

SHODOR PROJECT: COMPUTATIONAL PHYSICS STRATEGY WORKSHOP

WORKflow Profile

Norman Chonacky

20 April 2007

This introduction is intended to give workshop participants a general idea an idealized workflow over the two and one-half day period. We are placing this description within the context of the workshop's overarching objectives. These include bringing together physics faculty with experience in using computation as part of their course methods in order to create a realistic vision of and practical guidelines for future, comprehensive research and development projects to integrate computing into physics curricula.

Working in a number of groups, these faculty will initiate a design for, an outline of, and possibly begin to implement a computational module that could be used as a current course supplement. Each module will be designed within constraints specific to each group. Within the scope of this workshop, the purpose of such work will be to stimulate ideation and to provide a concrete basis for participants to discuss the more general considerations needed as a basis for creating any vision and guidelines statement. This process will be facilitated by periodic plenary discussions and infused with considerations of institutional challenges presented by an issues panel of various stakeholders having experience and representing a broad array of perspectives lying beyond the immediate business of creating instructional reforms.

Here is a description of how we are planning for this work to proceed.

The work groups will convene on Friday morning to develop work agendas, both generally for the whole workshop in plenary discussions and specifically for day one in individual groups. Each group will then engage in a sequence of module design and development tasks including specifying educational objects, outlining module structure, and identifying elements that would need to be implemented. This first day will also include periodic plenary discussions to exchange ideas as well as the usual informal discussions during and, in the evening, after meals.

On Saturday morning, the issues panel join these work groups. That panel will learn what the work groups have been doing, identify those issues it believes to overlie the kind of development work suggested by the modules, and develop a strategy for engaging the work groups with these issues in a sequence of plenary sessions during the day. In the meantime each work group will continue its module development tasks, now also dedicating some time to reflective consideration of what a computationally integrated physics curriculum might look like. The plenary sessions will provide an opportunity to join the ideas of "what" to ideas of "how", based upon challenges and constraints presented by the issues panel. As usual, there will be occasions for informal discussion among all participants as well.

On Sunday morning, both work groups and issues panel will have a chance to begin moving toward some form of closure of their respective activities. The work groups will draft synopses of their development work framed as a set of provisional guidelines for projects to develop computationally integrated instruction. Also they will describe the status of their module products with suggestions for what is needed for completion. The issues panel will prepare a synopsis of its findings in anticipation of collaborating with the work groups in a final plenary to integrate relevant issues into the development project guidelines. The workshop will culminate with a wrap up session to recommend elements to include in the White Paper, which is the goal of this workshop project.