

Responses to S&T Homework Questions -- II

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Q1: Please enumerate the operational responsibilities within PHENIX/STAR that are carried by members of the local BNL group and the approximate number of group FTEs associated with each of those responsibilities. Identify any group responsibilities that are new or have grown or declined significantly in scope over the past two years.

Local BNL STAR Group Responsibilities

TPC Hardware:	1	FTE (new)
TPC Software:	1.2	FTE (expanded)
FTPC:	0.5	FTE (new ~2008)
TOF:	0.9	FTE (new)
pp2pp:	0.75	FTE (new)
Upgrades:	1.45	FTE (expanded)
DAQ/Runtime	2.25	FTE
ZDC	0.55	FTE
Magnet	0.15	FTE
Online QA	0.1	FTE
Ops/Run Coordination	4.4	FTE
Computing	6.7	FTE
		(includes production, infrastructure, calibration, simulation)
Technical support group	8	FTE
		(includes Electrical Engineers, Electrical and Mechanical Technicians, one designer)

Local BNL PHENIX Group Responsibilities

14.75 FTE's non-scientific staff:

Safety systems, power systems, gas systems, cooling systems, mechanical and electrical engineering coordination, detector maintenance and repair, Work Planning and Administration (Collaboration admin for 250 visitors/year)

11.75 FTE's scientific staff:

EMCal (1.5), ZDC/SMD (0.25), MPC (0.25), HBD (0.5), DAQ (1.5)
Online/Offline computing (1.75), Tracking (0.5), Magnets (0.25),
R&D (1), VTX (0.75), Run coordination (1.0),
PHENIX Management (1.5 includes operations on, visitors,
budgets, publications, reporting),
Detector & DAQ support (0.75), Online monitoring support (0.25).

New responsibilities MPC+HBD+VTX = 1.5 FTE's.

Expanded effort: detector & DAQ support (0.75)
online monitoring support (0.25)

Q2: Over time, collaboration members or institutions may substantially change their interests and roles and/or depart (e.g., to work on LHC). In cases where those members or institutions carried operational responsibilities within the collaboration, how are new people identified to pick up those responsibilities?

Both collaborations try to find existing or new collaborating institutions to pick up the abandoned responsibilities, with mixed success.

PHENIX: Almost all subsystems have multiple institutions with shared responsibilities. When we perceive that an institution is not fulfilling its responsibilities we work with the subsystem managers to either strongly encourage the under-performing institution to fulfill its commitment, or we try to get other institutions on a subsystem to pick up the slack. Failing in both those efforts we actively look for new institutions (new to the subsystem, not necessarily to PHENIX) to join the effort. The last resort is to have BNL take over the effort. BNL has never had to completely take over an abandoned subsystem, but there are many gaps that have had to be filled within subsystems by BNL. Its a chronic problem, not an acute one.

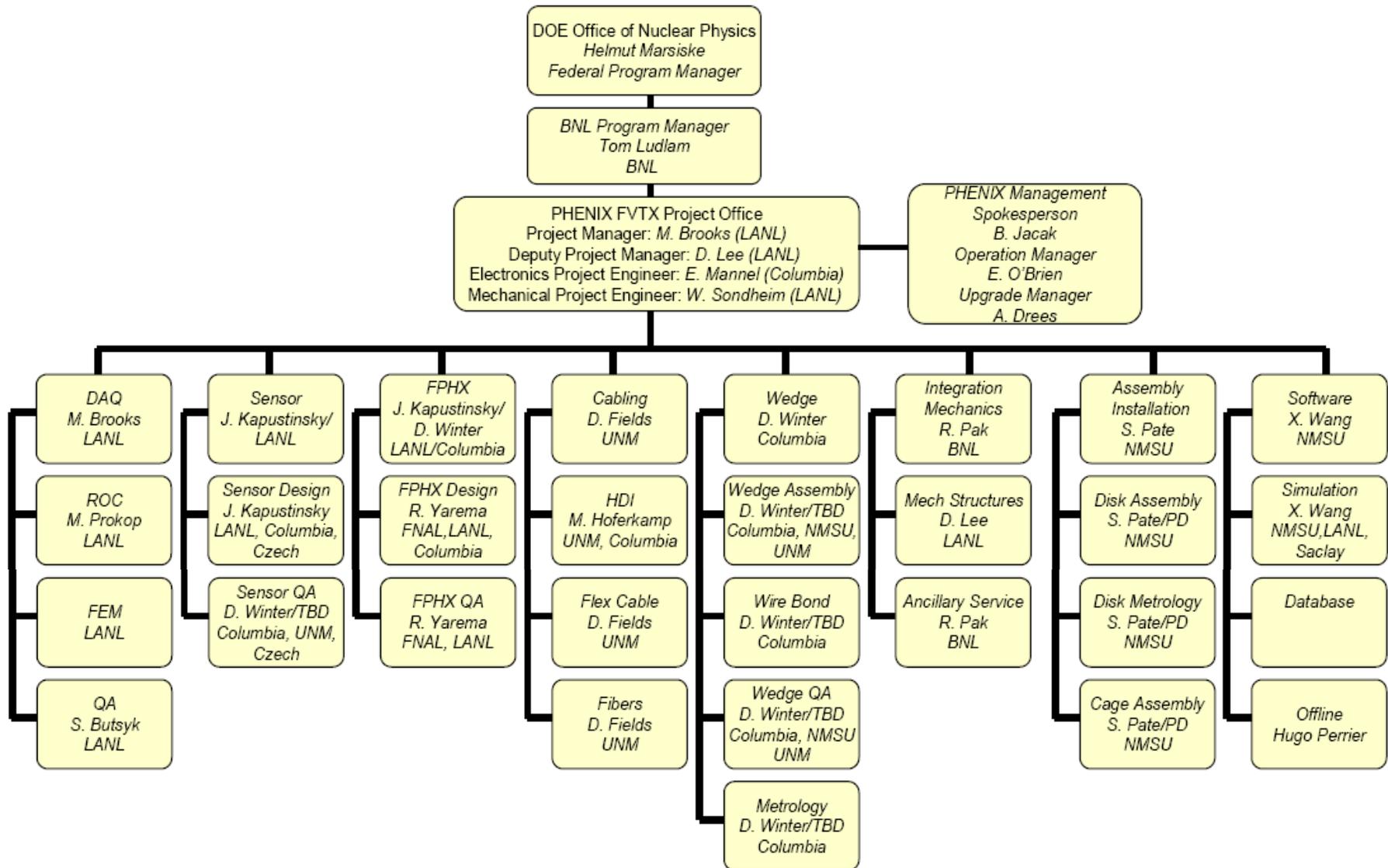
STAR: Occasionally collaborating university groups working on similar subsystems have expanded their roles (e.g., Indiana, UCLA and MIT taking over some barrel EMC responsibilities for Wayne State), but most often the burden falls on national lab groups. The problem is exacerbated by funding agency decisions. For example, after Blair Stringfellow retired, DOE eliminated funding for a TPC guru at a collaborating university, and a small team led by Jim Thomas (LBNL) and Alexei Lebedev (BNL) has filled in. However, it is not clear that the current situation is a stable, long-term solution. Similarly, British funding decisions have forced Birmingham University to leave STAR, complicating a replacement for John Nelson (who is retiring) to cover trigger software responsibilities. The Collaboration is considering an application for membership from a new institution that may be able to fulfill the trigger duties. Deputy Spokesperson Helen Caines has led a recent effort to redefine MOUs and service roles for all STAR collaborating institutions. Expanded efforts from foreign institutions (Russia, India, China, South Korea) are helping to fill voids in coverage of responsibilities.

Q3: Describe the “organization chart” for project management of capital equipment and MIE projects, i.e., what is the “wiring diagram” from Vigdor to the project team?

The organization charts for project management of MIE projects are explicitly given in the Management Plans that DOE requires, of which copies are included on the S&T documents web site. An example of such an org. chart is given on the next slide. These show a line of responsibility that flows upward from the project managers to the "BNL Project Oversight Manager" (Ludlam), to DOE. There is a parallel line of responsibility, described in the Management Plans, that states that the Collaboration management has overall responsibility for the successful execution and scientific operation of the detector (PHENIX or STAR), including the upgrade, and that the overall responsibility for the RHIC experimental program lies with the BNL ALD (Vigdor). In practice, Vigdor is kept abreast of project progress and issues by Ludlam and O'Brien, as well as by Collaboration and project management, and he discusses strategy for successful project completion and timelines with all of the above.

The “wiring diagram” is the same as the above for the larger Capital Equipment projects.

Example of MIE Project Organization Chart: FVTX



Q4: Describe the process PHENIX and STAR use to generate MIE and Capital Equipment proposals to the BNL management, i.e., what is the “pre-project” process?

Most upgrade projects are brought forward by the collaborations through long-term planning exercises organized by the collaborations themselves, or by BNL (or both). These include the decadal plans requested from each of the experiments in 2003, the Mid-Term Plan exercise that took place in 2005, and the RHIC II Science workshops of 2006-2007. The latter two involved the entire RHIC community working together in extended workshops and town-hall style meetings that produced the white paper describing the key measurements for the RHIC II era, and helped to clarify the need for specific upgrades. A call from the BNL ALD for new decadal plans to propose upgrade paths for the next decade is anticipated soon.

Capital Equipment and MIE projects normally begin as R&D efforts that are typically, but not always, supported by R&D funds from the RHIC operations budget (the R&D lines in the Mid-Term Plan spread sheet). Each year, through the FWP process, the local STAR and PHENIX groups make 3-year plans for R&D and capital equipment requests. These requests are based on internal collaboration decisions and priorities. These requests follow budget guidelines set by BNL management, and are informed by interactions between BNL and DOE. At the beginning of each (normal) budget year, BNL provides initial R&D budgets to the collaborations and asks for priorities. This is followed by an iterative process to determine a final allocation of funds.

Q4, continued...

Proposals for capital equipment and MIE projects are developed within the collaborations, usually as a result of ongoing R&D work, within which the core teams develop. These proposals are presented to BNL after internal collaboration review. For projects >\$1M these projects are reviewed by BNL, with outside consultants, for scientific need, likelihood of success in meeting science goals and suitability of project scope. When BNL is satisfied, they are presented to DOE. We then begin the process described at this review by Ludlam and O'Brien.

