# Using Humanitarian Free and Open Source Software (HFOSS) to Introduce Computing for the Social Good

Lori Postner, Darci Burdge, *Nassau Community College*
Stoney Jackson, Heidi J. C. Ellis, *Western New England University*
Gregory W. Hislop, *Drexel University*
Sean Goggins, *University of Missouri*

Humanitarian Free and Open Source Software (HFOSS) is a category of free and open source software that improves the human condition. HFOSS projects focus on a range of societal needs including microfinance, healthcare, education, and disaster relief. Many HFOSS projects are developed by international teams whose goal is to make the world a better place. These projects are often primarily used in developing nations, but many have been adopted across the world because of the robustness of the software and the ability to contribute to its direction and applications.

HFOSS projects have been successfully infused into the computing curriculum at a number of institutions in a range of ways and courses [1]. The benefits of introducing students to HFOSS projects potentially includes improved students learning, increased motivation to study computing, attracting women to computing and increased appreciation of the societal impact of computing. HFOSS projects are an excellent real-world learning environment for a number of reasons:

- The altruistic nature of HFOSS makes the community welcoming of new contributors and tolerant of student participation
- The ability to help others is a potential draw for women and under-represented minorities
- The transparency of HFOSS projects provides artifacts that can use for instructional purposes in the classroom
- Students can build a visible portfolio of their contributions to show potential employers.

However, determining which project to choose, how to incorporate HFOSS into a class and deciding how to assess students' participation, can be challenging. OpenFE is an NSF-funded project whose goal is to help faculty members introduce their students to HFOSS and become contributing members in HFOSS communities. Faculty typically start with choosing a project, then learning about the chosen project, getting up to speed on the tools and communication used by the project and getting a handle on the work flow. Then faculty members have to figure out how to integrate the project into their existing curriculum and determine how to assess the student performance. The goal of the OpenFE project is to help faculty through the hurdles presented by joining an HFOSS project.

The OpenFE team, with collaborator Red Hat, Inc., has run three workshops (called POSSE - Professor's Open Source Software Experience) to introduce interested faculty to the world of HFOSS [2]. The POSSE workshop has three stages - stage 1 consists of online activities that are completed over a 6 week period including interaction with other participants and the OpenFE team. These activities introduce faculty to the tools and culture of open source communities as well as having them learn about specific HFOSS projects that other faculty have used in the classroom. Stage 2 is a 2.5 day face-to-face workshop that

brings faculty together to learn about how to incorporate HFOSS into the academic setting and work together to outline goals for their courses. During the face-to-face workshop, faculty discuss the classes in which they want to use HFOSS, the ways in which they may accomplish this and begin development of activities that they can use during the next semester. Stage 3 consists of small groups of faculty members that continue to meet virtually after the face-to-face workshop to provide support as they integrate HFOSS into their courses. These groups are primarily focused around a specific project and include faculty from a number of institutions and target courses. To date, the POSSE workshops have been attended by approximately 45 faculty members representing 34 institutions. At least 14 faculty members have incorporated HFOSS into a class they are teaching and more faculty members have plans to use HFOSS in future semesters.

## Acknowledgement

This material is based on work supported by the National Science Foundation under Grant Nos. DUE-1225708, DUE-1225738, and DUE-1225688. Any opinions, findings and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation (NSF).

## References

[1] Heidi J. C. Ellis, Lori Postner, Gregory W. Hislop, and Stoney Jackson. 2015. Team Project Experiences in Humanitarian Free and Open Source Software (HFOSS). Special Issue of the ACM Transactions on Computing Education on Team Projects in Computing Education. (in press)

[2] FOSS2Serve.org, http://foss2serve.org