Assessment of the NHSE Software Submission and Review Process

Shirley Browne
Tom Rowan

October 23, 1995

Abstract

An NHSE software submission trial run was conducted to facilitate evaluation of the submission and review process. This document describes the experiment and assesses the current state of the NHSE software submission and review process.

1 Introduction

In mid-July of this year, the NHSE began accepting submissions to its software review process. In addition to opening the submission process, we solicited software submissions from particular authors. These solicited submissions along with early unsolicited submissions served as a trial run of the NHSE software submission and review process. The experiment's purpose was to assist us in assessing and improving this process. This document assesses the submission and review process using results from the experiment and from our subsequent experience.

The document begins with an overview of the submission and review process. The experiment's description and results are then presented. The document concludes with an assessment and some possible courses of action. The forms used in the experiment and its evaluation are included as an appendix.

2 Overview of Software Submission and Review Process

Contributors submit software to the NHSE by filling out an HTML form using a forms-capable WWW browser [1]. This form explains the submission and review

[1] The NHSE software submission form is accessible at
`http://www.netlib.org/nse/software_submit/software_submit.html`

process, including the authentication procedures, and gives an example of a completed submission form. After submitting the form, a contributor receives a plain-text version of the submission's NHSE catalog record. The author uses his public NHSE-certified PGP key to sign the catalog record and then mails it back.

Once an author's software submission has been authenticated, it is processed according to the requested review level. Currently three levels of software are recognized in the NHSE:

Unreviewed. The submission has not been reviewed by the NHSE for conformance with software guidelines. This classification is for unreviewed software available on an "as is" basis.

Partially reviewed. The submission has undergone a partial NHSE review to verify conformance with the scope, completeness, documentation, and construction guidelines. These particular guidelines are those that can be verified through a visual inspection of the submission.

Reviewed. The submission has undergone a complete NHSE review to verify conformance with all the software guidelines. This classification requires peer-review testing of the submitted software. This level may be further refined into additional levels in the future.

If the software has been submitted for partial review, the NHSE librarian inspects the submission for adherence to the NHSE software guidelines.

To be accorded the reviewed status, the software must first have been accorded the partially reviewed status. This ensures that reviewers will have all the information needed to conduct the review.

Software submitted for full review is assigned to an area editor, who recruits two or more reviewers to review the software. Reviewers ensure that the methods and programming methodology are of acceptable quality and test the software on data sets provided by the author. Each reviewer returns his comments and recommendation to the editor in charge of the review. The editor makes the final decision as to whether to accept the software and informs the author of the decision.

If the software is accepted, the author will be shown a review abstract summarizing the reviewer comments. This abstract will be available to anyone who accesses the software through the NHSE. If the author finds the abstract unacceptable, he or she may withdraw the software and resubmit it for review at a later date.

3 Software Submission Experiment

We asked authors of selected software packages to submit their software to the NHSE for partial review. Two unsolicited submissions also were received during this period. The following table summarizes the packages' solicitation and submittal dates, as well as the ultimate disposition of the submission.

```
#solicitations = 11
#solicited submissions that were received = 5
#unsolicited submissions that were received = 2
```

Package	Date solicited	Date submitted	Status
TIPSY	June 28	July 17	PR
VMD	July 24	July 31	PR
namd	Not solicited	July 31	PR
SciAn	June 28, July 17		No reply
ScaLAPACK	June 28	July 4	PR
AIMS	June 28		Postponed
SparseLib++	July 24	July 25	PR
VolPack	July 24		No reply
PMHS	July 24		No reply
PVM	July 24		No reply
PETSc	July 27		Declined
PACT	Not solicited	July 11	Rejected
VPE	Not recorded	June 6	PR

The partial reviews of the submitted software uncovered a couple of problems with particular packages.

- Sparselib++ would not compile on partial reviewer's system. After checking with the author we eventually determined that the package doesn't conform to the latest version of the C++ language standard.
- PACT contained code we could not distribute without the permission of the authors of Numerical Recipes.

After we returned to submitters reports on the partial review of their submissions, we sent evaluation forms to everyone who participated or was asked to participate in the trial run. Two different evaluation forms were used, one for those who participated and another one for those who did not. Copies of these forms are included in the appendix. The wording of the evaluation form sent to one participant, the PACT authors, was modified slightly so that the form did not say their submission was part of the NHSE software catalog. (The PACT package has been removed from the NHSE because of the distribution limitations.)

A total of 13 evaluation forms were sent out, 7 to participants and 6 to nonparticipants. 1 of 7 participants and 4 of 6 of the nonparticipants responded to the survey. The following summarizes the responses.

```
Responses from participants:
-----
        Confusing forms and PGP
-----
Responses from nonparticipants:
-----
        Lack of time
        Can submit later?
-----
        Lack of time
        Will submit later
-----
        Lack of time
        Confusing form
-----
        Confusing how to update
-----
```

Of the packages accepted into the NHSE with Partial Review status, none have as yet been submitted for full review. Since the initial solicitations for the software submission experiment we have received one additional submission to the NHSE for partial review.

4 Conclusions

Although we intend to continue improving and simplifying submission procedures, NHSE security requirements impose certain minimal authentication procedures that can not be completely relaxed out of convenience considerations. The submission procedures may appear to be less of an obstacle as the user community and as mailers and other tools become more PGP-aware.

The feedback and the number of software submissions for review suggest a need for improved incentives for overcoming the perceived difficulties of going through the submission process. In adopting courses of action to improve incentives the following factors should be considered.

- In contrast to journal article review, software review is not a requirement for professional advancement. Note however that without sufficient incentives for developers to submit software of their own accord, pressuring developers to submit could in the long run be counterproductive.
- Although abstracts of the software reviews are to be made available to NHSE users, reviewers are anonymous and therefore of unknown quality to the submitter.
- Developers may believe a package can be better showcased through its own Web page than as part of the large NHSE collection.

The partial reviews of Sparselib++ and PACT suggest the potential benefits of even a rudimentary review of software submissions. For Sparselib++, the author indicated that the information in the partial review report will result in code and documentation changes (improvements). For PACT, the partial review avoided potential legal problems by identifying code the NHSE was not authorized to distribute.

Reviews that provide authors with valuable feedback, as was the case with Sparselib++, could provide incentive for submissions. The feedback will enable the author to improve the code, and the NHSE and users will get a better product as a result.

The NHSE needs to represent a mutually beneficial arrangement between the NHSE, users, and developers. Currently the biggest challenge to this arrangement is ensuring that software developers clearly benefit by submitting to the NHSE. Demonstrably high quality reviews, testing, and evaluation not readily availably elsewhere could provide some of the needed incentive.

A Forms

```
----------------------------------------------------------------------

SOFTWARE REVIEW REPORT TO SUBMITTER

FROM: NHSE-LIBRARIAN    (nhse-librarian@netlib.org)

TO:

SUBMISSION TITLE:

SUBMISSION URC:


REVIEW CLASSIFICATION REQUESTED:       Partial Review


REVIEW CLASSIFICATION STATUS:

        _____  Partially Reviewed status granted.

        _____  Partially Reviewed status granted, conditional on
               satisfying conditions specified in comments below.

        _____  Partially Reviewed status not granted.
               See checklist and comments below.


PARTIAL REVIEW REQUIREMENTS CHECKLIST

        _____  Scope requirements satisfied

        _____  Completeness requirements satisfied

        _____  Documentation requirements satisfied

        _____  Construction requirements satisifed

(See    http://www.netlib.org/nhse/software_submit/guidelines.html
 for partial review guidelines.)


COMMENTS        (comments, recommendations, conditions to be satisfied)


----------------------------------------------------------------------
```

```
*********************************************************************

EVALUATION FORM FOR PARTICIPANTS IN NHSE SOFTWARE SUBMISSION TRIAL RUN

Thanks for participating in the trial run of the NHSE software submission
process.  You should have already received the results of the partial
review of your software, and you should find your software listed in
the NHSE Software Catalog at http://www.netlib.org/nhse/sw_catalog/.

Please help us to evaluate the trial run by taking a few minutes to
answer the questions below.

1.  Were you already a PGP user?  yes no
    If not, approximately how much time did it take you to figure out
    PGP and get your key pair?




2.  Approximately how much time did it take you to carry out the
    software submission process (not including getting PGP set up)?




Please rank the questions below using the following scale:

  1  Excellent
  2  Adequate
  3  Needs improvement
  4  Poor


____ 3.  Submission form

____ 4.  Explanation of authentication procedures

____ 5.  Explanation of review process and software guidelines

____ 6.  Authentication procedure

____ 7.  Software guidelines

____ 8.  Partial review report


Please give us any additional comments below.




Please email completed evaluation form to nhse-librarian@netlib.org

*********************************************************************
```

```
*********************************************************************

EVALUATION FORM FOR NONPARTICIPANTS IN NHSE SOFTWARE SUBMISSION TRIAL RUN

You were recently contacted about participating in a trial run of the
NHSE software submission process, but we did not receive a submission
from you.  Please help us evaluate the trial run by indicating the
reason(s) for not participating (check all that apply):

  ____ Submission form too hard to understand

  ____ Authentication procedures too much hassle

  ____ Lack of time

  ____ Other ___________________________________________________________

Please give us any additional comments below.



Please email completed form to nhse-librarian@netlib.org

*********************************************************************
```