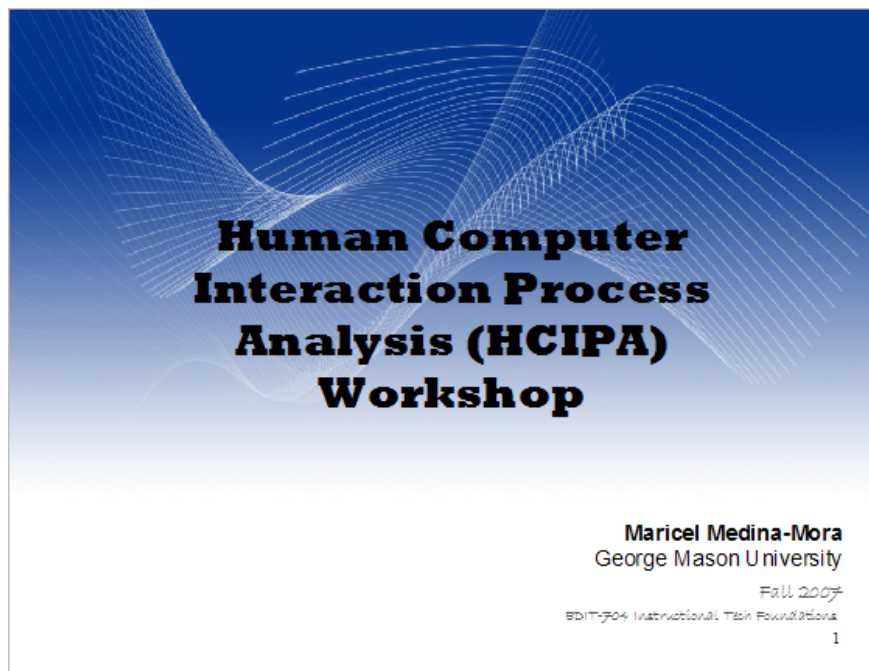


# Human Computer Interaction Process Analysis



## Instructor Guide

Created by Maricel Medina Mora  
EDIT-704 Instructional Tech Foundations  
George Mason University, Fall 2007

## SYMBOLS



**Note to the Instructor**



**Instructor talking point**



**Point to the MS Power Point Presentation**



**Ask for questions**



**Check your time**

## Purpose

To instruct software designers and developers a method to analyze the human computer interaction process on their projects.

## Target Audience

The course is open to any software developers who are actively involved on the development of user interfaces and have previous knowledge on user interface analysis.

## Objectives

Trainees will be able to

- Learn a new method to do usability analysis
- Explain how the human computer interaction process analysis (HCIPA) must be carried on
- Analyze their on designers based on the HCIPA principles
- Improve their development strategies by incorporating HCIPA on the earlier phases of the software development cycle
- Adopt the new method as the preferred user interface analysis.

## Class Structure

The class is organized for one hour of instruction and includes the following sections:

Section	Duration	Purpose
Introduction	10 minutes	To contextualize the instruction. In this section, the following sub tasks are carried out: - "Break-the-ice" activity: - Inform learner objectives:
The HCIPA Method	20 minutes	To present the content of the HCIPA method. In this section, the following sub tasks are carried out: - Brief introduction to Human Computer Interaction - Description of the HCIPA Method - Example of HCIPA
Practice & Feedback	20 minutes	To apply the HCIPA method in three different tasks. In this section, students are motivated to apply the learned instruction. Feedback will be provided immediately after each task.
Feedback	10 minutes	To provide feedback and advice to apply on the application of HCIPA in future projects.
<b>TOTAL INSTRUCTION</b>	<b>60 minutes</b>	

## Materials

- HCIPA\_Instructor\_Presentation.ppt: MS Power Point to be used during the class
- HCIPA\_Instructor\_Guideline.pdf: This guide used as reference for the instructor
- MS Power Point 2003 or higher: Tool needed to create the HCIPA analysis and present to the class



Before starting the class, make sure that:

- ✓ The MS Power Point presentation runs correctly
- ✓ There is a GMAIL account accessible to all students ([www.gmail.com](http://www.gmail.com))
- ✓ Computers have MS Power Point installed

# Introduction

The introduction section is very important. You must gain the students attention and create a nice atmosphere so students can fill comfortable.

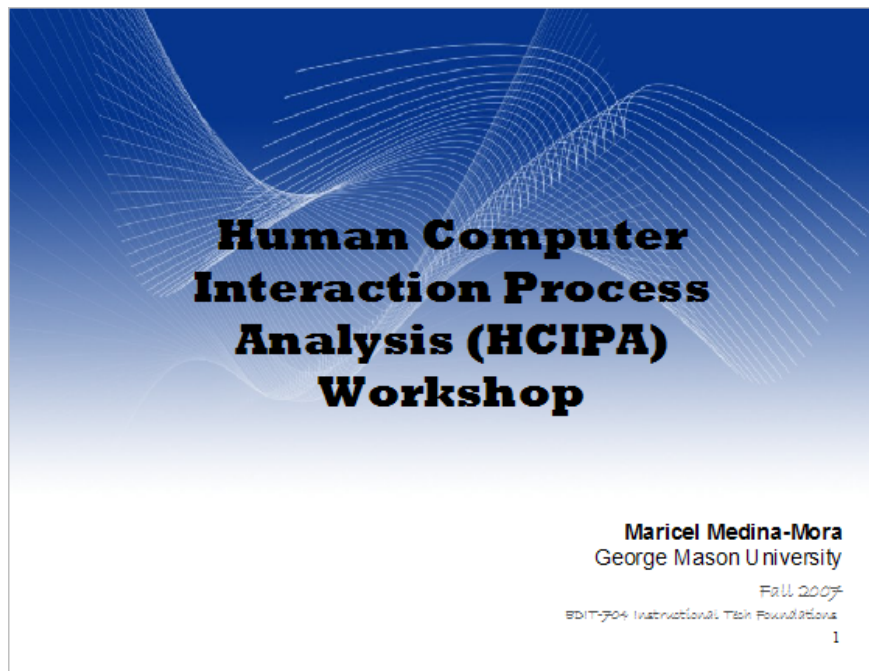
During the introduction phase you must do the activities listed on Table 1.

Activity	Purpose	Time
Break-the-ice	Gain attention of the participants	5 minutes
Inform learner objectives	Increase the motivation of the learners about the topic by sharing the learning objectives and the agenda of the workshop	5 minutes

Table 1: Introduction Section Activities



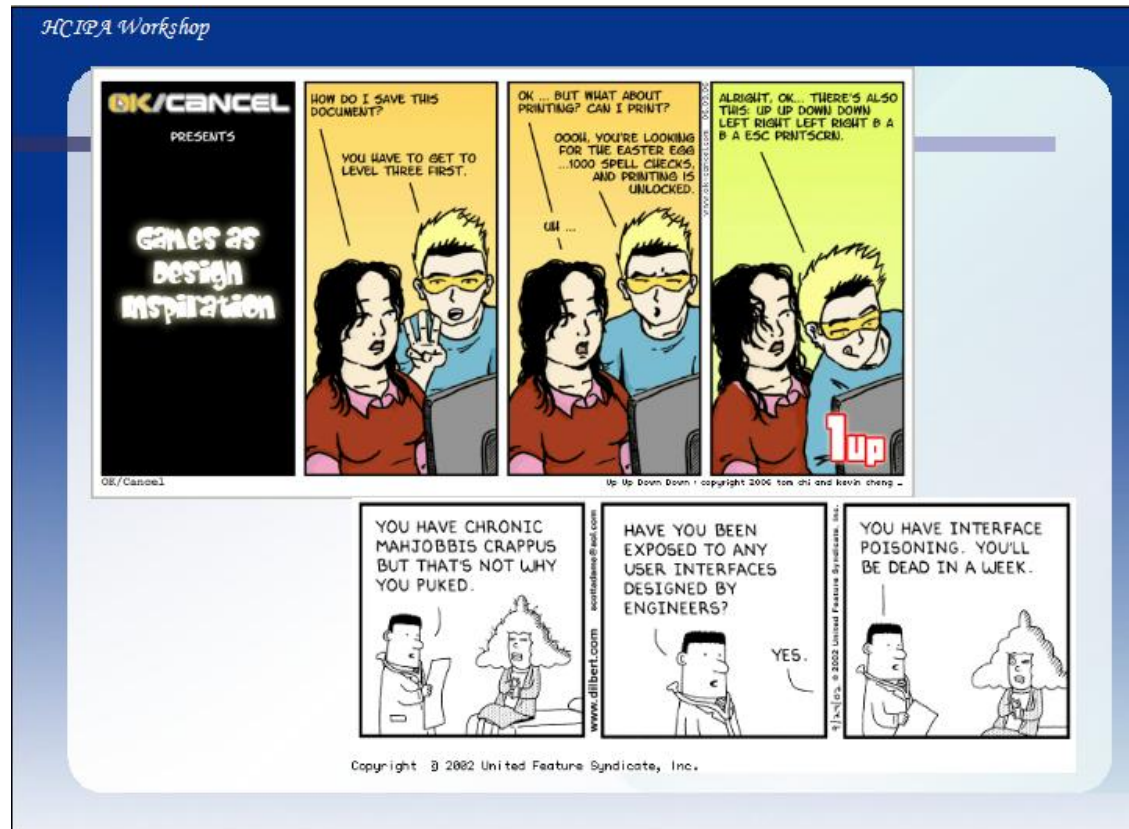
Show Slide #1



1. Start the workshop by introducing yourself, your contact information and welcome the students to the workshop.
2. Provide information about location of restrooms, procedures in case of an emergency and any other logistic information



Show Slide #2



### Activity #1: Break-the-ice

1. Let participants to read both comics
2. Ask participants to provide their thoughts on both comics. Ask the following questions:
  - 1<sup>st</sup> Comic (OK/Cancel): Have you ever been in a similar situation? How can user interfaces be improved?
  - 2<sup>nd</sup> Comic (Dilbert): What do you think designers can do in order to reduce human computer interaction problems? Can you share your methods on user interfaces analysis?



### Activity #2 : Inform learner objectives

Provide the learning objective:



“During this workshop, we will learn how to apply the Human Computer Interaction Process Analysis (HCIPA) method to evaluate user interfaces during the earlier phases on the software development cycle”

### Activity #3 : Share the workshop agenda

<see next page>



Show Slide #3

HCIPA Workshop

### AGENDA

- Introduction to Human Computer Interaction
- The HCIPA Method
- HCIPA Example: step by step
  - Gmail: Add a New Contact
- Practice
  - Gmail: Change account password
  - Gmail: Add a signature to emails.
  - Free task
- Student presentations
- Feedback



Talk briefly about the agenda and how the content will help to reach the learning objective



Allow few minutes for questions



**00:10**

# The HCIPA Method

This is the main part of the workshop. During this phase you must develop the topics listed on Table 2.

Topic	Purpose	Time
Introduction to Human Computer Interaction	Recall previous knowledge about user interface method.	20 minutes
The HCIPA Method	Provide the workshop content and description of the HCIPA method	
Examples	Provide one example about the HCIPA method application	

Table 2: The HCIPA Method Activities



Show Slide #4

The slide is titled "Introduction to Human Computer Interaction (HCI)" and is part of an "HCIPA Workshop". It lists the following content:

- GOAL**  
Improve the interactions between users and computers by making computers more usable and receptive to the user's needs
- INTERESTS**
  - 1) Methodologies and processes for designing interfaces
  - 2) Methods for implementing interfaces
  - 3) Techniques for evaluating and comparing interfaces
  - 4) Developing new interfaces and interaction techniques
  - 5) Developing descriptive and predictive models and theories of interaction

A URL is provided at the bottom: [http://en.wikipedia.org/wiki/Human-computer\\_interaction](http://en.wikipedia.org/wiki/Human-computer_interaction)

## Topic #1: Introduction to Human Computer Interaction (HCI)

“The Human Computer Interaction has a main goal to improve the interactions between users and computers. This means that computers can be more usable and receptive to the user's needs. The HCI long term goal is to design systems that minimize the barrier between human's cognitive model model of what they want to accomplish and the computer's understanding of the user's task. People working on HCI are usually designers whose interests are to develop methodologies and process for designing user interfaces, apply techniques for evaluating and comparing interfaces, develop new interfaces and interaction techniques and develop predictive models and theories of interaction”.



This is a good time to talk more about HCI history and difference between human factors.



Show Slide #5

*HCI @ Workshop*

### HCIPA Method

- **DEFINITION:**  
The HCIPA is a method designed for system/software developers to evaluate the visual interface of a product during the design/development phase before releasing the version to other teams (testing team, human computer experts, beta users, etc.)
- **CHARACTERISTICS:**
  - Easy to use
  - Simple
  - Web-based Tool Support
- **BENEFITS:**
  - Find usability problems on your prototype prior delivery to other teams member (HCI experts, software testing team, beta testers, users)
  - Reduce re-development cycle time by fixing problems immediately
  - Descriptions can be used on system training and documentation

## Topic #2: The HCIPA Method



"The HCIPA stands for Human Computer Interaction Process Analysis. The method has been designed to be used by systems and software developers to evaluate visual interfaces. The evaluation is carried out before releasing the version to other teams. In some companies, there are specific departments that carry out the human computer interaction process analysis on an interface. These departments are independent of the development team. Some times this interaction leads to redevelop and redesign of the interface because designers and developers did not use any method to analyze their interface prior the delivery of the version to those departments. In order to reduce the costs of this interaction, the HCIPA Method has been designed with three characteristics in mind:

- Easy to use: It does not require expert knowledge on Human Computer Interaction
- Simple: It does not involve knowledge acquisition of new languages
- Web-based Tool Support: It provides a web-based tool to document the HCIPA on the design

The benefits of using the HCIPA method are summarized as follow:

- Find usability problems on your prototype prior delivery to other teams member (HCI experts, software testing team, beta testers, users)
- Reduce re-development cycle time by fixing problems immediately
- Descriptions can be used on system training and documentation





Show Slide #6

HCIPA Method

**Click to add title**

- Method: 6 Steps
  - **Identify Task:** What can be accomplished in the system?
  - **Select Function:** How can the task be accomplished?
  - **Access Step:** What need to be done in order to access the function? (motor/cognitive actions)
  - **Enter Step:** What need to be done in order to prepare for function execution? (motor/cognitive actions)
  - **Confirm & Save Step:** What need to be done in order to verify the function results? (motor/cognitive actions)
  - **Monitor:** What need to be done in order to monitor function execution? (motor/cognitive actions)



“How does the HCIPA Method work? Once an user interface is designed, apply the following steps

1. **Identify Task:** Select a task that can be done on the system. Ex., Write an email, save file, print document, insert picture on document, etc.
2. **Select Function:** Ask “*How can the task be accomplished?*” The answers to this question are the functions that can be used to accomplish the task. Select one function
3. **Access Step:** *How can you reach that function?* The different actions to reach the function are grouped under the access step. Actions can be:
  - Click-on File Menu
  - Look at Properties
  - Click on Properties
  - Select Description tab
4. **Enter Step:** Once the function has been reached, ask *what do you need to enter in order to execute the function?* The answer are the actions for the enter step
5. **Confirm and Save:** The actions to execute this step are the verification of data inserted/changed/deleted in previous step and the trigger of the selected function (click on “Save” button)
6. **Monitor:** If there is a change on the system state that need to be monitored, the actions to do that monitoring are grouped on this step.

Steps 3 to 6 are not required on all the tasks. Furthermore, the quicker the user reach the Confirm and Save, the faster the final user will be able to accomplish the task”.



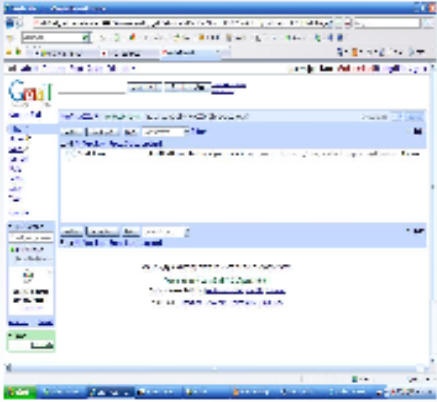


Show Slide #7

HCIPA Workshop

### HCIPA Example: step by step

- Identify Task: Add a contact using GMAIL
  - Select Function: Decide to use CREATE CONTACT function
  - Access Step: Access "Create Contact" page



- Actions
  - LOOK FOR a link labeled "Contacts" to the left of the page
  - MOUSE OVER and click on the label "Contacts"
  - LOOK FOR a link labeled "Create Contact"
  - MOUSE OVER and click "Create Contact"
  - SEE the add contact page displayed



"Let's see the HCIPA Method in practice. Lets add a contact using GMAIL."



Show how to add a contact using GMAIL. Go to [www.gmail.com](http://www.gmail.com) and add the contact. Once you are done, return to the Power Point presentation.



"The first HCIPA Step is to **Identify Task**. So, what is the task? Add a contact using GMAIL.

The second HCIPA Step is to Select Function. How does a user add a contact? By pressing the "Create Contact" link. Therefore, function is **DECIDE TO USE CREATE CONTACT FUNCTION**

The 3<sup>rd</sup> step is to identify the actions to access the CREATE CONTACT function. What does the user need to use to reach the function?:

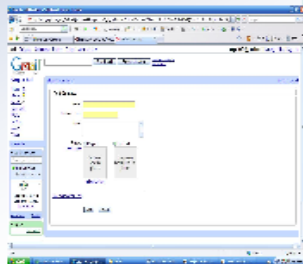
- LOOK FOR a link labeled "Contacts" to the left of the page
- MOUSE OVER and click on the label "Contacts"
- LOOK FOR a link labeled "Create Contact"
- MOUSE OVER and click "Create Contact"
- SEE the add contact page displayed



Show Slide #8

**HCIPA Example: step by step**

- Identify Task: Add a contact using GMAIL
  - Select Function: Decide to use CREATE CONTACT function
  - Enter Step: Enter "Create Contact" page information



- Actions
  - Fill in the contact information on the [required/optional] fields



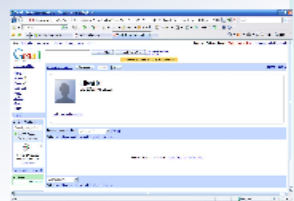
“Once the user has reached the CREATE CONTACT link, then the 4<sup>th</sup> HCIPA step has been reached: Enter Step. The final user action is to fill in the contact information on the [required/optional] fields.



Show Slide #9

**HCIPA Example: step by step**

- Identify Task: Add a contact using GMAIL
  - Select Function: Decide to use CREATE CONTACT function
  - Confirm & Save Step: Verify "Create Contact" page information has been submitted



- Actions
  - LOOK FOR the fields and check their contents.
  - LOOK FOR button labeled "SAVE"
  - MOUSE OVER and CLICK on the "SAVE" button
  - SEE the new contact card



“Once the user enters the contact information, the 5<sup>th</sup> HCIPA step has been reached: Confirm & Save. The final user action verifies the entered information and if everything is correct, then execute the selected function. The actions performed in this step are:

- LOOK FOR the fields and check their contents.
- LOOK FOR button labeled “SAVE”
- MOUSE OVER and CLICK on the “SAVE” button
- SEE the new contact card



**00:30**

# Let's Practice

This section of the workshop will allow the participants to apply the learned method on three different exercises. Ideally, students must work independently. If there is a problem with any computer make students work in pairs.



Show Slide #10

**Practice**

- Select a task
  - GMail: Change password
  - GMail: Add signature to emails
  - Free task: Use any task using GMAIL
- Identify function: Identify how the selected task can be accomplished in the system
- Write actions for different HCIPA Steps:
  - Access
  - Enter
  - Confirm & Save
  - Monitor
- Capture images for each step/actions
- Present your analysis



analysis”

“Now it is time for you to do your own HCIPA analysis. Our first analysis will be: Change the password of your GMAIL account.” Work in your computer and start doing the analysis. You will have 10 minutes to do it and I will choose a volunteer to present the



Recall all HCIPA steps and leave the slide show active. Students will need to take a look in order to create their analysis. After 10 minutes select a volunteer and provide feedback on his analysis.



“Our next analysis will be: Add signature to your email.” Work in your computer and start doing the analysis. You will have 10 minutes to do it and I will choose a volunteer to present the analysis”



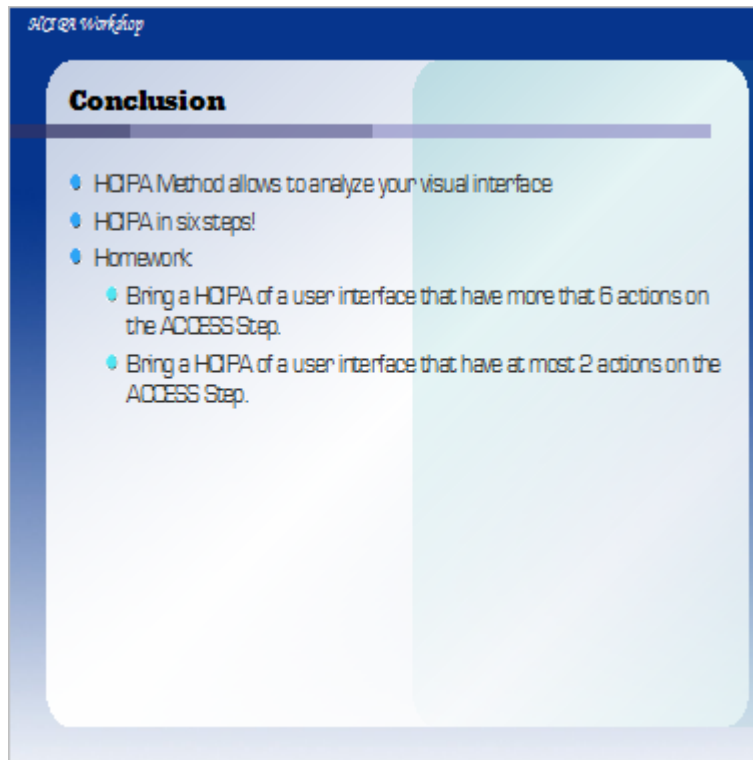
**00:50**

# Conclusion

The course is now over. You have reached the end of the session and is now time to summarize what you have done.



Go to slide #11 in the Power Point presentation



“Today, we have introduced an new method to analyze user intefaces: HCIPA. The HCIPA provides 6 steps to analyze a given task”



Ask trainees to provide the six steps



“For our next session, you will bring two HCIPA results. Find a user interface that have more than 6 actions on the ACCESS step and one that have at most 2 actions on the ACCESS step. Think about which task was easier to complete. We will use this question to open our next session. Thanks for attending this workshop”.



**01:00**



# Synopsis

According to Gagne-Briggs (Medsker and Holdsworth, 2001), knowledge of the subject matter's learning structure is the base to plan the sequence of instruction. Additionally, Gagne-Briggs identified five domain of learnings and different instructional conditions that support the learning process in each domain: intellectual skills, cognitive strategies, verbal information, attitudes, motor skills. Human computer interaction process analysis requires cognitive skills. The goal is to adopt a new method to analyze visual interfaces. Because trainees will learn the method, they will be able to further adopt it and create their own HCIPA on their products. The steps of the HCIPA are fixed, but users will need to identify their own description and apply their cognitive abilities to do a good HCIPA. The Conditions of Learning, also know as Nine events of learning was selected as the strategy to present the instruction. As described on Medsker and Holdsworth (page 87), the conditions of learning has nine steps. The use of those steps in this instruction are summarized in Table 3.

Component	Description	Reference in the Instructional Guide
Gain Attention	Provide stimulus change	<b>Introduction Section:</b> Presentation of two comics and discussion about user interfaces problems.
State the learning objective	Tell learners what they will be able to do after learning	<b>Introduction Section:</b> After the discussion, the learner objective is provided
Stimulate recall of prior learning	Elicit previously learned knowledge or skills	<b>HCIPA Method Section:</b> Through the brief introduction of Human Computer Interaction, the trainees are recall on methods and techniques used to evaluate user interfaces. They are asked to mention different techniques.
Present content	Show/explain/demonstrate the content with distinctive features	<b>HCIPA Method Section:</b> The content is presented through the verbal description of the HCIPA method and then two examples are provided
Provide Learning Guidance	Suggest a meaningful organization or cues	<b>Practice Section:</b> A summary of the HCIPA six steps is presented as a guideline to be used on the practice
Elicit Performance	Ask learners to perform	<b>Practice Section:</b> Students are requested to perform three different tasks.
Provide Feedback	Give specific feedback	<b>Practice Section:</b> After each task, students are provided with immediate feedback
Assess Performance	Ask learners to perform again and give specific feedback	<b>Practice Section:</b> Next task starts after the completion of first task.
Enhance Retention and Transfer	Provide varied practice opportunities and spaced reviews	<b>Conclusion:</b> Students are provided with a homework and questions to be used during next session.

*Table 3: Nine events of learning and HCIPA Instruction Guide*