HiPOP Policy Brief

HiPOP (High Performance Computing Opportunities) is a project funded by the EU-US Atlantis Programme, whose goal is to **promote computational sciences and high performance computing (HPC) to the youth**. The need for this project comes from the decreasing number of students studying CS&E/HPC. Statistical evidence shows that the problem is much more general: this decrease appears in most mathematically dense subjects. The HiPOP project attempts to address the above problem through the design and implementation of a **web portal, containing high quality information on CS&E** such as tutorials, events (conferences, seminars etc.), job opportunities etc.

In order to gather information about the current situation, the HiPOP consortium conducted a survey aimed at institutions offering CS&E/HPC related promotional activities. From the results of the survey, as well as information gathered from the individual policy reports prepared by the consortium institutions, we reached the conclusion that it is both necessary and timely to implement web based methods to attain more coherence between worldwide efforts for improving the HPC workforce situation. Given the scarcity of sustained funding, this can best be done by using all possible synergies, that is by means of more practical cooperation between EU and US.

After considering the available material we have organised the policy guidelines into the following main categories: selection of the most suitable target audiences; the kinds of activities to be considered; and methodologies for organizing and evaluating the success of activities.

The main potential target audiences can be classified into K-12 students, teachers, students in tertiary education, professionals and minorities (including women, which are underrepresented in the field). From our survey we concluded that the majority of activities are targeting students in tertiary education. K-12 students are not so well catered for and so should be considered a prime target. Teachers in pre-service training should also be included, indirectly providing better education and motivation at the lower levels. Professionals should also be targeted to help them exploit the opportunities presented to them by CS&E/HPC. Finally, any initiative should keep in mind the special needs of minority groups.

The kind of activities can be split into two major groups: educational and promotional. The main kinds of educational activity are: formal courses in tertiary education; short courses such as summer/weekend schools; lectures and seminars; and e-learning initiatives. In the case of formal courses (which seem to be the vast majority of activities), the main objective should be to engage non-computer scientists by emphasizing the relevance and approachability of CS&E/HPC. Short courses can play an especially important role in bringing CS&E/HPC knowledge to people who were not exposed to this material during their formal education. Individual lectures, presentations and seminars serve to arouse interest and hopefully persuade people to pursue further information on the topics involved. Finally, e-learning renders information on the topic available to people who cannot attend any of the other kinds of activity.

Of the many kinds of promotional activities, the most effective seem to be web portals and electronic mailings. However, the evidence for this is largely anecdotal and so in developing new promotional activities assessment of effectiveness should be given serious consideration.

The kinds of activities discussed above have been tried by partner and other institutions but in general *there are no guidelines on how to set up, execute and evaluate a particular kind of activity*. Thus anyone wishing to establish some kind of activity must effectively start from scratch and re-invent the wheel. In future initiatives, principles and methodologies to be applied should be defined at the start and evaluated at the end of each initiative. A set of methodological principles and conclusions can then be assembled in a central repository for reference by anyone planning a new initiative.