MODEL THIS C: Predator-Prey

1. **DESCRIPTION**: This event integrates computer technology, the Internet, quantitative data analysis and computer modeling. Teams are presented with a problem that requires modifying or creating a computer model that will create an output similar to quantitative data supplied. Short answer questions related to the problem are also included.

   A TEAM OF UP TO: 2 **APPROXIMATE TIME**: 50 Minutes

2. **EVENT PARAMETERS:** No resource materials or calculators may be used during the competition. Blank tablet paper and writing instruments may be used to assist teams in organizing their thoughts, if desired. Prior to the event, teams may construct their own publicly accessible (non-password protected) websites to organize URL links and reference information for use during the competition. Teams may also freely access any publicly accessible www site or search (e.g., Google or others) to locate information about modeling using any or all of the tools listed below and sample models. However, during the event, no external communication is permitted with other individuals via e-mail, chat rooms, or other forms of collaborative computing; the penalty for an infraction of this nature will be immediate disqualification.

3. **EVENT PREPARATION:** Prior to the competition, students should download VenSim from http://www.vensim.com/freedownload.html . A predator-prey model using Vensim may be found at: http://www.shodor.org/talks/ncsi/vensim/. Other predator-prey models may be found at: http://ccl.northwestern.edu/netlogo/models/WolfSheepPredation(SystemDynamics) http://www.iseesystems.com/community/downloads/EducationDownloads.aspx

4. **THE COMPETITION**:

   a. During the competition, each team will be provided with a single Windows OS PC with word processing (MS Word), spreadsheet (MS Excel), WWW browser (MS Explorer), modeling software (VenSimPLE) and Internet access.

   b. Teams will be given information about a predator-prey population and all required information will be located on web sites supplied at the time of the competition.

   c. The problem statement will require the development of an original or modification of an existing population model to reflect the specific predator-prey information supplied during the competition. It will also require a comparison of the model output to the supplied population data.

   d. The problem statement will also include up to five (5) short answer questions. Questions may involve discussion of assumptions or simplifications made in the model or questions about parameters not included in the model.

   e. Teams will create a file of the predator-prey model and an MS Word (.doc) file that contains the answers and URLs associated with the short answer questions. The event supervisor will specify how these files are to be submitted at the conclusion of the event. Teams should include their school name and team number (as appropriate) within both files to ensure proper identification by the event supervisor.

5. **SCORING:** High score wins based on
   a. Completeness of the population model - 30 Points.
   b. Accuracy of the model in matching the population data - 30 Points.
   c. Answers to the Short Answer Questions - 40 Points.

   The tiebreakers shall be:
   1) The number of short answer questions correctly answered,
   2) The completeness and accuracy of quantitative data match and
   3) Modification of the model to match a second data set.

   Additional information, links to sample models, and supervisor guidance may be found at www.soinc.org.