**INSTRUCTIONS FOR COMPLETING ASSIGNMENT #2 (Choose Option #1 or #2)**
**Option #1: Assignment #2 Groupware Heuristic Evaluation, Due on or before Sunday, April 23, 2017**

**Associated Learning Objectives:** Examine theories, definitions, concepts, and issues related to CSCW. Communicate IS concepts, designs, and solutions effectively and professionally in online discussions and in papers. Write an effective research paper that captures the essence of a current research trend in computer-supported cooperative work. Develop skills in identifying, evaluating, and synthesizing scholarly literature effectively.

**Background:** If you are involved in leading, managing, training, supporting, or participating in some collaborative capacity with teams or groups, no doubt you are using one or several groupware technologies or collaborative tools or systems that help support various aspects of the collaborative process. Most often shared workspaces or online collaborative communications tools are used to support the "Mechanics of Collaboration (MoC); the *actions* (e.g. "taskwork") and *interactions* (e.g., teamwork) group members must carry out in order to get a shared task done. Gutwin and Greenberg (2001) and others developed and researched the conceptual framework for MoC to support user requirements for engineering CSCW systems and to evaluate how people use CSCW systems technology collaboratively to complete work-related tasks. Specifically, the MoC includes support for "*taskwork"* and *teamwork* respectively, in seven major activities: explicit communication, consequential communication, coordination of action, planning, monitoring, assistance, and protection. MoC elements are essential, as are many contextual factors in CSCW that must be designed for in the tools to support team or group work. A groupware tool that does not support voting, for example, may hamper a group from reaching consensus on an important decision, thus impeding coordination and planning. In software development, for example, team members may be using Agile methods for coordination; perhaps teams participate in remote or distributed technology-mediated Scrum activities. Whether team members are remote or co-located in time and space, a groupware tool must support the ability to coordinate activities, work with artifacts, assist with planning, and provide secure information sharing, among other supporting mechanisms that need to be in place.

In general, if you are involved in any sort of collaborative activity, involving synchronous or asynchronous group or team work, a myriad of groupware or CSCW tools such as shared editing or writing tools like Wikipedia or PBWiki, or Google Docs; as well as group meeting or communication tools like Go-to-Meeting/Training, Skype, FaceTime, Google Hangouts, Blackboard Collaborate, email, SMS, group forums or discussion boards, Facebook, LinkedIn, and virtual worlds. CSCW tools in some way require the support of the whole or parts of the mechanics of collaboration. Certainly, many synchronous and asynchronous communications tools support group or team collaboration. Some tools support video conferencing and some tools support as minimal as text-based email or text messaging. Many of today's CSCW tools are mobile as well, and now than ever before, are making virtual collaboration much easier and impromptu. However, there is still the issue of the design of collaborative systems. How well are they designed for usability and for collaboration? The design of useful collaborative systems requires an understanding of MoC elements-- group activity and how technology supports people

in their work. Many collaborative tools are still lacking the full range of usability and user interface functionality to support seamless and meaningful group activity.

**Purpose:** The purpose of the assignment is to evaluate CSCW not only for its functionality, but also to what extent CSCW systems or tools support and improve productive group work. You will gain insight about CSCW technology design and usability through conducting a heuristic evaluation (HE). As HE is a popular usability evaluation discount method, you will apply the method to groupware/collaborative systems in the context of groupware activity (i.e., the "mechanics of collaboration"). Finding usability problems in a selected groupware or collaborative tool will build your awareness about the importance of selecting the "right" group tool for the "right" group activity, meaning that not all collaborative tools are equal in supporting important aspects of collaboration and that some tools are more effective, efficient, and satisfying in their use than other tools. You will perform a heuristic evaluation of a collaborative tool of your choice -- either one you use in your workplace or one that maybe you use socially (with a purpose to collaborate on something socially meaningful such as a study group, a club, a school committee, a charity organization, other). The choice of the collaborative tool is yours, provided you choose one that you have direct access to and one with a specific purpose and goal in mind to collaborate with others, with the tool as the mediator. You will apply Groupware Heuristic Evaluation (HE) usability principles and detail usability problems you find with the tool and match the usability problem(s) to the heuristic(s). Once you match usability problems to the heuristics, you will give a detailed account about what design aspects need to be improved with the collaborative tool. You will also apply the concepts of the Mechanics of Collaboration (MoC), developed by Gutwin and Greenberg (2000) and others, as the MoC has been applied for many years across the evolution of groupware from early designs (1980's-early 2000s) to present day groupware and collaborative systems and tools. Your groupware heuristic evaluation will explore the in-depth issues you are identifying in the usability of the collaborative tool and in the context of the MoC, supported with key research literature that you also describe to cover current trends, theories, issues, and concepts, applications, and effective practices related to your evaluation. (You may use the required article readings for your literature integration and review across the paper.)

**Overall task:** You will conduct a Heuristic Evaluation of a groupware/collaborative tool of your choice, following the HE guidelines of Gutwin and Greenberg, along with an assessment of how the design of the tool meets or violates the heuristics and the extent the tool supports the MoC elements. This research paper requires your attention to extensive literature research and synthesis of review. The paper should reach approximately 15 pages of the main content and without counting the title page or list of References.

**About Heuristic Evaluation for Groupware/Collaborative Systems or Tools**

Heuristic Evaluation (HE) is well known and is widely applied in the CSCW and HCI (Human-Computer Interaction) research areas as a discount method or low cost usability evaluation technique for diagnosing potential usability problems in user interfaces. HE involves an inspection by several evaluators to work through an interface and locate usability problems and judge its compliance or non-compliance with recognized usability principles called "heuristics"

(Gutwin & Greenberg, 2000, p. 101). Each evaluator inspects the interface independently and then works in teams or groups of evaluators to aggregate the list of usability problems with the heuristics. Usually, the evaluators will decide on the usability problem, determine its severity (or criticality) level, and recommend how the usability problem needs to be fixed (if at all). Nielsen (1994, 2004) devised 10 usability heuristics that have been used extensively in usability evaluation; the general heuristics have also been modified to fit a particular type of technology, such as web site design and groupware, among other applications. Baker, Greenberg, and Gutwin (2002) modified Nielsen's heuristics to apply to groupware usability. The Groupware Heuristics are:

Heuristic 1: Provide the means for intentional and appropriate verbal communication
Heuristic 2: Provide the means for intentional and appropriate gestural communication
Heuristic 3: Provide consequential communication of an individual's embodiment
Heuristic 4: Provide consequential communication of shared artifacts (i.e. artifact feedthrough)
Heuristic 5: Provide Protection
Heuristic 6: Manage the transitions between tightly and loosely-coupled collaboration
Heuristic 7: Support people with the coordination of their actions
Heuristic 8: Facilitate finding collaborators and establishing contact

For the complete list of heuristics and their descriptions, as well as an overview of the Mechanics of Collaboration (MoC), read the Baker, Greenberg, and Gutwin (2002) article and other sources listed below.

Heuristic Evaluation of Groupware:
http://pages.cpsc.ucalgary.ca/~saul/581/exer.heuristic_groupware/index.html

Baker, K., Greenberg, S., & Gutwin, C. (2002). Empirical development if a heuristic evaluation methodology for shared workspace groupware. *Proceedings of the Conference on Computer Supported Cooperative Work (CSCW '02)*, November 16-20, 2002, New Orleans, LA, USA: ACM.

Gutwin, C., & Greenberg, S. (2000). The mechanics of collaboration: Developing low cost usability evaluation methods for shared workspaces. In *Enabling Technologies: Infrastructure for Collaborative Enterprises, WET ICE 2000. IEEE 9th International Workshops, IEEE*, 98-103.

Baker, K., Greenberg, S., & Gutwin, C. (2001). Heuristic evaluation of groupware based on the mechanics of collaboration. *Proceedings of the 8th IFIP Working Conference on Engineering for Human-Computer Interaction (EHCI'01)*, May 11-13, Toronto, Canada.

Heuristics for Supporting the Mechanics of Collaboration
http://pages.cpsc.ucalgary.ca/~saul/581/exer.heuristic_groupware/Mechanics%20of%20Collaboration.pdf

As this is a course offered in a master's program in information systems, you have an opportunity to understand the nuances of CSCW by evaluating the design of a groupware tool you are using in your workplace (or one that you use socially if you are not using one in a workplace). It's

really about expanding your peripheral vision and your understanding of CSCW in your organization (work or social) and to recommend improvements to the CSCW design to your peers and/or management. Further, with integrating CSCW research literature throughout your paper, you have the opportunity to approach current and new strategies through noting effective theories, concepts, issues, and best practices from the research literature.

**How to Conduct a Heuristic Evaluation**

First, review the articles listed above and all of the other required readings under the Course Topic: Evaluating CSCW (see the detailed course schedule). When reading the articles for content, review the different aspects of MoCs and other ways to measure collaboration. (When reading, pay attention to the general constructs; do not worry so much about the details of the study described or the data analysis, but concentrate on the conceptual aspects of evaluating CSCW. You will be applying those concepts to your own heuristic evaluation.)

You do not need special training in conducting the HE, nor do you have to be an expert in CSCW to complete this assignment. All you have to do is take on an introspective approach to the evaluation. What you need is an open mind and a dedication to detail as you link usability problems to the Groupware Heuristics and as you discuss to what extent the tool supports or does not support the elements of the MoC.

**General Steps for Conducting the Groupware HE Inspection:**

The following are general steps to guide you on the inspection part of this assignment. (The "inspection" part needs to be done before you write the paper because you have to evaluate the collaborative tool first. For the paper, please review **Directives on Organization, Content, Writing, and Presentation Quality of the Paper.**)

Please keep in mind that heuristic evaluation is usually conducted in several parts or multi-stages, so you may have to inspect the selected tool a few times to capture a range of usability problems. Also, HE involves multiple evaluators -- after independent inspection by each evaluator, a group of evaluators meet to aggregate the usability problems into one list and to suggest fixes or improvements to the interface. You are going to do *only* the independent inspection part and you will aggregate the usability problems on your own. You are not required to meet in groups to complete the other formal stages of the HE.

1. Your task is to inspect the user interface alone. This is a “free form” inspection where you will evaluate the design in regards to the list of groupware heuristics (listed above).

2. Inspect the interface. Get a feel for the flow of the interaction and general scope of the site. Then focus on the specific interface elements while knowing how they fit the larger whole. If you find elements of the design that are difficult to use or things you are looking for are hard to find or navigate, write each of those problems down.

3. Organize the inspection:

- List the specific usability problems of the design (including major and minor problems). List each problem separately.
- Annotate problems to the usability principles violated. Connect also to the MoC.
- Classify the usability problems by severity levels. (See below.)
- Produce an aggregate list of usability problems.
- Suggest solutions to improving or fixing the problems.

SEVERITY LEVELS

Four level rating scheme for identifying user problems with products:

LEVEL 1: The problem prevents performance or completion of task.

LEVEL 2: The problem creates significant delay and/or frustration for the user.

LEVEL 3: The problem creates some frustration for the user, but not does significantly affect usability.

LEVEL 4: Enhancement issues

**Directives on Organization, Content, Writing, and Presentation Quality of the Paper**

Once you complete the independent groupware HE inspection and have organized your evaluation as suggested above, how you present the HE in the paper depends on your approach and critical-thinking style. It seems logical to have a clear introduction explaining the CSCW tool selected and your workplace or social context for using the tool. (Please read the entire assignment guidelines here as I've already introduced the purpose and reasons for doing this assignment.) I'm open to creative ways on how you would organize the paper, but it seems logical to start with an introduction, then a section describing in depth, breaking down each HE category with listing usability problems, indicating their severity level, how the usability problem relates to one or more MoC elements, and your insights and observations about how the collaborative tool needs to be improved. Finally, you should have a conclusions section with a unique and in-depth overview of suggestions or strategies to improve CSCW or collaborative initiatives or some potential area for improvement that you know about or have recognized through doing the HE.

You will need to weave into the paper CSCW research literature. (You can use any of the article readings from the course schedule and those you find on your own from publications from the *Acceptable Journals and Conference Proceedings List for Use in Assignments.*) I prefer a weaving in of research literature discussion throughout the paper rather than a separate section on Review of Literature, though I am open to your most effective way of accomplishing the synthesis. Current and relevant literature synthesis involves including literature sources (2014-present) to bring support to the discussion in the paper. You must synthesize the literature by

comparing and contrasting work presented by the experts in the field of study. The paper must conform to the format guidelines established in the APA Manual 6$^{h}$ edition.

IMPORTANT!!! The articles that you select to review for Assignment #1 can be used as literature material to integrate into your paper for Assignment #2! So, be sure to carefully consider the article selection for Assignment #1 and Assignment #2 so that you can leverage your work in this course!

**"General" Format for the Groupware Heuristic Evaluation Paper:** (see Basic Requirements for All Assignments in the Course Guide).

Title page: including title of paper, author full name, full contact information, course number.
Beginning on page 2:

Title of paper

Abstract – no more than 100 words summarizing the paper

Keywords

Introduction and Background (describe the groupware/collaborative tool you are evaluating)

Main Section: Detail the HE breakdown by heuristic -- list the usability problems and describe how the tool supports or does not support the heuristic. Describe the usability problems in context of the MoC. Categorize the usability problems by severity level. Weave in the CSCW research literature to relate general concepts. Use section headings as appropriate to maintain organization as you may be shifting or advancing several issues. Please describe and narrate the problems and issues in detail. Do not merely put everything in tables or provide lists of findings. Depth is preferred over breadth.

Conclusions – Make suggestions or strategies for improvement needed in your organization to enhance CSCW initiatives (or to solve some problem that needs to be improved in the CSCW context).

Reference List -- Please use strict APA 6th. (Tip: Follow the exact style and syntax for citations as I've used for articles listed in the Detailed Course Schedule.)

**Grading/Evaluation:** The paper is worth a total of 100 points. (See syllabus for course grading criteria based on earning points.) The paper will be evaluated on both the quality of the evaluation, including the depth and level of evaluation you present. This is a paper that balances theory and practice -- the student shows the ability to select, summarize, analyze, and show relationships between concepts and practice. Thoughts and observations expressed are purposeful and objective. As with any graduate level work, the paper will be evaluated on the quality of writing and presentation, quality of content, depth of content, quality of sources selected, quality of CSCW literature integration, current and relevant synthesis, organization, presentation, references style and accuracy, language and style and presentation accuracy.

**End of Assignment #2, Option #1 Instructions**