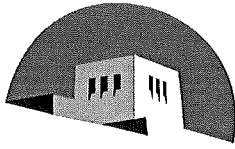


Sally Seidel



The University of New Mexico

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Prof. Ian Shipsey, Purdue  
Dr. Marcel Demarteau, Argonne National Laboratory

Dear Ian and Marcel,

Thank you for the opportunity to comment on issues being addressed by the task force.

1. A National Instrument Board

A national body to promote instrumentation R&D would be valuable. I'm not sure that the group should also evaluate R&D efforts, as that process seems to be already adequately handled within the context of large experimental efforts (for example LHC Upgrade detector communities), generic programs (for example US groups involved in CERN RD collaborations), and peer review of journal submissions.

2. Targeted resources at national labs

I'm of two minds about this.

On the one hand, I can see that this proposal could have practical value in the case of equipment that would be difficult to justify placing at a university if it would be used there only rarely. Ultra-expensive, ultra-specialized equipment might be best located at a central place. The challenge would be to make the program work as well for the universities that are remote from the labs as it would for the universities that are near. If universities have to devote significant resources to traveling to the lab, or residing at the lab, this initiative would be less likely to succeed. Solutions could be as simple as expanded support for facilities that simplify communication between lab-based engineers and the university personnel: file sharing tools, transparent conferencing facilities, and so forth.

On the other hand, if mishandled, this program could lead to depleted support for productive university-based instrumentation research. I am in favor of the funding agencies continuing to support engineers, technicians, and equipment purchases at universities if those universities have projects for which those technical people and that equipment are in demand.

Thus: it is important to establish clear guidelines about the categories of equipment and support that would be provided by the national centers.

### 3. National instrumentation fellowship program

This is an excellent idea. It's reminiscent of NSF Graduate Research Fellowships and National Defense Science and Engineering Graduate Fellowships, but more focused. Care should be taken, during evaluation of the proposals, to ensure that smaller institutions doing worthwhile instrumentation research have some platform from which to compete with large institutions.

### 4. Instrumentation school

I strongly favor the creation of an instrumentation school. The ICFA instrumentation schools and IEEE short courses provide a good model that could be extended and broadened. It's not clear to me why the venue would be restricted to national labs; the accelerator school is not. Responsibility for organizing this school could be borne by the National Instrumentation Board.

### 5. Interdisciplinary links

Yes, opportunities to forge strategic links should be developed. Grants that require joint participation by PI's from different academic fields might help---I'm thinking of an analog to existing fellowships that support people from developing countries to work with people from developed countries on research of mutual interest. If such a program were created, I would recommend that it be directed toward joint academic or national lab PI's, as SBIR's already respond to this issue for industry.

### 6. A national prize

I don't see any drawback to this.

kind regards,



Sally Seidel

**Priscilla  
Cushman**

### **Task: A National Instrumentation Board.**

There should be some sort of National Instrumentation Board. It would be easiest to tie it to DOE and to the National Labs, and indeed this may be the quickest way to proceed. A staged approach is probably a good idea. However, it would be useful to create an entity that has some independence and has ties to NSF and NASA. If we eventually create a model that works, it could be expanded to other scientific fields as well. The JOG exists as a cross-agency entity, can we model it on this?

A taskforce goal should be to unify the various means by which people receive funding for projects. At the moment, it is impossible to track multiple funding sources for the same project – which therefore tends to starve smaller projects which always fall below the line and over-reward the high profile projects.

The National Board would establish panels in each subfield that would collect information from the relevant on-going projects and future proposals. The subpanels would prepare extensive lists of instrumentation needs in that field, as well as a frequently updated website with new advances and directions. The list of needs would be prioritized and made public. These sub-panels would NOT be responsible for awarding funds. A different set of panels would be charged with reviewing instrumentation proposals. These proposals would be made by researchers or projects in full cognizance of the prioritized list of needs.

### **Task: A national instrumentation fellowship program.**

National Instrumentation Fellowships is an excellent idea. It also is fundable – investing in people is recognized as a high returns investment. It is also a much easier to track progress and administer awards to researchers rather than to a particular project with multiple investigators and income sources.

Recipients: Several different programs targeted at different groups

(a) Postdocs and grad students

(b) The program should also be open to young faculty who are NOT in a tenure track job. Currently it is virtually impossible for such researchers to get funds – certainly the career awards and most other funding stipulates a tenure track job or postdoc status.

(c) Established Faculty. While targeting young researchers, there is also a need for mid-career scientists to bring projects to their institutions or to become involved for a sabbatical year with new instrumentation. I would suggest an additional program based on a year sabbatical at a Laboratory or other University to work on instrumentation.

(d) Industry internship. Industry connections are best made by interchange of personnel. University engineering departments have much expertise in these connections and could give some advice. Educational internships are very effective.

Process: As a means to advancing instrumentation, we should consider in what way we can make this a model for as much of the support as we can. I would suggest parallel systems of evaluation panels, where the project needs are prioritized by one panel of experts in the relevant field, and published on a public website – and another panel which awards instrumentation research money to people. Researchers are encouraged to examine the needs published on the website in order to make their research proposal as relevant as possible.

Pitfalls: University infrastructure has steadily declined as the National Labs have taken over much of what was done in specialized electronics facilities or engineering high bays. This program might provide yet another drain of promising researchers away from the Universities. The taskforce should examine whether there could be infrastructure grants for Universities – similar to the NSF MRI program, but without the excessive pre-proposal stage which penalizes large research Universities. The program would concentrate on HEP-related infrastructure.