

Predicted Composition of US Computer-Using Community in 2012

Award No: CCF-0438929 ITR-0325273	
Project Title: Early Predictive Design Evaluation, End User Software Engineering	
Investigators: Mary Shaw and others	
Institution: Carnegie Mellon University	Description of Graphic Image: By 2012 we predict there will be 90M computer users in American workplaces. Of these, the overwhelming majority will not be professional programmers. Preliminary results indicate at least three clusters of skills among those who are not professional programmers.

Project Description and Outcome

Ideas:

We refined Boehm's estimate that there would be 55M "end user programmers" by 2005. Using fresh data from the Bureau of Labor Statistics and a richer model that accounts for rising computer usage rates, we estimate that over 90M Americans will use computers at work in 2012. Of these, only about 2.5M will be professional programmers; 40.5M will be managers and (non-software) professionals; the diagram above (areas to scale) shows the relative sizes of these populations. A preliminary survey suggests at least three clusters of skills among the end users.

This analysis identifies a significant population that is not well served by computer science and the computer industry. Factor analysis of the results of a preliminary survey identified three clusters of features whose use tends to be correlated. These appear to be grouped around abstractions rather than applications. This offers guidance for research directed at the users who fall into these (and possible other) clusters. In addition, the analysis indicates a need to characterize the level of sophistication with which an "end user programmer" uses various features.

References:

- C. Scaffidi, M. Shaw, and B. Myers. *The "55M End user Programmers" Estimate Revisited*. Technical Report CMU-ISRI-05-100/CMU-HCII-05-100, School of Computer Science, Carnegie Mellon University, Pittsburgh, PA, 2005.
- C. Scaffidi, M. Shaw, and B. Myers. Estimating the Numbers of End Users and End User Programmers. *VL/HCC'05: Proceedings of the 2005 IEEE Symposium on Visual Languages and Human-Centric Computing*, pp. 207-214, 2005.
- C. Scaffidi, Andrew Ko, B. Myers, and M. Shaw. Dimensions Characterizing Programming Feature Usage by Information Workers. *VL/HCC'06: Proceedings of the 2006 IEEE Symposium on Visual Languages and Human-Centric Computing*, pp. 59-62, 2006.