

JLab Hall D Computing Staff

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Introduction

In this note I estimate the number of JLab staff needed to help develop and maintain Hall D computing hardware and software systems. I further comment on management strategies for these efforts, mainly from a JLab perspective. How JLab management and Hall D group coordination coexist needs further discussion.

Scaling from CLAS is difficult in this case since Hall D needs a sophisticated computing system and highly reliable software very early in the experiment (e.g. portals and grids, Level 3 trigger, simulation, etc.), and we are planning to implement a distributed computing environment from the start. Further, there are large uncertainties in the level of support we can expect from the universities. In contrast, scaling from CLAS for hardware support personnel was straightforward.

Below I assume JLab Hall D staff will develop and maintain the Hall D online computing system, lead the development of the early Hall D core software and computing infrastructure, and will share the remaining work with university personnel. I further assume JLab Computer Center staff will maintain the silos, offline farms, networks, software, etc. needed to transfer Hall D data to the central storage facility and to process part of the Hall D data.

In previous notes I performed similar analyses for detector and hardware support staff, and discussed non-Hall D online computing staff (DAQ, Computer Center, etc.), and Hall D online system management staff.

Distributed environment

We plan to maximize participation by university personnel through use of a portal-based grid computing environment. Here the entire computing framework is based on internet accessible tools so that it makes little difference where developers or users work, assuming they have high-speed internet connections. The scientific community is devoting a tremendous amount of manpower to making grid and portal systems work, and we will build on these efforts.

Note that successful implementation of these models requires a large up-front effort at JLab to develop the necessary infrastructure.

Management at JLab

Management of the Hall D online effort must be performed by JLab staff due to the intimate connection between the online, detector hardware, JLab environment, and personnel involved. I propose a single position be created to manage the Hall D online, coordinate the Hall D online group, and supervise all online personnel.

Coordination of the Hall D offline group may be performed by university personnel, although supervision of JLab offline personnel must be done by JLab staff. If the offline coordinator is not a JLab employee JLab offline personnel could be supervised directly by the Hall Leader or by a local JLab offline supervisor. Alternatively, the online group manager position could be expanded to become the head of JLab Hall D computing, covering both the full online and the local offline effort.

Role of JLab Hall D personnel in online

The online group's responsibilities include DAQ hardware and software, trigger system, computers and networks, Level 3 farm, slow controls, databases, monitoring and alarm systems, event format, etc. This group must work closely with the offline, electronics, and detector groups. Staff recommendations below assume non-JLab personnel will contribute significantly to the Hall D online effort.

Role of JLab Hall D personnel in offline

Although JLab will be one of many institutions working on Hall D offline reconstruction and analysis, development of critical components needed early in the experiment might best initially be led by JLab staff. These include the grid/portal infrastructure, the initial simulation, reconstruction, and calibration frameworks, database schema, data formats, data distribution schemes, etc. Staff recommendations below assume major contributions from non-JLab staff to the Hall D offline effort.

Role of university personnel

So far few university groups in Hall D are primarily committed to computing and software development, and it is difficult for groups developing major detector components to also be responsible for major pieces of the Hall D computing system.

Major university tasks include setting up simulation, analysis, and PWA analysis farms. The Hall D calibration farm may also be set up by university personnel although it will likely be located in the Hall D counting house. University groups are expected to play a major role in the development of simulation, calibration, reconstruction, and analysis code. Finally, we expect significant university contributions to the online effort, implying long-term deployment of

university personnel at JLab.

Role of JLab Computer Center personnel

As with CLAS, the Computer Center will need to maintain the data transfer and storage infrastructure, networks, simulation and reconstruction farms, etc. used by Hall D at JLab, as well as assist with system management tasks in the counting house. We expect most or all of the first pass reconstruction will be done at Jlab, but that most of the simulation and analysis of Hall D data will be done at the universities.

Hiring Timelines

Fiscal Year	1	2	3	4	5	6	7
Hall D Staff (long-term)							

Physicist (online)	0.5	1	2	3	3	3	3
Physicist (offline)	0.5	1	2	3	3	3	3
Computer Professional				1	1	1	1

Sub Total	1	2	4	7	7	7	7
Jlab Staff (non-Hall D)							

Computer Center			1	1.5	2	3	3

Sub Total			1	1.5	2	3	3

Total	1	2	5	8.5	9	10	10

Last updated on the 8'th of August, 2000 by cmeyer@ernest.phys.cmu.edu.