

UI IS COMMUNICATION

How to design intuitive interactions by focusing on effective communication

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The *UI is Communication* concept

- The key ideas:
 - UI design is ultimately all about communicating to users, both in terms of what you say and how you say it
 - If you can explain how to perform a task to someone in person in a way that's clear and concise, you can apply those same communication techniques in a UI
 - We should have the same standards for HCI as we do for human interaction
 - Focusing on communication is the simplest way to develop design thinking and focus on user goals
- The talk presents communication-focused principles, process, and techniques to help you design better UI

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Who is this guy?

- Principal of UX Design Edge, an interaction training and design company
- Was a senior program manager at Microsoft for 10 years
 - Was on the Windows 7 and Windows Vista teams for 5 years, responsible for managing, writing, and driving the [Windows User Experience Interaction Guidelines](#)
 - Taught several UX design courses, including the introductory *User Experience Design Basics* for three years
- A Windows and Mac UI programmer before Microsoft
- Wrote two books
 - *Developing User Interfaces for Microsoft Windows* (Microsoft Press)
 - *Debugging Windows Programs* (Addison Wesley)
- Writing another interaction design book now

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UI design is hard...but not *that* hard

Why make it harder than it needs to be?

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UI design is challenging

- Good UI design requires an unusual mix of skills and a different way of thinking
- UI is super visible and everybody has an opinion
- There are many ways to get it wrong
- There's so much bad UI out there
- Often, the best UI design is one that isn't even noticed

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Should you bother?

- Yes!
- For users, the UX is the product
 - Don't expect users to appreciate the beauty that lies beneath—why should they?
- Great UX is an enduring competitive advantage
 - There's a surplus of technology, but a shortage of great experiences
 - In a competitive market, the best UX wins
 - You can't beat love with power or price
- Most teams don't have designers and user researchers
- To create a great UX, everyone on the team needs to be fully engaged

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Designers make design sound hard

- Most introductory design courses I've seen are very depressing
 - Underlying message: You can't do this!
- Designers have a hard time explaining their craft
 - Their thinking tends to be abstract, subjective, and intuitive
 - Standard response to simple questions: It depends
- Ask a simple question—what designers tell developers:
 - Good UX design requires a master's degree
 - You think using the wrong side of your brain
 - Underlying message: You can't do this!

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WORDS DESIGNERS SHOULD KEEP REPEATING:

RE-... RE-FRAME, RE-DESIGN	DESIGN THINKING	FRAMEWORK
CO-CREATION	HUMAN-CENTERED	MULTI-DISCIPLINARY
AMBIGUITY	USER-CENTERED	COLLECTIVE
STORY	DISCOVERY	EXPERIENCE
CREATIVITY	PLATFORM	PROBLEM-SOLVING
PLANNING	APPROACH	DESIGN THINKING
USER	COLLABORATION	THEMES
METHOD		TOUCH-POINTS

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You can do this!

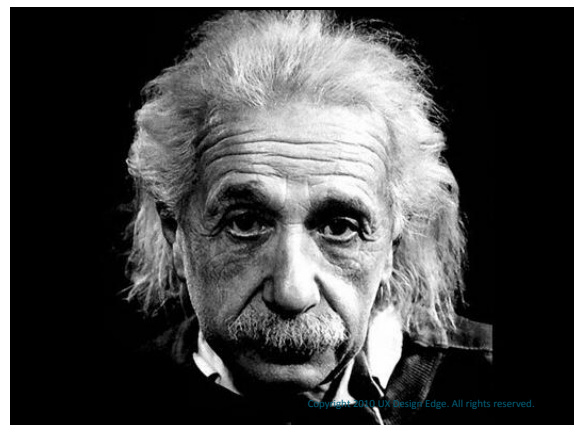
- UX Design boils down to these skills:
 - Design thinking; making good decisions; communicating, evaluating, and improving them
 - As a developer, you have many of the basic process and decision making skills already
 - The key difference: User centered design thinking
 - This is a hard skill to master
- My claim:
 - Focusing on effective communication is *the single best* user-centered design technique (but not the only!)
 - Best of all: it leverages a skill that you already have!

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Why this works

Why focusing on communication leads to better, more natural UI

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A thought experiment

Exercise 1

- Suppose we are all working on a project whose UI is critical to its success
- Suppose none of us have a design background
- Not to worry: Bob and Alice, our best developers, are on the project
- They are presenting their first draft of the design to us now
- Q: What do you expect to happen?

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My expectations

- Their initial UI design won't be very good
 - ▣ Bob and Alice will make the classic rookie mistakes
 - ▣ They will design for themselves
 - ▣ They considered only one solution
 - ▣ They'll focus on technology and features instead of user goals and tasks
 - ▣ The screens will be confusing, complicated, and often non-standard
- Their explanation of the design will be excellent
 - ▣ Bob and Alice are very intelligent, and that will show through in their explanation
 - ▣ The design makes total sense when they explain it in person

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Analysis: what's not surprising

- It's not surprising that the design isn't very good
 - ▣ Bob and Alice don't have any UI design training
 - ▣ They don't have any UI design experience either
- It's not surprising that their explanation makes total sense
 - ▣ Bob and Alice are smart and articulate
 - ▣ As humans, we communicate to other humans all our lives so we have lots of practice

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Analysis: what is surprising

- That the two are so different!
- If Bob and Alice can communicate to us effectively using English, why can't they communicate equally well using the language of UI?
- During the design review, you might have thought "If they just put what they said in the meeting on the screen, it would all make sense!"

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Why does this happen?

- Communication between people tends to
 - ▣ Be natural, friendly, using plain language (vs. robotic, technical tone)
 - ▣ Be goal, results oriented, purposeful (vs. technology or mechanically oriented, not explaining why)
 - ▣ Follow mental models and natural workflows (vs. the way the code works)
 - ▣ Be simple, getting right to the point (vs. overly complicated, laboring over unimportant details)
- When we communicate directly, we're totally focused on the user's goals: *What does the user care about now?*
- When we communicate through UI, we are focused on the technology and details: *What does the program need now?*

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Can't we use the same approach?

- Q: If the way we communicate in person is so much better, can't we just design UI to be like that?
- A: Yes! We can and we should!
- The difference is artificial and historical
 - We design UI this way because we've always designed UI this way
 - But there's no technical reason to do this (anymore)
- Great UI design boils down to eliminating these differences, making the experience simple and natural

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Realizations

- We are using UI to communicate to people, just using a *slightly* different language
 - Good UI has the same attributes of good personal communication
 - We are communicating to people with different knowledge, backgrounds
 - People care about their goals and their work, not about features or technology
 - Communication consists of what you say, and also how you say it
 - People are emotional and want to be treated with respect
 - If a task requires trust, you need to earn that trust

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Realizations 2

- When we explain a task in person, we naturally translate the task into something our target users will understand
- It's our job as UI designers to do this translation
 - Users shouldn't have to do this translation themselves
- If a UI feels like a natural, professional, friendly conversation, it's probably a good design
 - Many UI design problems are communication problems

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What we do instead...

- Do whatever is easiest to develop
 - Design for the technology or the schedule
- Design by copy
 - Reuse ideas intended for different tasks (Office)
 - Use sample code
- Design for ourselves (or our moms)
 - Personal preference
 - If we like it, it should work for everybody
- Design by committee
 - Do whatever gets consensus fastest
- Design for the boss (or the boss' mom)
 - Do whatever pleases the HIPPO
- Design by low-level detail
 - Fight over details like text, fonts, colors, and icons

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A simple road test

Exercise 2

- Can we improve this error message?



- Questions:
 - What do you think (now)?
 - Can we make the text more natural and friendly?
 - Why is "error" and that (cultish) icon there? What do they communicate?

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UI is Communication

The core philosophy

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UI is Communication (in a nutshell)

- UI is communication...between the user and technology
 - UI is different from natural language, but only slightly
- We can and should use the same approach and standards to communicate to users through technology as we do in person
 - ▣ This approach was developed over centuries
- Doing so is a simple way to help us focus on our users and their goals
- If a UI feels like a natural, professional, friendly conversation, it's probably a good design

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Don Norman's conceptual model

- From *The Design of Everyday Things*:
 - ▣ Design model: Concept in designer's mind
 - ▣ User model: How users explain the operation
 - ▣ System image: The actual product
- "Ideally, the user's model and the design model are equivalent. However, the user and designer communicate only through the system itself."

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Attributes of effective communication

- **Useful, relevant** Provides the right information, purposeful
- **Clear, natural** Speaks the user's language
- **Easy to understand** Doesn't require thought, experimentation
- **Explicit, specific** Doesn't under communicate
- **Concise, efficient** Doesn't over communicate
- **Good tone** Friendly, good personality
- **Control** Leaves user in control of the conversation
- **Timely** Presented at the right time

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Communications applies to all UI

- All UI elements communicate something:
 - ▣ Task flow
 - ▣ Controls
 - ▣ UI text
 - ▣ Icons, graphics, colors
 - ▣ Animations, transitions
 - ▣ Page layout
 - ▣ Feedback
- UI elements aren't arbitrary choices
 - ▣ They work together harmoniously to communicate different aspects of the same consistent story

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Example: Animations and transitions

- Good animations and transitions
 - ▣ Communicate non-verbally and make state changes more natural and less noticeable
 - ▣ Often used for feedback, showing relationships, causes and effects, or drawing attention to important change
- Consistency is crucial to their effectiveness
 - ▣ Specific effects should have specific meanings
 - ▣ Exception: Generic effects like cross fades
- Best approach: define an animation and transition vocabulary

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We need the same standards for HCI

- ...as we do for human interaction:
 - ▣ **Tone** attitude a UI conveys to the user
 - ▣ **Respect** users are emotional, care for users feelings
 - ▣ **Politeness** good manners, social behavior (rude demo)
 - ▣ **Forgiveness** Preventing and recovering from mistakes
 - ▣ **Personality** characteristics that connect *emotionally* with users
- If a behavior would be inappropriate between people, it should be inappropriate for software
- A interesting test: if your product were a person, who would it be?

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Put users in control of the “dialog”

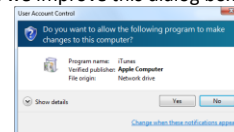
- “Precision questioning” is an established communication technique
 - ▣ Goal is concise QA, leaving questioner in control
- “Inverted pyramid” is another established technique
 - ▣ Start with the bottom line, fill in detail, allow user to stop at any time
- Combine the two to put user in control of the “dialog”
 - ▣ Main label gets right to the point
 - ▣ Optional supplemental label or infotip explains useful, relevant information
 - ▣ Progressive disclosure provides additional options
 - ▣ Help provides additional information that isn’t required to perform task
- Implications
 - ▣ Users are interested in additional information *when they ask for it*
 - ▣ Help shouldn’t be required to perform a task

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Let’s redesign a dialog box

Exercise 3

- Can we improve this dialog box?



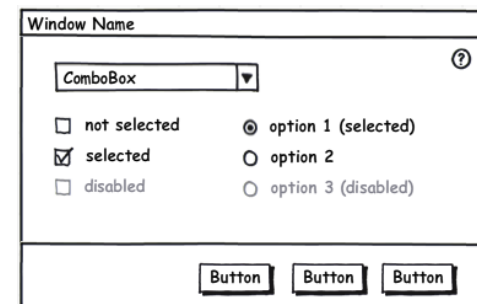
- Questions:
 - ▣ How would you ask this question in person?
 - ▣ What is the user’s conceptual model?
 - ▣ What are the user’s goals?
 - ▣ Which communication attributes apply?

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The language of UI

How to use the right UI elements

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Using the right UI element

Key questions to ask:

- Is the element used for the correct purpose?
 - Is the interaction natural, efficient, and standard?
 - Is the purpose and effect obvious from inspection?
- Can a label clearly communicate the purpose?
 - For all states?
- Are the details right?
 - Is the scale suitable?
- Is it the best choice compared to the alternatives?
 - Is there a simpler, lighter weight alternative?
 - Is there a more constrained, less error prone alternative?

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Evaluating elements by what they communicate

- Warnings
 - A condition that might cause a problem in the future
 - Good: ...and users likely to perform an action or change their behavior
- Confirmations
 - A possibility user might be making a mistake
 - Good: ...and a good reason not to proceed
- Wizard pages
 - A step in a process
 - Good: ...where users need to actually do something

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UI element “body language”

- Body language—it’s not just what you say, but how you say it
- Data type, source
- Data values, continuity
- Number of items
- Immediate vs. delayed
- Screen space required
- Default values
- Encourage change
- Secondary commands
- Presentation, order
- Level of commitment
- Complexity
- Discoverability

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Body language example

Exercise 4

- These controls have the same basic purpose: to choose a single item
- But their body language is different How?



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Understanding controls

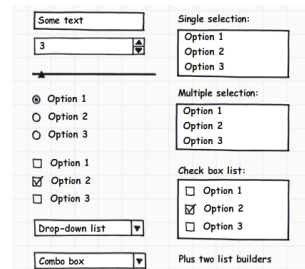
Exercise 5

Goal: Determine when to use a control based on what they communicate

- For each input control:
 - Determine what it communicates
 - Determine its “body language”

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Exercise 5: Input controls



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A design process

Based on effective communication

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Consider a conversation between friends

- Suppose you are looking over a user's shoulder and he or she asks, "What do I do here?" Think about the explanation you would give—the steps, their order, the language you'd use, and the way you explain things. Also think about what you *wouldn't* say.
- This is a high-level guide to design and evaluate task flows
- Look for discrepancies—they reveal problems

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Inductive UI

- An *inductive UI* is designed to be self-explanatory to lead users through a task
 - Goal: To eliminate the need to think and experiment
- Elements of inductivity
 - A clear main instruction that explains the purpose of a page
 - Page content that is related to the main instruction
 - Use of clear, specific language on all controls
 - Clear navigation elements
- Underlying concept: Explainable UI is understandable UI—the quality of the main instruction often predicts/indicates the quality of the page (ex: Manage)
- **Implication: Not a good idea to avoid writing UI text**

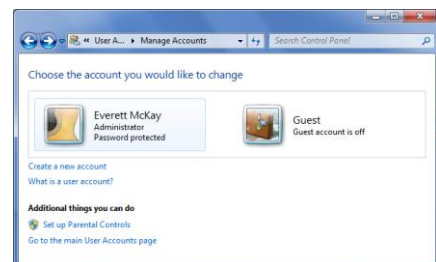
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A "deductive" UI example



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An "inductive" UI example



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A communication-based design process

- Explain the task as you would to someone in person
- Break the task into natural, goal focused, easily explainable steps
- Present each step using appropriate controls, UI text, layout, defaults, etc.
- Refine and simplify as necessary until communication goals are achieved

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Designing task steps

Let's think about the steps required to perform a task

- Break task down into individual steps
 - ▣ Where does the user start?
 - ▣ Where does the user end?
 - ▣ What are the steps in between
- Craft a plain, "friendly" language description of each, focused on goals and purpose

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Designing screens

- Start by thinking about the purpose of the screen
 - ▣ What does the user need to do?
 - ▣ How can you communicate that concisely and naturally?
 - ▣ What is the input, likely actions?
- Map the communication to controls and UI text
 - ▣ Need progressive disclosure, dynamic behaviors?
- Determine layout by considering
 - ▣ Proper sizing and spacing
 - ▣ Order the actions
 - ▣ Visual hierarchy, focus, flow
- Details: defaults, optimize for probable, error handling

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Inductive navigation

Exercise 6

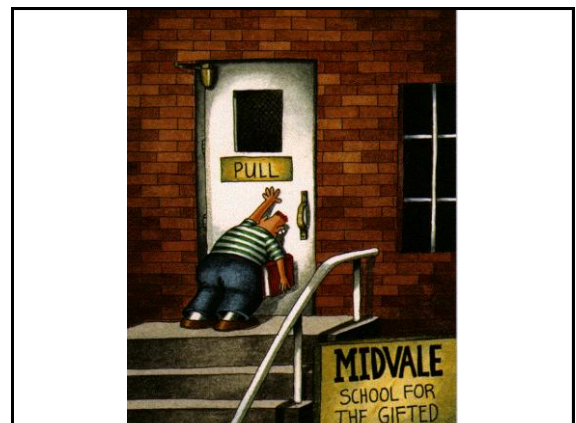
- Suppose you are in an unfamiliar city and you are trying to find your way around
- What attributes of the design of the city will help you find your way?
- Are there similar attributes that help you navigate through an unfamiliar task?
- Observation: All these apply to UI nav

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Intuitive communication

Everybody wants an intuitive UI

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Everybody wants an intuitive UI

- Having an “intuitive UI” is a top goal for any UX project
- To users, describing a UI as intuitive is the highest praise they can bestow
- Funny thing: nobody really knows what an “intuitive UI” is
- Let’s try to define it!

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So, what’s an intuitive UI?

- A UI is intuitive when it has an appropriate combination of:
- **Affordance** Visually, the UI has clues that indicate what it is going to do. Users don’t have to experiment or deduce the interaction
 - **Expectation** Functionally, the UI delivers the expected results, with no surprises. Users don’t have to experiment or deduce the effect
 - **Efficiency** The UI enables users to perform an action with a minimum amount of effort
 - **Responsiveness** The UI gives clear, immediate feedback to indicate that the action is happening, and was either successful or unsuccessful
 - **Forgiveness** If users make a mistake, either the right thing happens anyway or they can fix or undo the action with ease
 - **Explorability** Users can explore without fear of penalty or getting lost

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Consistency

- Consistency is crucial to being intuitive
- Jakob Nielsen’s Law of UX (rephrased):
 - ▣ *Users spend most of their time using software other than yours*
- Benefits of small improvements achieved through inconsistency are easily outweighed by the lack of familiarity
- Common controls with standard interaction are best
- Custom controls are acceptable when really needed

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Following guidelines helps

- Guidelines are rules, based on experience and convention
 - ▣ Guidelines are the “grammar and usage” rules for the language of UI
- Following guidelines will help your program communicate to users effectively, feel “intuitive”, and have a familiar, consistent appearance

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Bottom line

- The various element design decisions aren’t arbitrary—they need to work together to communicate different aspects of the same consistent message
- The effective communication is essential to an intuitive UI
- Trying to make a UI intuitive directly doesn’t get us very far

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Evaluation techniques

How to make sure that you’ve got it right

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How people read

- People read in a left-to-right, top-to-bottom order (in Western cultures)
- There are two modes of reading: immersive reading and scanning
 - The goal of immersive reading is comprehension
 - The goal of scanning is to find things
- Generally, users usually don't read—they scan
 - They aren't immersed in the UI itself but in their work
 - They first scan the whole page
 - They read bits of text comprehensively only when they believe they need to
 - They tend to skip over large blocks of unformatted text without reading them at all
 - They tend to read interactive control labels

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Communication review

- A *communication review* evaluates how well a design communicates by reading it according to a set of rules
- Process: Apply rules for immersive, scanning, and “Ginger” reading
- A simple way to evaluate if a design communicates well

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My inspiration for “Ginger”



Cartoon © Gary Larson

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Immersive reading rules

- Rules
 - Read all text from left to right, top to bottom
 - Read icons (ex: warning icon as “Warning!”)
 - Drill down into any progressive disclosure
 - Read wait cursors and progress bars
 - Read whitespace as pauses
 - But ignore anything that requires hover
- What to look for:
 - Text makes sense, is well written, not redundant
 - A good design won't sound silly when read this way

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Scanning rules

- Rules
 - Reader generally from left to right, top to bottom, but let your eye gravitate to things that catch your eye
 - Read all prominent text
 - Read only the first line, replace the remainder with “blah, blah, blah...”
 - Read all control labels
 - Read error and warning icons
 - Ignore everything else
- What to look for:
 - It should be clear what to do

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“Ginger” rules

- Rules
 - If there is a heading, read first 7 words
 - Read all *interactive* control labels
 - Read anything that heading or interactive controls indicate that you should read
 - Ignore everything else
- What to look for:
 - It should still be clear what to do
- Q: Using this model, how do you make sure users read essential text?

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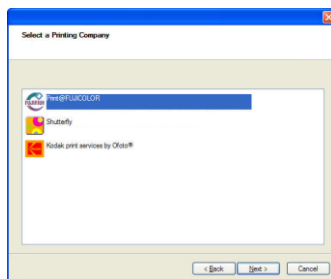
Let's try a communication review

Exercise 7

- Apply the reading rules to the following examples
- What problems did you find?
- How can you fix them?

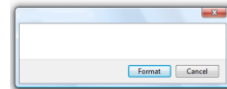
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Communication review example 1



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Communication review example 2



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Summary and wrap up

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Summary

- UI is communication!
- Focusing on communication is the simplest way to develop design thinking and focus on user goals
- We should have the same standards for HCI as we do for human interaction
- Effective communication applies to all UI elements
- UI elements have a “body language”
- “Inductive” UI suggests a design process
- Most of the attributes of an “intuitive” UI are related to effective communication
- We can easily evaluate a UI easily just by reading it

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Things to remember

- UI is a conversation between users and a product
 - Good designs communicate their purpose well
 - Great designs have a human touch
 - Most interaction problems are some type of communication problem
- When in doubt, ask yourself:
 - What would you say in person to a friend or colleague ?
 - Does the UI match?
- For the details:
 - Why is this element here?
 - What does it communicate?
 - Would an alternative communicate better?
 - What would you lose if you removed it?

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- Team, onsite, and online training
- “In house” UX expert service
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 - www.uxdesignedge.com
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UX Design Essentials Course

- A three-day UX design course targeted at non-designers
- Top goals:
 - Lean the practical essentials
 - Help you make better decisions more quickly and confidently
- Scheduled for Albany for October 4 – 6
- Please sign up!

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UX Design Essentials Outline

- Part 1: Basic design process
- Part 2: Design principles and guidelines
- Part 3: User centered decisions
- Part 4: Elements of UI
- Part 5: Task flows
- Part 6: Modern UX
- Part 7: Delighting users
- Part 8: Design communication techniques: sketches, prototypes, specs
- Part 9: Design evaluation techniques
- Part 10: Informal usability studies
- Optional workshop

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- [Why “everybody is a designer”: The UX Design Skills Ladder](#)
- [Intuitive UI: What the heck is it?](#)
- [Don’t design like a programmer](#)
- [Icon design for non-designers](#)
- [Design scenarios—and how thrilled users ruin them](#)
- [Are you sure? How to write effective confirmations](#)
- [Interaction design interview question #1](#)
- [The politics of ribbons](#)

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Got feedback?

- Would love to hear it!
- Please send it to me at everettm@uxdesignedge.com

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Questions

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Thank you!!

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