

Panel on
NSF CAREER Proposal

Assessment of Open-Source Software for
High-Performance Computing

by
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Project Summary

- Research
 - Empirical assessment of quality of open-source software for high-performance computing
 - Using software metrics technology
- Education
 - New courses in empirical software engineering
 - Education material for existing courses

Project Summary

- No-cost research collaborator
 - MSU High Performance Computing Lab
- No-cost education collaborators
 - MSU ITS — Information Systems
 - MSU Dept of Psychology, PSY 4743
Psych of Human-Computer Interaction
- Reviewer ratings: 2 Good, 2 Very Good
- Panel Recommendation: Competitive

Success Factors

- “Important problem. . .”
- “Carefully justified and cohesive proposal.”
- “Solid educational component . . .”
 - Addressing a weakness in current software engineering education
- “PI has solid background. . .”
 - Leveraging expertise in PI’s prior work

Criticisms by Reviewers

- “Lack of overall model or framework.”
- “Can result really be generalized?”
 - Sample size is four projects
- “. . .generalizable to other open-source codes?”
- “More information on the indicators needed.”

Best Practices

- Read carefully from NSF viewpoint
 - Program Announcement (PA)
 - FAQ
 - Grant Proposal Guide (GPG)
- Choose excellent research idea
 - Scientific approach, not just engineering
 - Very innovative
 - High impact

Scientists build to learn

Engineers learn to build

Engineering research is **science**

Engineering can be part of the work, but not the purpose

Building things is not NSF's business --- it is the role of industry

Common Errors

- Procrastination
- Poor match with goals of PA
- Omission of information requested by PA or GPG
- Proposal organization does not match review criteria
- Unprofessional details

“good soup takes time to cook”

Examples of omissions:

- Research hypothesis
- Expected contributions to the field
- Broader impacts
- Integration of education and research
- Integrating diversity into NSF Programs
- Broadening participation by underrepresented groups
- Letters of collaboration

Examples of details

- Bibliography format and complete information
- Publication style
- English should be perfect