



U.S. DEPARTMENT OF  
**ENERGY**

Office of  
Science

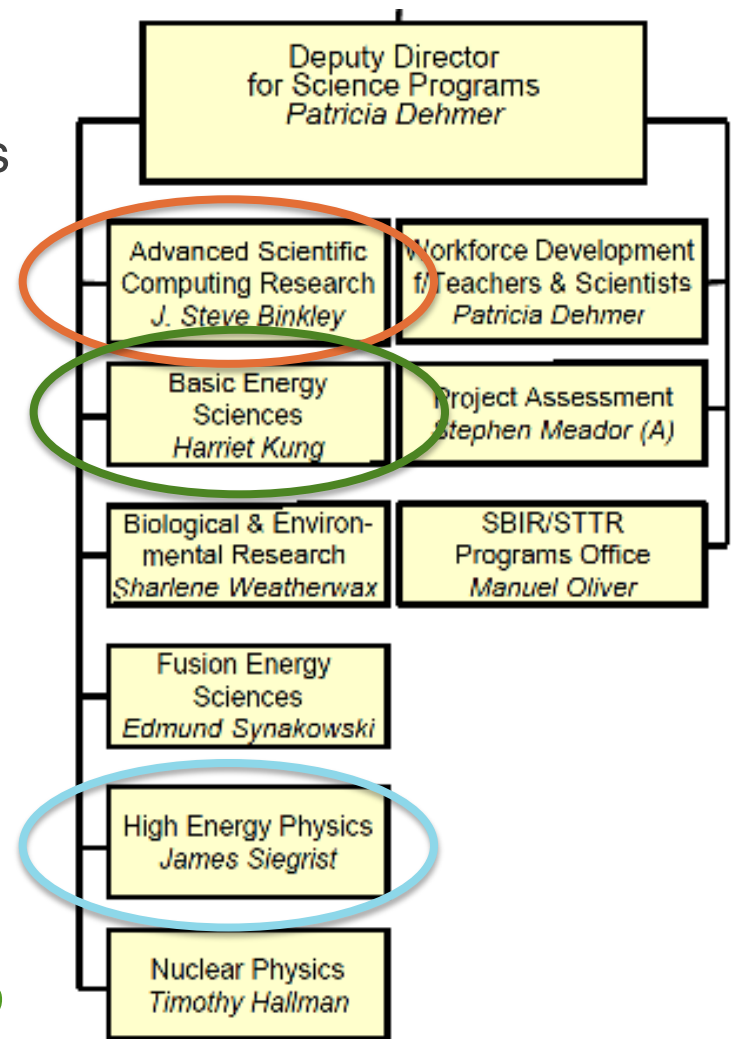
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# DOE Funding Opportunities

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# DOE funding landscape

- Computing and computational activities interdisciplinary, but DOE funding model not set up to easily support such programs
  - Different offices mainly focus on the portfolio of their specific domains
  - There are partnership programs for common or complementary activities
    - Not as common, harder to create
    - Funding usually remains segregated flowing to “domain” researchers from same “domain” offices
      - But at least resources are leveraged
- To first order, relevant offices
  - HEP (direct)
  - ASCR (partnership and direct, but partnership an advantage)
- BES a target of opportunity for partnership



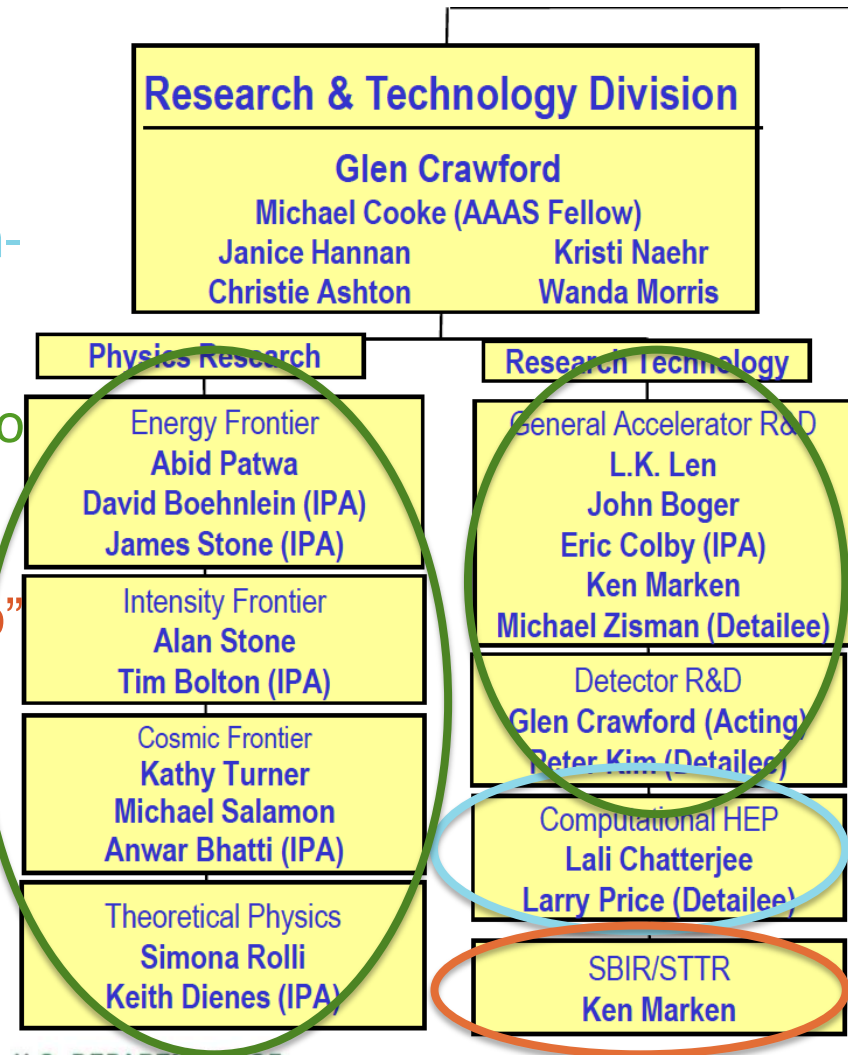
# Partnerships

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- In general, by partnership define
  - a) a project with some HEP thrust receiving services (effort on software, expertise) from a non-HEP funded entity
  - b) a project with some HEP thrust providing capabilities to a non-HEP entity (thus receiving resources to develop these common capabilities)
- The **first type** more common (partnerships with ASCR, SBIRs). The **second** less common, but a goal of and an incentive for a HEP software collaboration.
  - If successful, collaboration provides: coordination, common infrastructure, standards... all very appealing features for a potential partnership

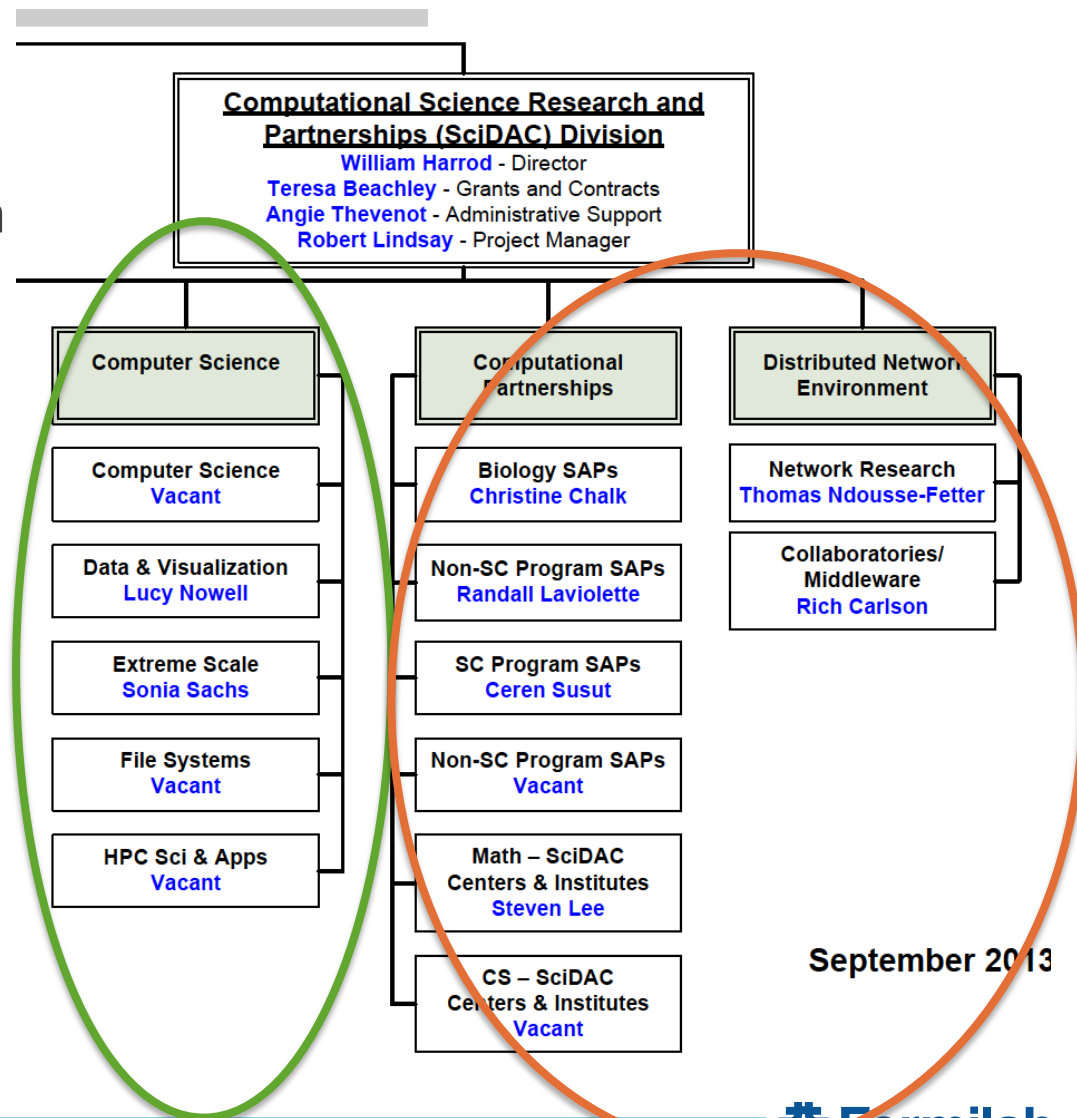
# HEP opportunities

- Even within HEP, supporting a coordinated computational program has to obey certain boundaries:
  - Computational HEP program for **non-specific R&D**
  - Other programs for deployment and infrastructure development **specific to their needs**
    - E.g., LHC computing
  - SBIR program a **“special partnership”** with small businesses
    - Objective, technology transfer
  - Makes coordination of a coherent program almost as complex as the partnerships across offices



# ASCR opportunities

- ASCR setup to manage partnerships with other offices
  - Funding has to come from all partners
  - Partnership has to leverage capabilities from the “**Computer Science**” programs to develop applications for the partner’s domain
- More difficult to obtain direct R&D funding for traditionally non-ASCR organizations
  - But has been done...
  - Advantage for multi-purpose organizations



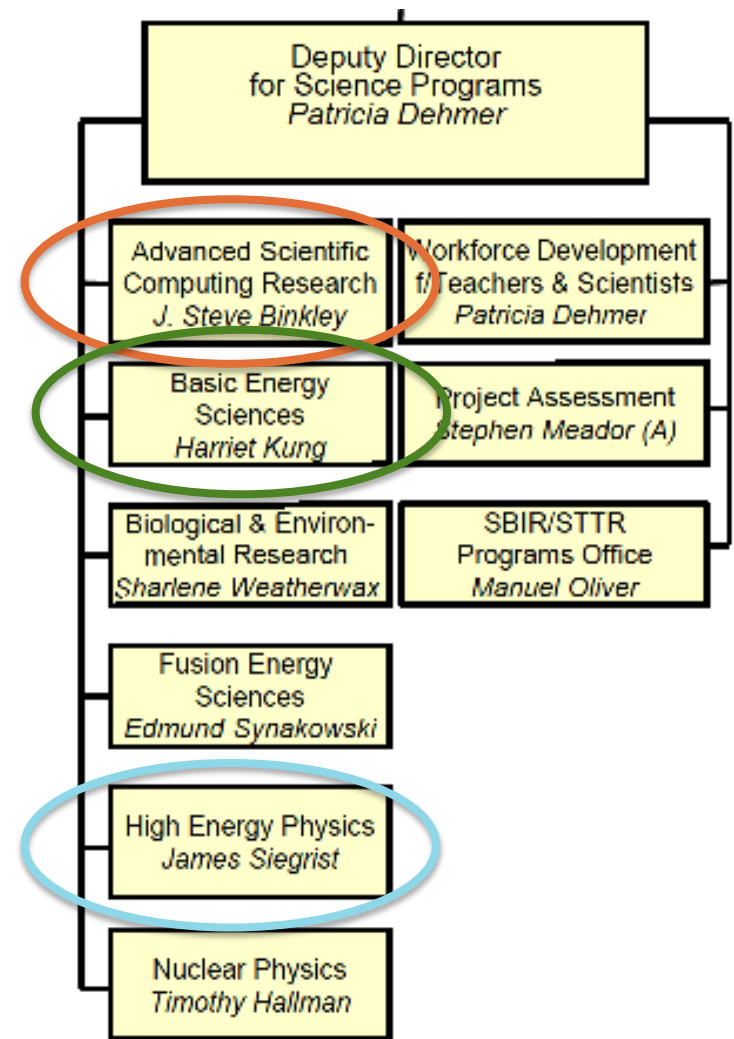
# Current DOE-funded computational projects

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- Under the SciDAC program (partnerships with ASCR)
  - Accelerator modeling (ComPASS)
  - Cosmology
  - Lattice QCD
- SciDAC-like (partnership with ASCR but not competed under the SciDAC call)
  - G4 re-engineering (focus on new architectures)
- Computational HEP (R&D FWPs)
  - Framework R&D on new architectures
  - Cosmology simulation workflow development (PDACS)
    - Coordinated with workflow development for experiment (DES and LSST) and aiming for a complete system
  - G4 porting on HPC platforms

# Future possibilities

- The hunt for exascale (new architectures) will generate possibilities for partnerships
  - R&D for algorithms
  - Collaboratories and workflows
- Partnerships with offices that could benefit from HEP software capabilities
  - **BES** a prime candidate
    - Current and next generation light source experiments much more like HEP
  - Note that BES and NP had joined partnerships with HEP under SciDAC1-2



# The HEP software collaboration

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- If successful, the HEP software collaboration will enhance the probability of collaborating projects to secure R&D funding from different offices (direct or partnership).
- The collaboration should be able to produce appealing proposals to relevant programs that focus on infrastructure and laboratories.