

Comments from DPRI External Reviewer

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Introduction

The comments are influenced in part from my service on the University of Washington Graduate Council from September 2000 to June 2003. The Graduate Council has the responsibility of assisting the Dean of the Graduate School conduct reviews of all Graduate degree programs every ten years. Each department or unit presented materials on budgets, educational accomplishments, and the scholarly growth of the faculty and plans to maintain a vibrant faculty. This also included strategic plans and contingencies for anticipating changes in staffing.

I have also been involved for more than a decade with helping develop the Plan that guides the activities for the American Geophysical Union. My earliest involvement was in 1993. We were new to the activity then and many items included in the plan reflected our lack of experience. We were overly optimistic on what we thought could be achieved. All those involved in preparing the three-year plan now have more experience in how long it takes to make changes. A guiding principle is to follow four steps when planning. Those steps involve assessing: “Strengths”, “Weaknesses”, “Opportunities”, and “Threats”. Any plan element has to be measurable with a realistic budget and time frame for reaching it. An example of a major shift that included both opportunity and threat was the change to electronic publication. There were huge uncertainties associated with that change.

The comments are also influenced from my experience serving on the University of Washington College of Engineering Promotion and Tenure Council. The job of this council is to provide recommendations to the Dean of Engineering on the suitability of proposed senior academic appointments and promotion and tenure cases. The council evaluates faculty from the ten departments that constitute the College of Engineering. There are approximately 200 tenure-line faculty members in the engineering college. The Dean then makes recommendations to the President of the university.

DPRI Self Assessment

The self assessment was most helpful as was the material in Document A-1. The presentations by the various divisions and centers were most informative. The time and effort that all colleagues put into preparing for our visit was deeply appreciated.

My Assessment follows two major themes:

1. DPRI’s achievements in the last five years in the context of the 1998 review, and
2. Opportunities and challenges for the future.

1. DPRI’s achievements in the last five years in the context of the 1998 review

I generally agree with the overall group self assessment for each item from the 1998 external review.

Specific issues raised in the 1998 review:

G-1-2 Cooperation and Interactions Between Groups

There are overlaps in research activities in the various divisions and centers. For example, studies of soil liquefaction are conducted by at least three groups. This can be beneficial if there are close collaborations that draw upon the diverse engineering and scientific skills of the individual teams.

G-3-1 Comprehensive Integrated Research

There are many remaining opportunities to exploit here. The work of the Division of Integrated Management for Disaster Risk appears to be most effective at combining the skills from multiple disciplines from the social sciences through decision sciences, physical sciences, and engineering to address disaster mitigation.

R-1-2 Publish in International Journals

This is being done. The Division of Earthquake Disaster Prevention appears to have made the strongest response to this 1998 recommendation. Continue to increase the fraction of papers published in international journals, but choose the highest quality journals. This is a major opportunity to continue to showcase the excellent research you do.

R-2 Evaluating individual performance

Develop clear criteria based on the quality of work published in top journals. The frequency of publishing differs by discipline. Some disciplines communicate frequently with short papers. Others do so less frequently with more comprehensive longer papers. It is unwise to set some arbitrary number of papers (or other forms of publications) to measure productivity.

Contributions in significant professional leadership positions are important but these are in addition to the fundamental core of scientific or professionally relevant published work. Major editorships (and associate editorships), and major leadership roles in professional societies are important. All focus national and international attention to the quality of the DPRI professional staff and the importance of their work.

Faculty mentorship of students is important and should be strongly encouraged, valued, and rewarded. The placement of graduates in prestigious positions is an important part of the work of DPRI.

Diversion from primary contributions as a DPRI educator and research leader, through major time commitments in offering courses at other universities, most likely will not be beneficial to DPRI in the intermediate- to long-term and should be discouraged.

E-2-1 Graduate Student and Post-Doctoral Fellows

The number that is appropriate for each group needs to be determined. It will be a function of the overall group mission and available career paths for these colleagues. It was not clear in the self assessment how such numbers have been determined previously and how they will be determined in future. This requires most careful consideration.

Remaining Issues – 1998 Review

Assessment of most of the remaining issues in the previous assessment all depend on articulating a crisp Mission Statement and choosing appropriate research by groups and between groups.

There is one remaining major issue:

DPRI faculty and the entire DPRI would benefit by becoming the national leader in working to increase the number of women colleagues. This number will be “about right” when a large fraction of the professorial positions are held by women.

Mission Statement

DPRI’s future will be closely bound to a time varying articulation of what the staff members want the mission to be. Many opportunities will open up within five years given the age structure of professors with retirements. The changes in governance structure for Japanese universities offer many entrepreneurial opportunities. Priorities need to be developed within this framework.

A Proposed Mission Statement:

I offer for consider a proposed mission statement:

“DPRI is committed to developing the science, engineering, and management skills needed to mitigate natural and man made disasters for the primary benefit of the Japanese people as well as being a world renowned center of excellence in disaster mitigation and management with particular emphasis in Asia”.

I think you need to have the mission statement that you adopt as the first item that a reader sees on the DPRI www site.

2. Opportunities and challenges for the future

Communicating what DPRI does.

There is a wide range of outreach activities at many levels within DPRI. What are the major aims of “outreach”? At one level it is general education. At another it is technology transfer. At another it is explaining to society the need for both new science and new applications of findings. Do you specifically wish to reach:

- Interested people in Japan,

- Knowledgeable people in Japan,
- People outside Japan,
- World scientists, engineers, and disaster management experts?

The www and improved bandwidth have opened new possibilities for many aspects of communications. There could be considerable benefits from filming major lectures and making them available as downloadable “webcasts”. Examples of webcast lectures are available from many organizations. You could consider the potential utility of this medium by viewing examples at the American Geophysical Union’s web site at:

<http://www.agu.org/webcast/archive.html>.

Have you considered an “on-line newspaper”? An example of possibilities can be seen in “The New York Times” and their coverage for the December 2004 Bam earthquake in Iran. The www viewer could read science based discussion of the hazard, view pictures and video, as well as reading about how international relief work was done.

- Can comparable approaches be used by DPRI to provide a hierarchy of explanations from the equivalent of newspaper information through the reports contained in “Annals”?
- Would partnering with one or more major newspapers be an effective opportunity? Readers of the online version of the newspaper would be directed to background technical and other analyses on a DPRI web site.

DPRI’s Future

What will be the role of DPRI when the science of the fields of study matures to the point when conveying what has already been learned or included in management strategies is most important? This will influence staff considerations when positions become available through retirements or if there is an increase in resources.

DPRI’s future role in education

An article in a January 2004 issue of “The Economist” indicated that the demographics in Japan are such that there will be more open positions for students in Japanese Universities than there will be students to fill them in about 5 years time. How will this affect DPRI?

Recent activities provided opportunities for 25 COE post doctoral research workers. What opportunities and career paths exist for these post doctoral colleagues?

Showcasing DPRI Work

It is important to showcase the three to five highest visibility successes that you have had that demonstrate the effectiveness of DPRI? This could be a dynamic activity that is updated every couple of years.

One example that has obvious potential is the stunning architecture of Kyoto Railway Station and the research work done by DRPI that helped provide the advanced engineering design standards that made that work possible.

Education of Foreign Students

DPRI is becoming increasingly an international educational organization. How can you be more attractive to international students?

English has become the second language of the world and is the language of science and engineering.

- What are the possible merits of presenting all graduate lectures and seminars in English?
- What is the advisability of writing all theses and dissertations in English?

DPRI 2001-2002

The summary report “DPRI 2001-2002” contains information about the principal activities for the two-year period. DPRI is important to Japan and increasingly around the world.

- What mechanisms are available to convey the importance of the problems you address and the significance of the science?

Various US organizations provide readily accessible information that is valuable to the general public as well as specialists. It takes considerable effort by scientific writers to prepare such information. For example, NOAA and the USGS (there are many other agencies) in the US provide information in the form of fact sheets and graphs that can be readily used by congressional staff to advise members of congress. They include:

Graphs of flood damage losses as a function of time
Loss of life in floods as a function of time (annual summaries)
Slide damage and loss of life.
Fact sheets on issues of floods and droughts.

Examples are given at:

<http://www.disastercenter.com/flood.htm>

http://directory.google.com/Top/Science/Earth_Sciences/Natural_Disasters_and_Hazards/

<http://water.usgs.gov/wid/indexlist.html>

<http://water.usgs.gov/wid/index-hazards.html>

DPRI staff members have a considerable amount of material of this nature that would be most useful to society. DPRI should become the first place that citizens check for such information.

It will take considerable resources to develop and keep such material current. The faculty and staff are already fully committed. Consideration will need to be given to employing a small, highly skilled, technical communications staff of perhaps two or so professionals who are not involved in research. One member would need to be a skilled science writer of the caliber of Dr. Richard Kerr, who reports on the physical sciences for the American Association for the Advancement of Science in the journal “Science”.

Remaining General Issues of Education and research activity:

There are issues associated with your broad educational mission and the research findings that could be made more explicit. The following questions can all be addressed with some explanatory text that accompanies the DPRI mission statement.

- What are the principal purposes of educating MS and doctoral students at DPRI?
- What are the employment opportunities for your graduates?
- How are research findings adopted into:
 - The practice of the profession?
 - Decision making groups for implementation?
- What is the career path for a Research Associate? This should be carefully articulated.
- Who in Japan has responsibility for “Emergency management”
- Who are the clients for research finding or solution systems on:
 - Reservoir system management?
 - Landslide science and monitoring?
 - Tsunami inundation?
 - All forms of flooding?
 - Land use generally?
 - Lifeline/integrated disaster research?
- How is disaster preparedness integrated into “life cycle engineering”?
- Are disaster design methodologies “fail-safe” or “safe-fail”?

As an example, are buildings designed to fail so that they are unusable after failure but fail safely enough such that loss of life is minimized through collapse, fire, or exposure of building occupants to extremes of climate?

- How are major research themes determined?
Page 3-6 “CREST” offers an example of a major research theme, but no indication of how this was chosen is given.

Major Opportunities

The age distribution of the faculty and staff is such that many appointments will need to be made in the coming decade.

- A plan for future staffing (both for replacement and new initiatives) needs to be developed immediately.
There will likely be a change of focus of various groups.
- There should be major opportunities for determining how disaster research can be incorporated into the major rebuilding of urban infrastructure that will occur in the next decades and this will likely influence the directions of the activities of DPRI.
Integrative planning, for example, to minimize future urban flooding risks by having fewer below ground structures will require a different emphasis than has been appropriate until for DPRI.
- DPRI has an extraordinary opportunity to capitalize on the exceptional space that is available at the Ujigawa Hydraulics Laboratory. This could and should be a national and regional research center.

It will require staffing at a level with on the order of fifty active research workers and will need substantial new funding. This will necessitate a major commitment from the entire water research community in Japan and the national government.