RF & Structure Development – CAM: Chris Adolphsen
Novel Acceleration Research	Acc Sci – KA1501020	Laser Acceleration – CAM: Eric Colby Plasma Acceleration – CAM: Mark Hogan
High Gradient Research	Acc Dev – KA1502011	High Gradient Research – CAM: Sami Tantawi

Briefing on HEP Computing

August 25 in Germantown

SLAC Program in a Nutshell

Ongoing

Particle Physics

BABAR analysis
ATLAS
EXO
SiD R&D
Theory

Particle-Astrophysics

Fermi GST
Computational cosmology

Accelerator

Simulations

Projected

Particle Physics

CDMS
SuperB

Particle-Astrophysics

LSST
AGIS

Capabilities and Projects

		BABAR	GLAST	ATLAS	LSST	JDEM	KIPAC	LCLS/ PS
established	DAQ/ trigger	✓	✓	✓	✓	✓		✓
	Space systems					✓		
	Pipeline processing	✓	✓	✓	✓	✓		✓
	Petascale datasets	✓		✓	✓		✓	✓
developing	Petascale databases	(lessons learned!)			✓	✓	?	?
	MPI/SMP	some analyses			some analyses		✓ ✓	✓✓ (imaging)
	Visualization		✓?		✓	✓?	✓✓	✓
new R&D	Advanced CPU/GPU use			will need someday			✓	✓

Summary of Issues

- Transition to multi-program business model
  - Facility: site power and cooling limits make **any** additional hardware a challenge, let alone major upgrades from ATLAS, LSST and LCLS
  - Evolution of Linac Operations (BES) support for computing leads to uncertainties in future business model
  - HEP computing no longer BABAR and Detector Operations dominated, but overall HEP computing needs remain large and benefit from efficiencies of scale
  - SLAC coming to grips with overall IT requirements and transition in business computing model
  - New CIO/Director of Computing Division will help define new directions and strategies
- Opportunities for support of existing and future community tools
  - Need to maintain an appropriate level of contribution to the community – G4, xrootd, SPIRES, Root
  - Possible new opportunities supporting data management for small experiments and flexible simulation tools
  - Would like to create headroom to innovate at frontiers of scientific computing

Model for HEP Computing?

- Elements of program
  - Identified community software tools: typically multi-institutional collaborations, proposal driven
    - GEANT4, SPIRES, xrootd
  - Identified community toolkit support: no need to reinvent tools for each new small experiments
    - Simulation/reconstruction toolkit, data management toolkit
  - Future scientific computing R&D
    - Core team model augmented by specific projects, similar to Detector R&D approach
    - Typically ~50% support for core developers on HEP computing to provide stable platform
    - Could span both hardware and software capabilities
      - Petacache, GPU-approach to simulations
      - Petascale database development