James S. Murday, University of Southern California

Subject: Comments on NNI Draft Strategic Plan - with emphasis on Education
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While I like much of the new Strategic Plan, it is seriously flawed with respect to its education component (or more to the point, lack thereof in the new PCAs).

The PCAs are the mechanism to track funding - without explicit education "metrics" in the PCAs the education goals in Goal 3 will not be achieved. Table 4 misrepresents the attention to education - it is secondary at best, not primary.

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Attachments:
NNI Draft Strat Plan Comments.docx 145 KB

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Global

None of the five new PCAs address education and work force development in a meaningful way. The NNI is walking away from the educational commitment stated in Goal 3, even as: a) it claims the nanoscale can inspire student interest in STEM, b), there are pressing workforce needs, and c) the President is touting an initiative in STEM education.

The NNI/NSET faces a decision – to wimp out and allow the education component to diminish into nothing of value, or to issue a call to action. This strategic plan does the former. SHAME

If one is brutally honest, the education/workforce investment by NNI agencies has been small, dominated by NSF, and has been dropping. The NSF EHR nanoscale programs are largely five years gone, the NSECs are retiring (along with their education component) and won't be replaced (although the ERC and MRSEC programs will fund some efforts at the nanoscale). The NNIN has an education component, but is a "lick and promise". There are a couple of ATEs with a good nanoscale education component. No other agency has anything of consequence. The NNI/NSET inattention to education is exemplified by the absence of even one sponsored workshop focused on the topic, in contrast to the many others that have been sponsored.

There are numerous education artifacts that have been created under the NNI aegis, but most are local in application, unknown by anyone but their creators, and not ready for big time use. Now is a critical time to focus attention on quality and scale up. Rather than attempting to address/fix this problem, the draft strategic plan effectively ratifies a divesture by deemphasizing education.

Perhaps a signature initiative in nanoscale STEM education? Most of the agencies should have an interest. Under the new Presidential STEM education plan NSF, ED and Smithsonian have most of the monies. But DOD is retaining a significant program in education, and some other agencies will also have monies. And together the NSET agencies should be playing a role in advising how those funds are directed to address nanoscale education issues.

Detailed suggestions

Page 3 line 3
still vital rather than young. Depending how you start the clock, nano is 20-30+ years old at this point – no longer young. (DOD began its first nano program about 1978 – called it ultra-sub-micron since "nano" was not yet in vogue).

Page 4 line 33
…are required to inform the general public, prepare the decision makers (managers, insurers, financiers, regulators), and ….

Page 5 line 12
…and scientists/engineers…

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Page 8 line 4
Advancing nanoscale measurement science, standards and technology….

Page 24
Goal 1 should have a specific objectives toward guiding, influencing, leveraging – the Materials Genome Initiative
The NNI does not exist in a vacuum and should be formally interacting with other national initiatives – especially those that have very strong nanoscale dependence.

Page 25 line 6
Nanotechnology offers a paradigm (not at all clear what is "common")

Page 27 line 4
The title states up to 5 NSI and there are now 5.
Any new NSIs will require stopping one of the present NSIs – what are sunset procedures?

Page 33 line 1
Develop, vet, publish and disseminate
Too much material of dubious quality for the educational community. The NNI must institute a mechanism to vet the materials prior to publish/disseminate.

Page 34 line 4
Some of the specialized ….
Not all specialized equipment is prohibitively expensive.

Page 36 Figure
The recycle line/arrows need attention
No line to consumer use
Line from product end life box should have an arrow pointing up, not down.
Should have arrows pointing down from product end of life to the landfill and incinerator boxes.

Page 37 line 14
Mention PPE – personal protective equipment

Page 37 line 15
High-priority need is a source (not a repository)

Page 37 line 20
If you mention successes then you must also mention failures. Otherwise it appears the NNI is covering up problems. I suggest simply deleting successes.

Page 37 line 30
Another potential new approach is open sharing of the individual NNI agency's specific research priorities.
This hasn't been happening already??!!! Makes the NNI/NSET look really foolish.

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Page 41 Table 2
<u>None</u> of the five new PCAs address education and work force development in a meaningful way.

Page 52
Several of the solid dots are incorrect and should be open dots:

Goal 1 columns 4 and 5 – four out of five, or all of the sub categories are secondary, so the overarching must be secondary as well.

Goal 3 column 4 – Obj 3.1 and 3.2 are secondary, not primary

Page 59 line 23
The revised PCAs are better aligned…
This assertion is emphatically not true for the education / workforce development part of Goal 3.