PROBLEM 4 Instructions

In essence, problem 4 has the same guidelines and criteria as problem 3. You decided as a class that you would prefer giving a class presentation rather than a report. Problem 4 will not require a design journal but will require the group form as in problem 3. Refer to the web site again for evaluation criteria (these or the same as I did for your scorecards for problem 3 that I returned to you. In essence it is the same EXCEPT

(1) it is just a different problem domain to tackle
(2) It is worth 15 points rather than 20 points
(3) I will not require the journal for this problem in order to allow you to focus on the problem solving presentations will be 15 mins max!.

Points. The points breakout will be:

10 points presentation
5 points group participation.

Because you have worked so well in groups this will give you another opportunity to learn or apply what you have learned already. Remember time is of the essence. This is 9 April. Originally this project was stated as being due 19 April. We will back that up till 24 April. That is 15 days away. So now is the time to start.

(*Please go to the next page for Problem 4 list*)

IST 110 - 2 Problem 4 List   **Professor Michael McNeese**

Group _____   Date _____

Please select ONE of these problems as Problem # 4 for your group. The remaining problems that you do not choose will be part of a list of questions on your final exam (which you will select a subset from).   Perhaps these problems seem simple on the surface but it is your job to discover what the salient constraints, contingencies, and inherent user needs are as a basis (design rationale) for providing a high-tech information sciences and information technology design (solution space).

The following are problems /situations I would like you to think about (analyze and suggest possible solutions to) and to answer based on *putting your knowledge to use*. This means answering the problem by bringing all the knowledge, concepts, ideas to bear from a variety of class sources (lectures, group exercises, labs, requested readings, book, team problems, etc.) to generate the best problem definition - approach - solutions that you can based on what you have learned. Furthermore, you may seek various alterative solutions and paths to find creative "out of the box" approaches. I am looking for you to show me what you have learned as you apply it to real situations. Think of yourself in the role of a <u>systems analyst</u> providing answers to a client. Obviously, I have defined some of the problem states already but it is up to you to further identify, define, expand, and explore possible in-depth approaches and solutions. So be creative and lets see what we come up with. (Please address these problems in the same way you did problem # 2.) If you have any questions about the problem your group selects please contact me and I will advise as appropriate.

1. Using smart room technologies - propose a redesign of: a) fire station <u>or</u> b) a surgical suite in a hospital. What would you consider / what would you do to improve performance?

2. Using concepts from system analysis /cognitive systems engineering redesign your dorm and dorm-room using yourself as the primary user. Provide your design rationale and integrate use of new information technologies we have discussed (as appropriate).

3. You have been appointed as Chief System Analyst in charge of evaluating / improving the PSU website. Using various concepts, ideas, guidelines we have studied (1) how would you analyze the site (provide your initial impression of the site)? and (2) how you would improve the site.

4. With all the reports and incidents of school violence - there are various troubles in our middle and high schools today. Using class or class-related concepts, analyses, advanced information systems, technology, etc. please suggest potentially new envisioned solutions for this problem that address different kinds of people in the school (students, teachers, staff, etc.).

5. You have been assigned to design new information systems for emergency medical technicians and resuscitation crews who require use of an ambulance to get to mobile patients. Describe how you might use web-based computing, personal digital assistants, cell phone technology, or other advanced information technology to improve their problem solving in the field.

6. Tell me how you would apply what you have learned so far as a basis to design a HCI to a Uninhabited Air Vehicle Domain – as we discussed in class (assume this will be an interface involving a team 3 operators using virtual reality headsets remotely controlling a secret, advanced model airplane designed to take reconnaissance pictures of Penn State's next opponent in football). Prioritize what you would consider in the HCI and how you might go about developing it.

7. You have been appointed the Head of Telecommunications for NASA. As part of your responsibilities you are required to make a proposal for a system that can integrate (1) web-based computing (2) a/v teleconferencing (3) virtual environments (4) avatars --

to enhance the communications, decision making, and command/control among members of the flight crew of the *International Space Station* and the ground command post (on earth). How can you explore this problem and provide effective human performance.

8. What are some of the considerations that countries (e.g., the US) should be concerned with in dealing with information warfare / information security? What are some of the targets that information warfare would focus on and how would you prevent major international events from occurring (security) and/or how would you suggest offensive information warfare be conducted?

9. Take the Napster issue – you are the lawyer arguing the case – give your statement on the social, ethical, and/or legal implications associated with use of this technology. Why/how does this affect your philosophy regarding IST or the www? Since Napster appears to dead what lies on the horizon in this area of web-based information transfer?

10. Using concepts related to human factors, HCI, HIP, or pattern recognition describe how you would analyze and advise the Supreme Court Justices on how election results or individual ballots could be interpreted for intent (to determine voter's intent). Give rationale. Why or Why not they can (or cannot) be interpreted. Point out how information sciences and technology could be used to enhance the country's voting/election process. Include in your analysis of results ideas like butterfly ballots, perception of chads, and other elements that are making the election difficult to read.

11. Remember the Feeding Robot in the movie *Modern Times* and how it went awry – If you were considering a user-centered design of a feeding robot for a disabled person that a user could assist-control-monitor remotely from a website. Tell how you might use lecture information from a) Human Information Processing or b) the Systems Thinking lecture to analyze this situation.

(The End)