CSE 4513

Lec – 5

User interface Design

THE $300 MILLION BUTTON

- ✓ user filled their shopping cart with products and pressed the Checkout button
- ✓ a form with two fields (email, pass), two buttons (login/register), and one link(forgot pass) comes before they could actually enter the information to pay for the product.
- ✓ How could they have problems with it?

some 1st time shopper said "I'm Not Here To Be In a Relationship, I just want to buy something."

Some 1st time shoppers couldn't remember if it was their first time, becoming frustrated as each common email and password combination failed.

Many vocalized how the retailer only wanted their information to send them with marketing messages they didn't want.

Repeat customers weren't any happier. Except for a very few who remembered their login information, most stuck on the form.

couldn't remember the email address or password they used. Remembering which email address they registered with was problematic – many had multiple email addresses or had changed them over the years.

THE $300,000,000 FIX

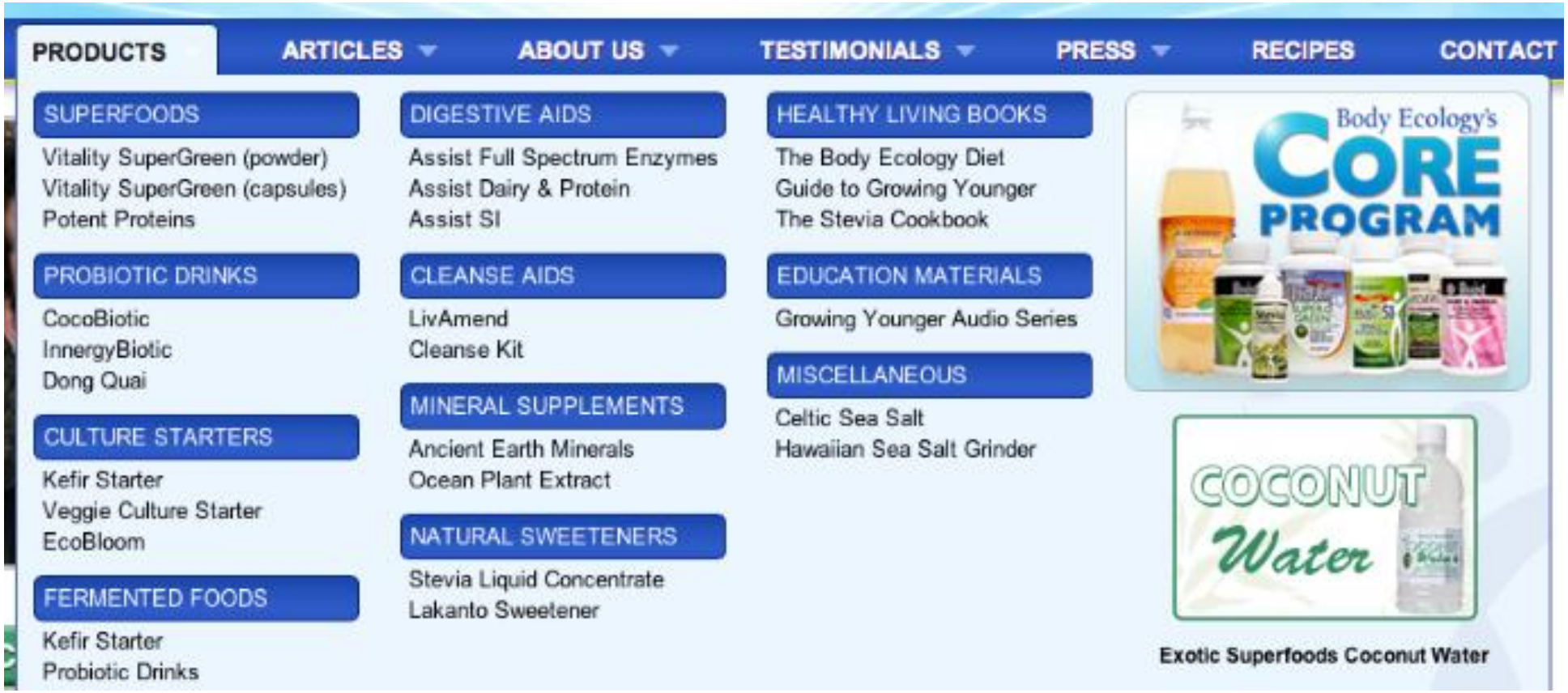
- ✓ designers fixed the problem simply.
- ✓ They took away the *Register* button
- ✓ In its place, they put a *Continue* button with a simple message:

"You do not need to create an account to make purchases on our site. Simply click Continue to proceed to checkout. To make your future purchases even faster, you can create an account during checkout."

The results: The number of customers purchasing went up by 45%. The extra purchases resulted in an extra $15 million the first month. For the first year, the site saw an additional $300,000,000.

REMOVING DROP-DOWN INCREASES REVENUE 56.43%

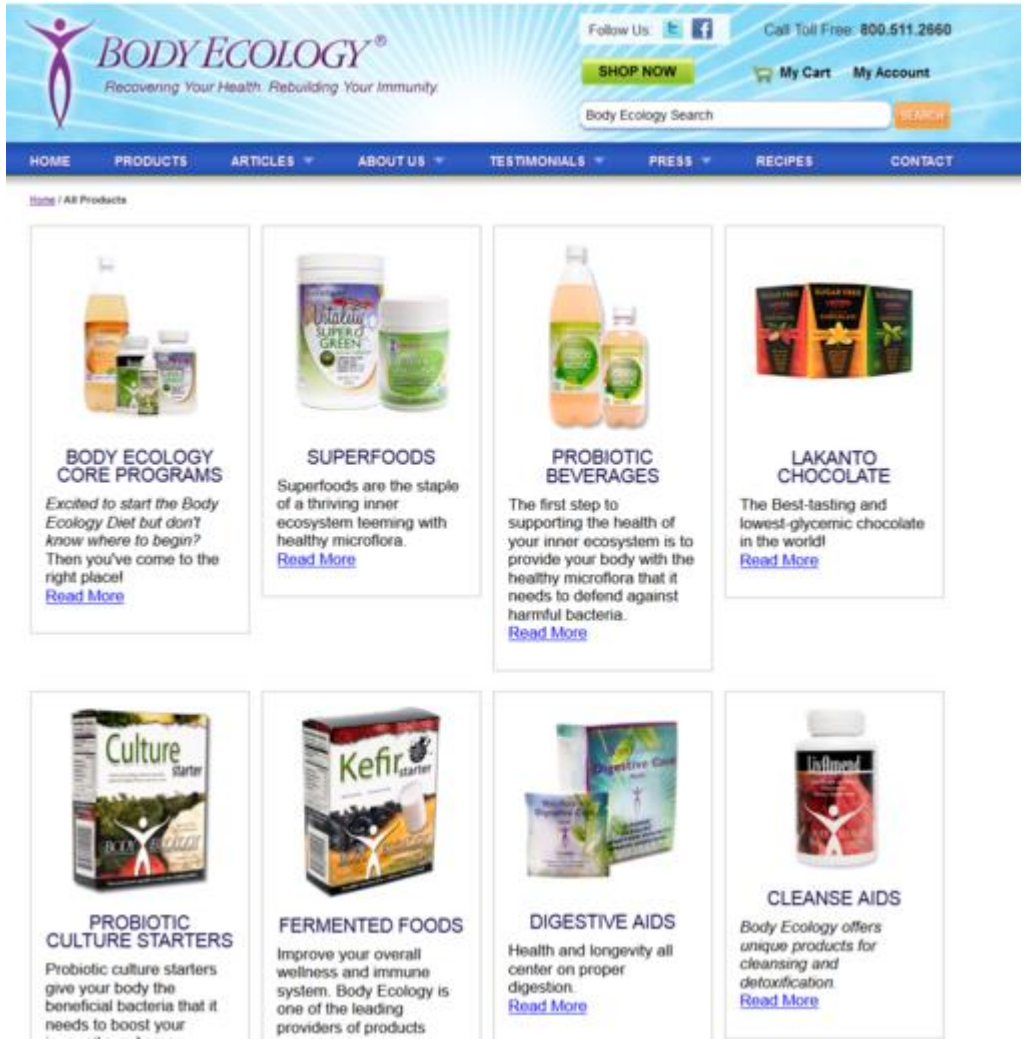
Body Ecology is an e-commerce store that sells diet products. They employed a drop-down menu to help narrow down the customers' choices



the drop-down menu gives only text links to products. It doesn't display a picture of the product

REMOVING DROP-DOWN INCREASES REVENUE 56.43%

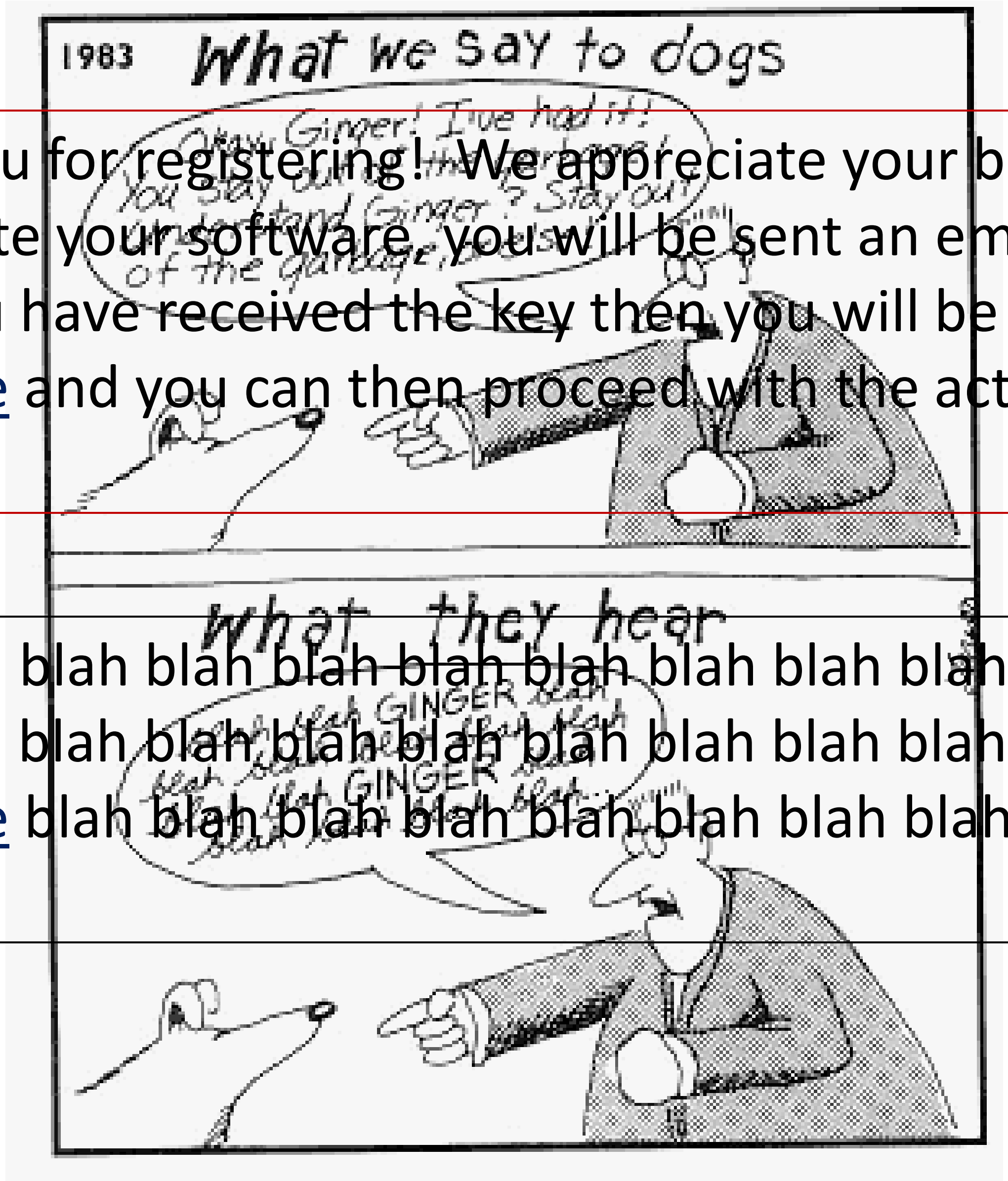
wanted to see if removing this drop-down menu and replacing it with a products page would increase order conversion. This is the replacement:



The product page beat the drop-down menu by 56.43%, resulting in a total increase in revenue of $8,880 over a two-week period.

Larson's dog effect

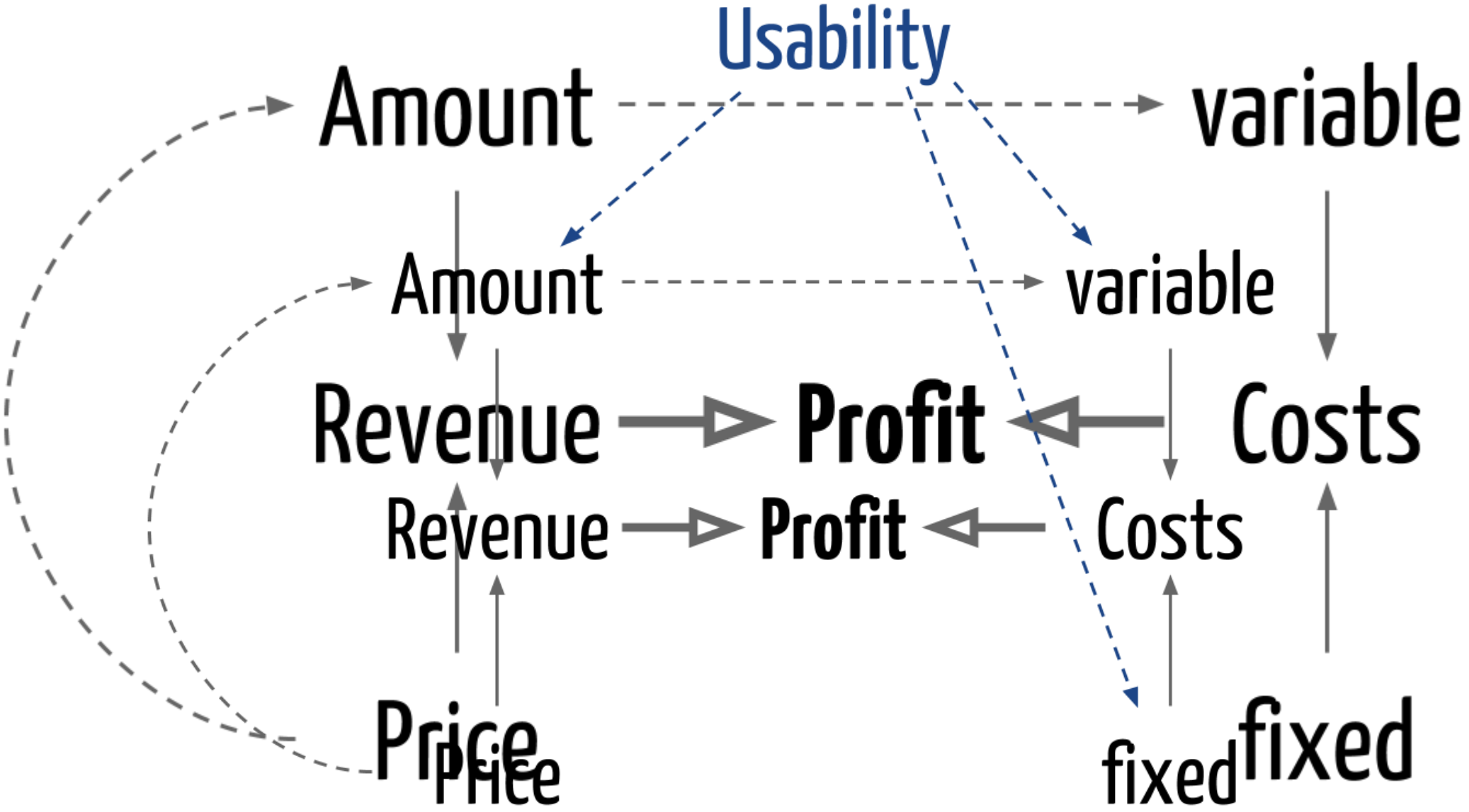
Same with Software



Thank you for registering! We appreciate your business. To activate your software, you will be sent an email key. After you have received the key then you will be able to click here and you can then proceed with the activation process.

Blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah blah click here blah blah blah blah blah blah blah blah blah blah blah

USABILITY, REVENUE, COSTS, & PROFIT



WHAT IS USABILITY?

Usability is a measure of the **effectiveness**, **efficiency** and **satisfaction** with which specified users can achieve specified goals in a particular environment.

WHY IS USABILITY IMPORTANT?

Poor usability results in

- ✓anger and frustration
- ✓decreased productivity in the workplace
- ✓higher error rates
- ✓physical and emotional injury
- ✓equipment damage
- ✓loss of customer loyalty
- ✓costs money

THE USER INTERFACE

The user interface is the system that helps users communicate with the computer system and/or the application system.

- ✓User interfaces should be designed to match the skills, experience and expectations of its anticipated users.
- ✓System users often judge a system by its interface rather than its functionality.
- ✓A poorly designed interface can cause a user to make catastrophic errors.
- ✓Poor user interface design is the reason why so many software systems are never used.

HUMAN FACTORS IN INTERFACE DESIGN

- ✓ Limited short-term memory
  - ➢ People can instantaneously remember about 7 items of information. If you present more than this, they are more likely to make mistakes.
- ✓ People make mistakes
  - ➢ When people make mistakes and systems go wrong, inappropriate alarms and messages can increase stress and hence the likelihood of more mistakes.
- ✓ People are different
  - ➢ People have a wide range of physical capabilities. Designers should not just design for their own capabilities.
- ✓ People have different interaction preferences
  - ➢ Some like pictures, some like text.

BASIC PRINCIPLES

- ✓ Assume users
  - ➢ Have not read the manual
  - ➢ Have not attended training
  - ➢ Do not have external help readily at hand

So…

- ✓ All controls should be clear and understandable and placed in an intuitive location on the screen.

BASIC PRINCIPLES

- ✓UI design must take account of the needs, experience and capabilities of the system users.
- ✓Designers should be aware of people's physical and mental limitations (e.g. limited short-term memory) and should recognise that people make mistakes.
- ✓UI design principles underlie interface designs although not all principles are applicable to all designs.

USER INTERFACE DESIGN PRINCIPLES

- ✓User familiarity
  - ➢The interface should be based on user-oriented terms and concepts rather than computer concepts. For example, an office system should use concepts such as letters, documents, folders etc. rather than directories, file identifiers, etc.
- ✓Consistency
  - ➢The system should display an appropriate level of consistency. Commands and menus should have the same format, command punctuation should be similar, etc.
- ✓Minimal surprise
  - ➢If a command operates in a known way, the user should be able to predict the operation of comparable commands

USER INTERFACE DESIGN PRINCIPLES

- ✓Recoverability
  - ➢The system should provide some resilience to user errors and allow the user to recover from errors. This might include an undo facility, confirmation of destructive actions, 'soft' deletes, etc.
- ✓User guidance
  - ➢Some user guidance such as help systems, on-line manuals, etc. should be supplied
- ✓User diversity
  - ➢Interaction facilities for different types of user should be supported. For example, some users have seeing difficulties and so larger text should be available

DESIGN ISSUES IN UIS

- ✓Two problems must be addressed in interactive systems design
  - ➢How should information from the user be provided to the computer system?
  - ➢How should information from the computer system be presented to the user?

INTERACTION STYLES

Interaction style	Main advantages	Main disadvantages	Application examples
Direct manipulation	Fast and intuitive interaction Easy to learn	May be hard to implement Only suitable where there is a visual metaphor for tasks and objects	Video games CAD systems
Menu selection	Avoids user error Little typing required	Slow for experienced users Can become complex if many menu options	Most general-purpose systems
Form fill-in Easy to learn Checkable	Simple data entry	Takes up a lot of screen space Causes problems where user options do not match the form fields	Stock control Personal loan processing
Command language	Powerful and flexible	Hard to learn Poor error management	Operating systems Command and control systems
Natural language	Accessible to casual users Easily extended	Requires more typing Natural language understanding systems are unreliable	Information retrieval systems

Typical Web-site Usability Problems

- ✓Navigation
  - ➢Knowing where you are
  - ➢Finding what you want
- ✓Structure of web site
- ✓Layout
  - ➢Use of large graphics

User Centered Design

- ✓UCD is a dialog between the customer and the designer
- ✓Rules of thumb:
  - ➢Get to know and understand the users.
  - ➢Build an application, applying usability principles.
  - ➢Test designs by observing users in a real work setting (environment and work load).

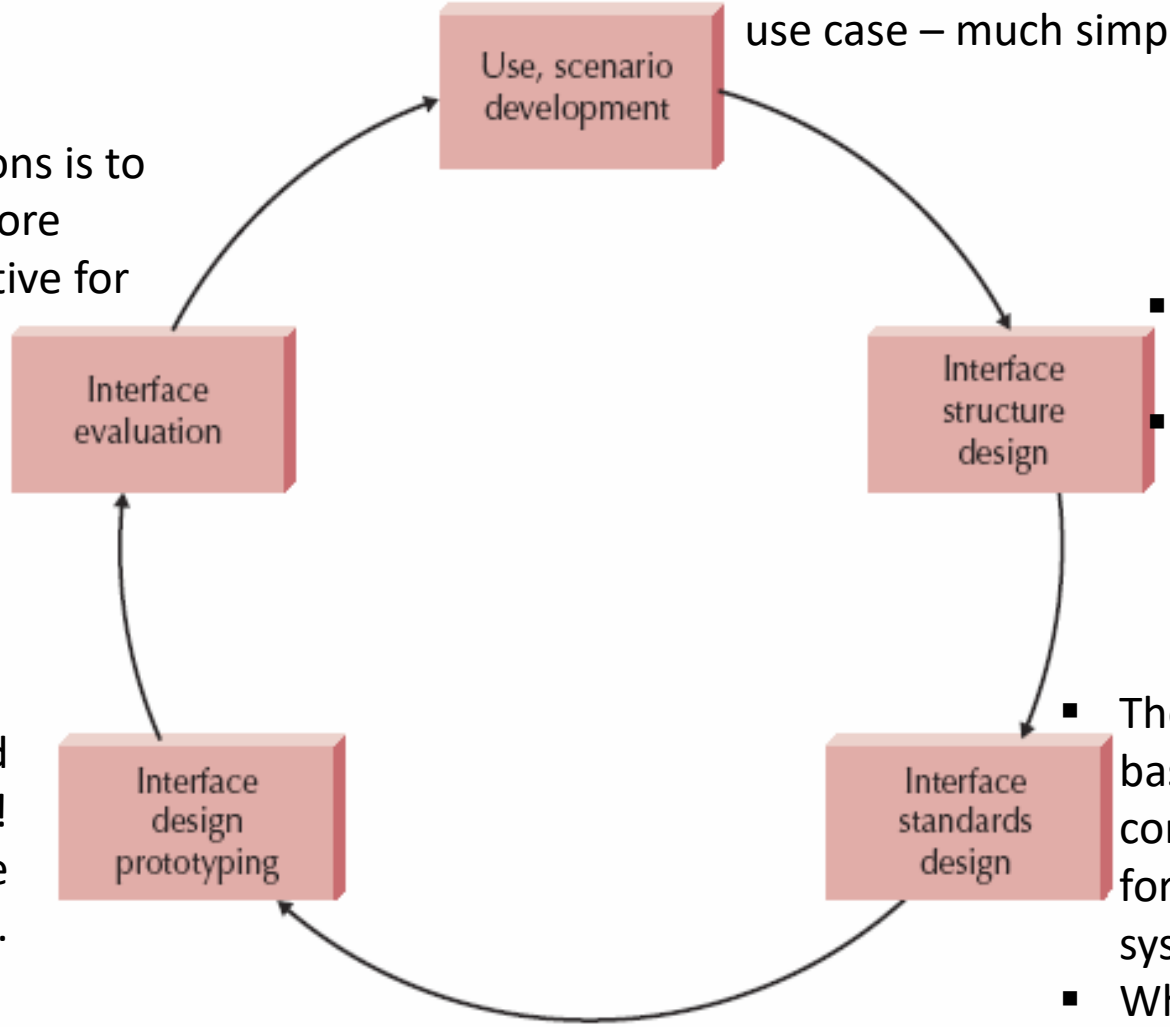
UI Design is Multi Disciplinary

- ✓ A team includes
  - Analyst
  - Designer
  - Technology expert
  - Graphic artist
  - Social and behavioral scientist
  - Programmer

USABILITY DESIGN PROCESS

- You already know about use cases
- User scenarios are just a single thread through a use case – much simpler!

- goal of user interface evaluations is to make products and services more usable, easy to learn and intuitive for the user.

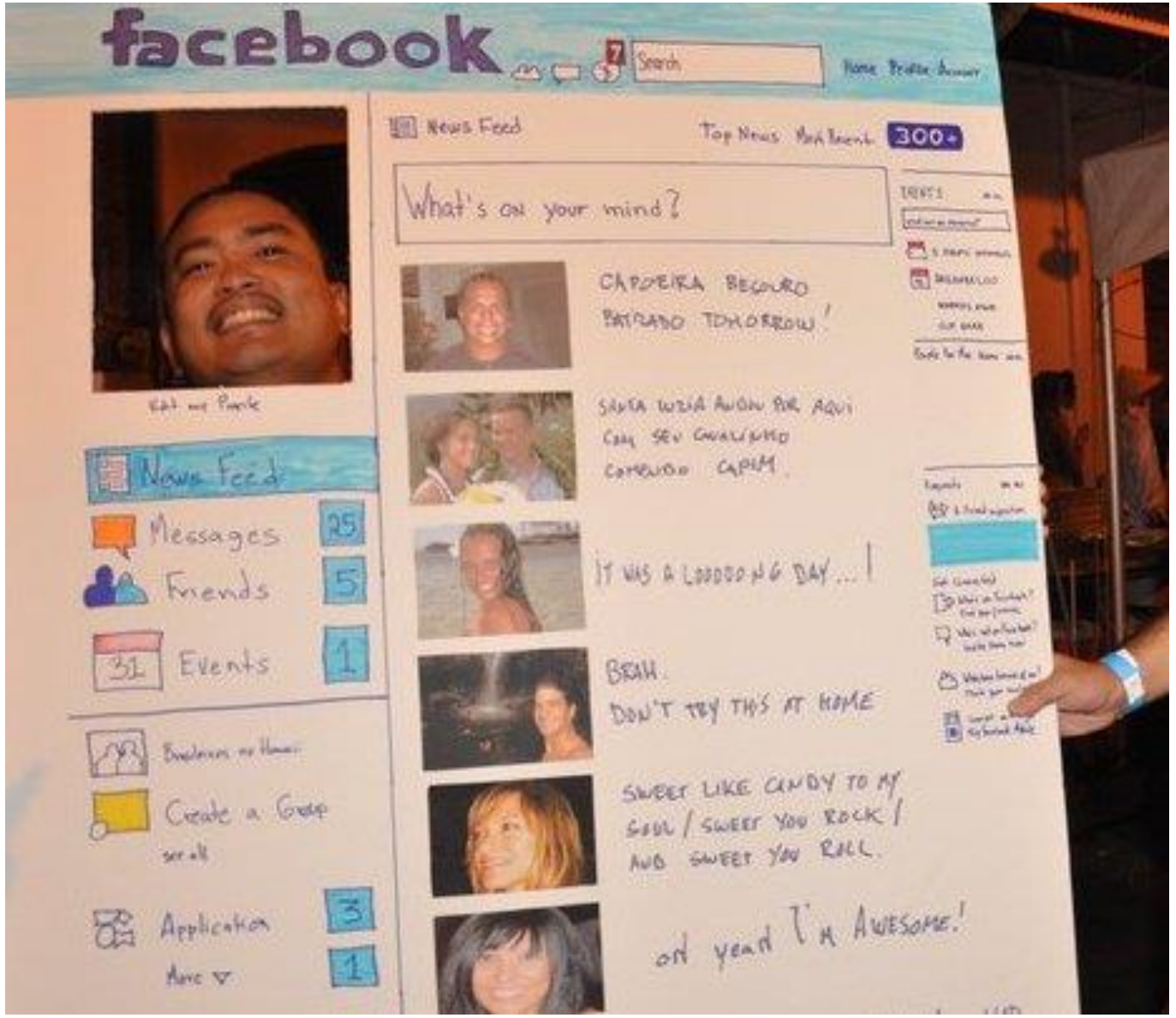


- This matters much less than it used to.
- What can you do about it?

- Storyboard
- Low-fidelity prototypes are good!
  - Paper prototype
  - Visio/HTML/PPT/…

- The interface standards are the basic design elements that are common across the screens, forms, and reports within the system.
- What do you think of this?

EXAMPLE : PAPER PROTOTYPE



Golden Rules for Better Interface Design

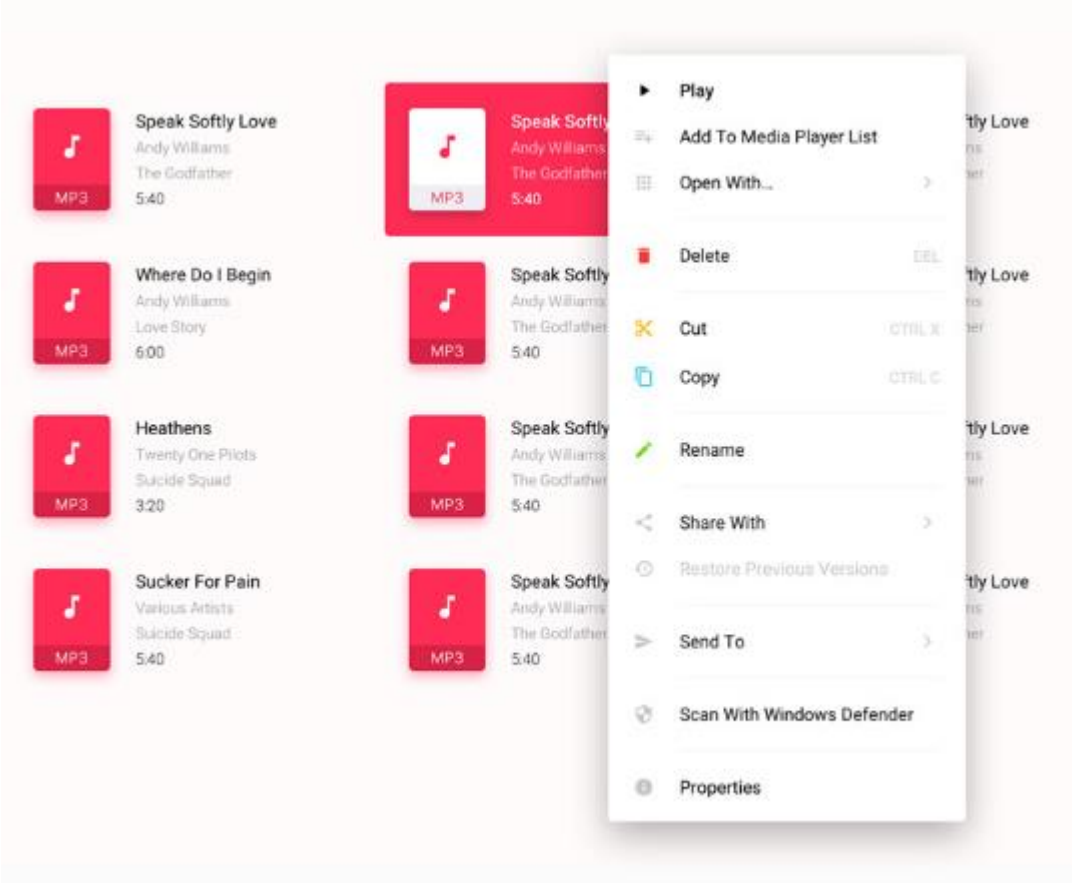
1. Strive for Consistency

- ✓ Designing “consistent interfaces” means using the same design patterns and the same sequences of actions for similar situations.
- ✓ This includes, but isn’t limited to, the right use of color, typography and terminology in prompt screens, commands, and menus throughout your user journey.
- ✓ a consistent interface will allow your users to complete their tasks and goals much more easily.

Golden Rules for Better Interface Design

2. Enable Frequent Users to Use Shortcuts

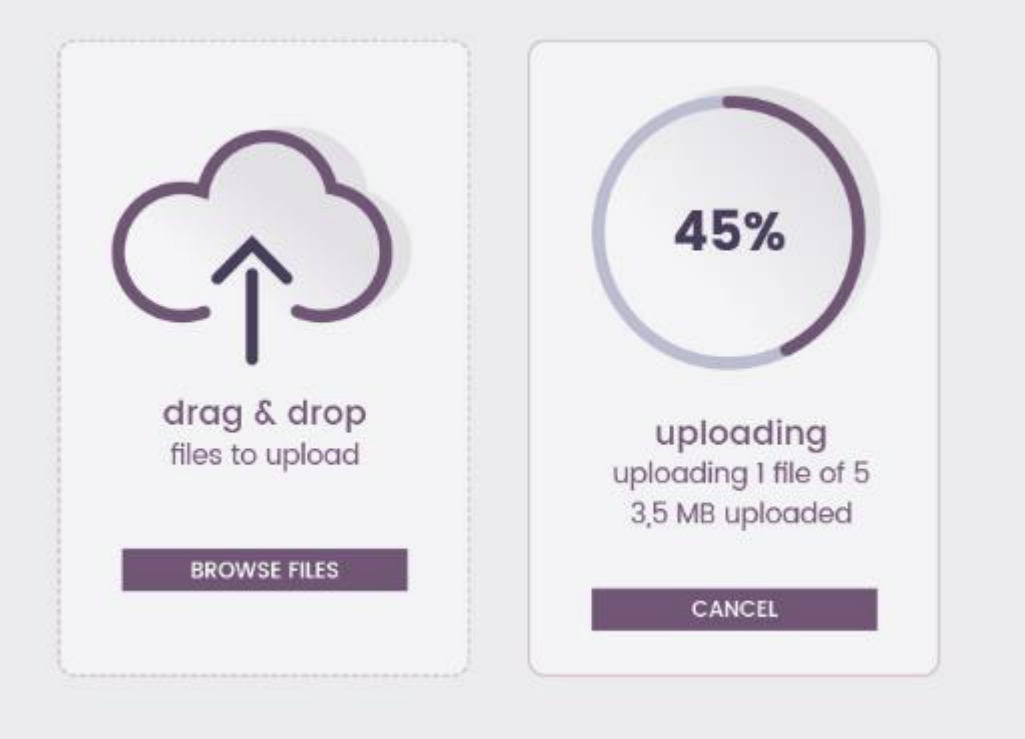
- ✓ Users will benefit from shortcuts if they need to complete the same tasks often.
- ✓ Expert users might find the following features helpful:
  - ➢ Abbreviations
  - ➢ Function keys
  - ➢ Hidden commands
  - ➢ Macro facilities



Golden Rules for Better Interface Design

3. Offer Informative Feedback

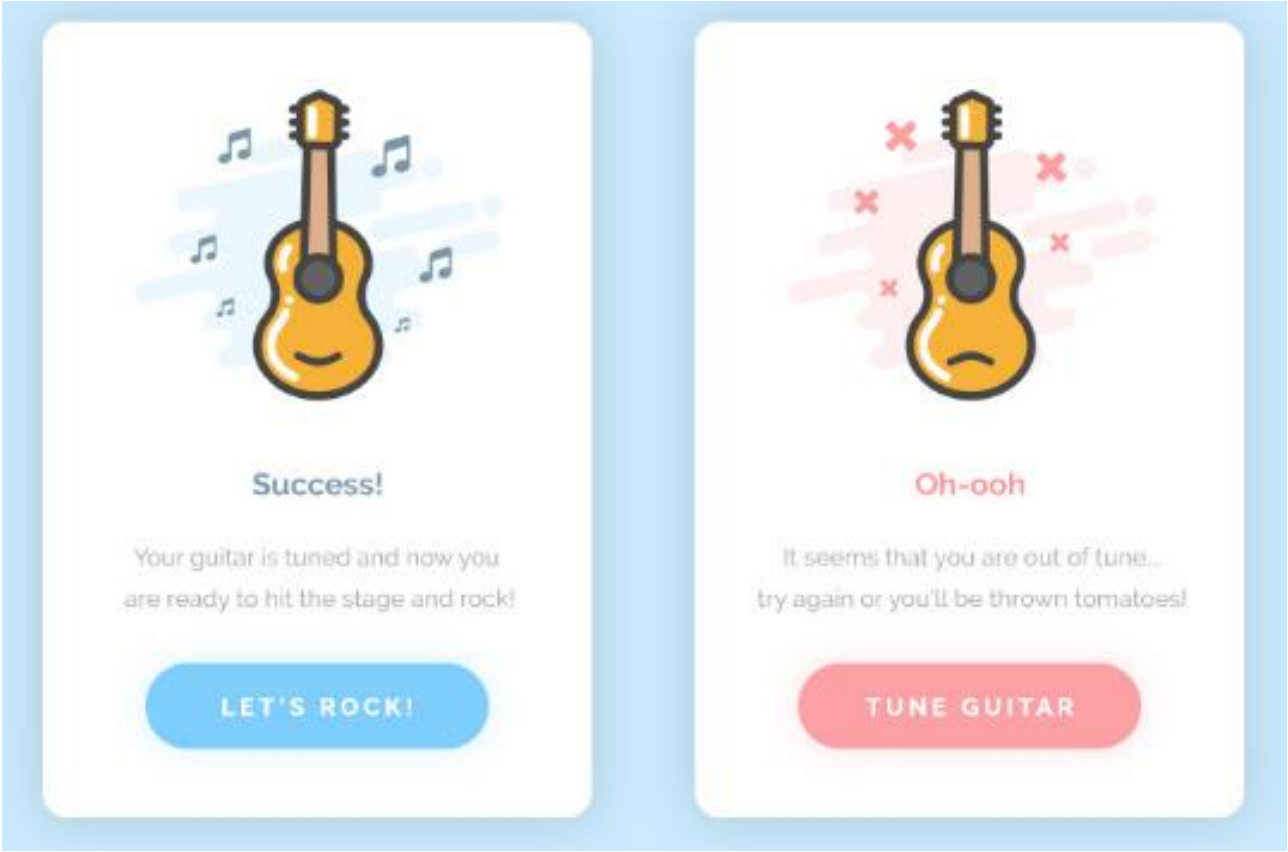
- ✓ need to keep users informed of what is happening at every stage of their process.
- ✓ This feedback needs to be meaningful, relevant, clear, and fit the context.



Golden Rules for Better Interface Design

4. Design Dialog to Yield Closure

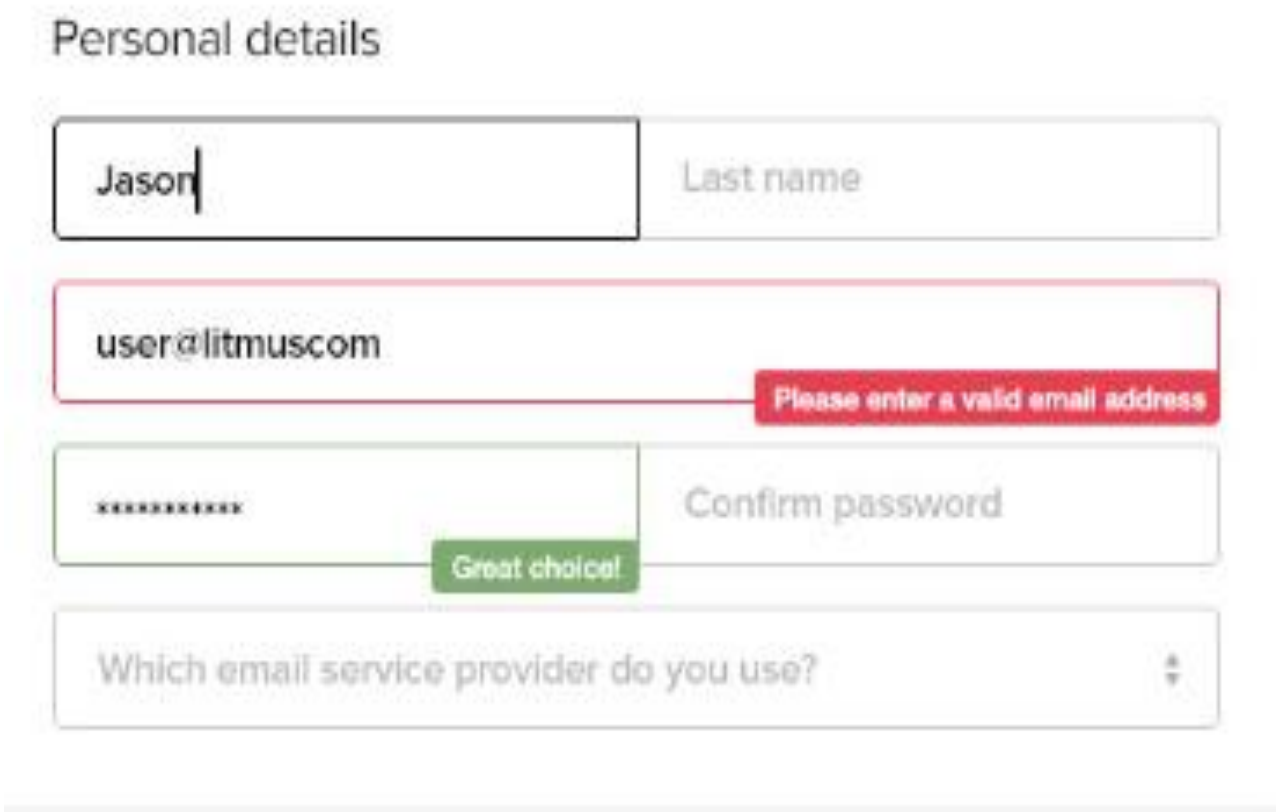
- ✓ Sequences of actions need to have a beginning, middle and end.
- ✓ Once a task is completed, give some peace of mind to your user by providing them informative feedback and well-defined options for the next step if that's the case.
- ✓ Don't keep them wondering!



GOLDEN RULES FOR BETTER INTERFACE DESIGN

5. Offer Simple Error Handling

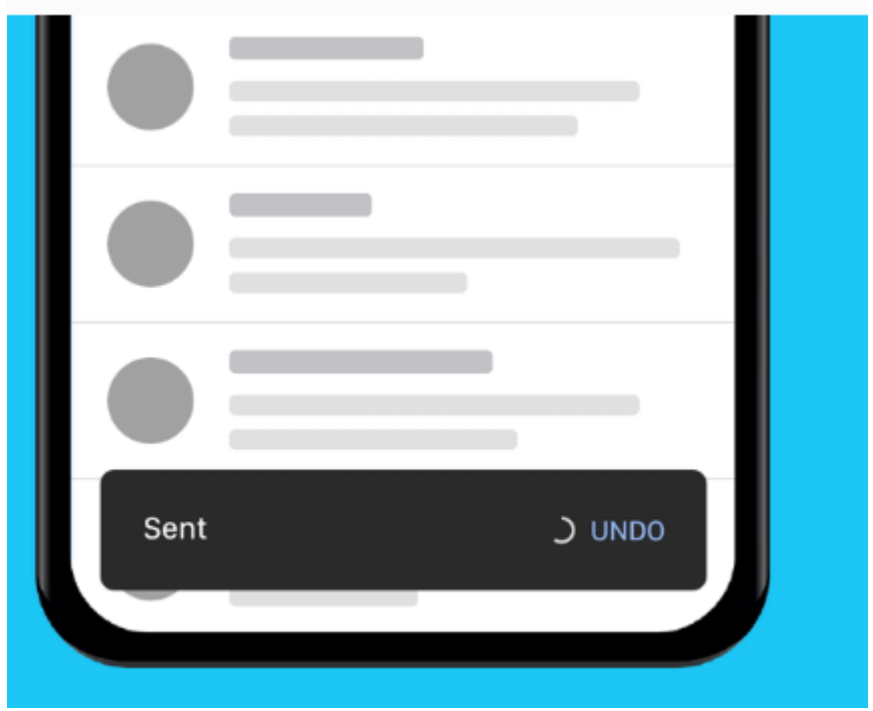
- ✓ A good interface should be designed to avoid errors as much as possible.
- ✓ But when errors do happen, your system needs to make it easy for the user to understand the issue and know how to solve it.
- ✓ Simple ways to handle errors include displaying clear error notifications along with descriptive hints to solve the problem.



Golden Rules for Better Interface Design

6. Permit Easy Reversal of Actions

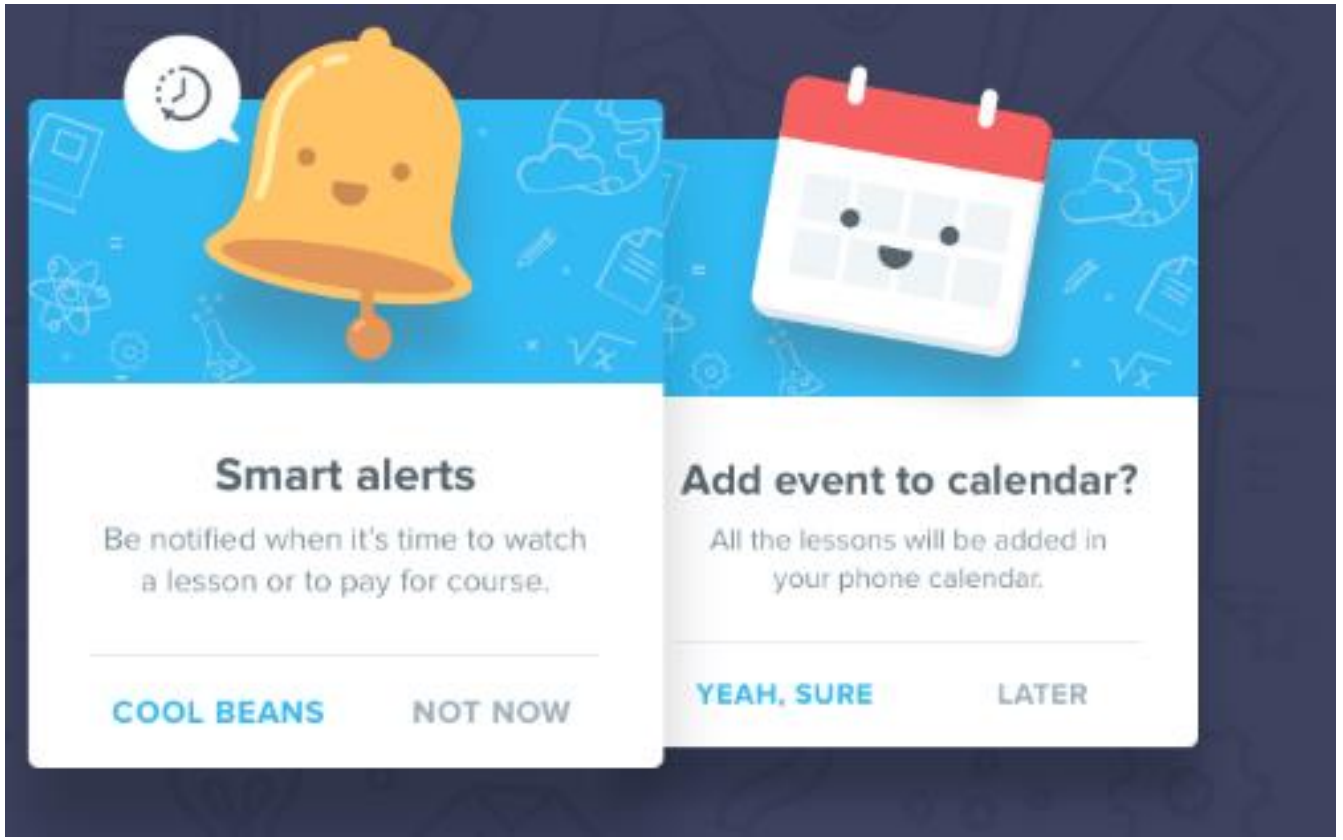
- ✓ It's an instant relief to find that "undo" option after a mistake is made.
- ✓ Users will feel less anxious and more likely to explore options if they know there's an easy way to reverse any accidents.
- ✓ This rule can be applied to any action, group of actions, or data entry.



GOLDEN RULES FOR BETTER INTERFACE DESIGN

7. Support Internal Locus of Control

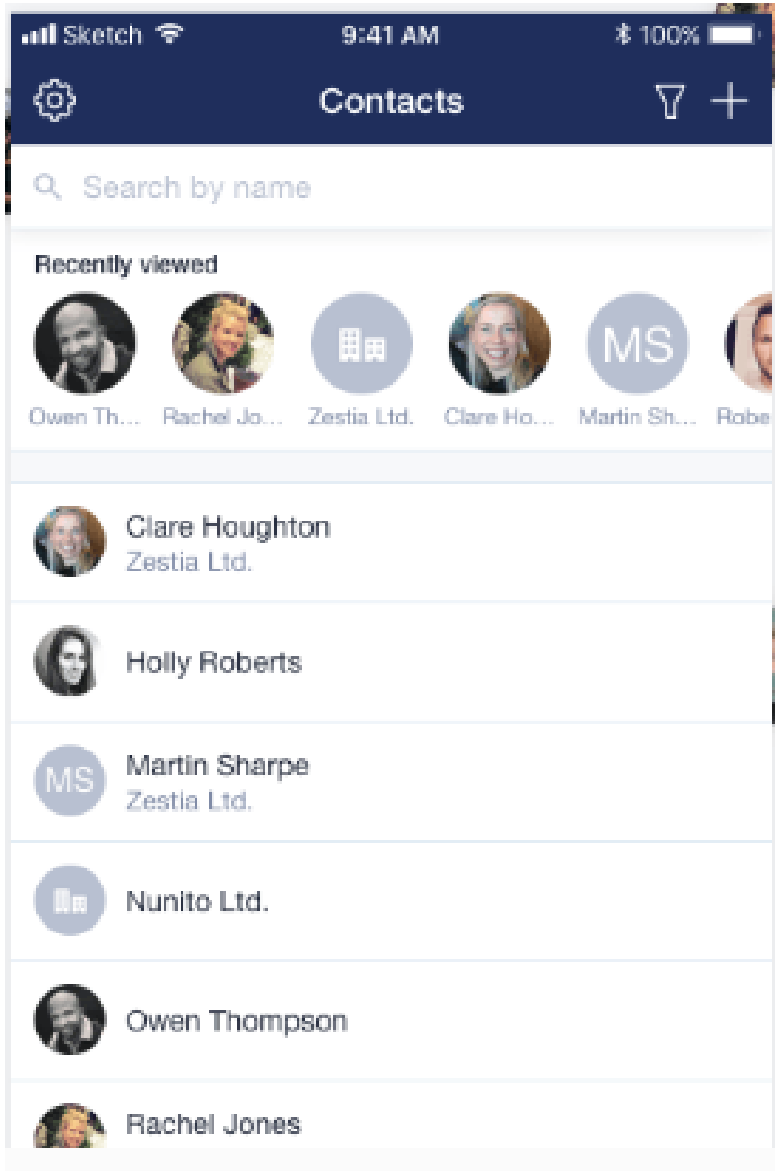
- ✓ It's important to give control and freedom to your users so they're able to feel they're in charge of the system, not the other way round.
- ✓ Avoid surprises, interruptions, or anything that hasn't be prompted by the users.
- ✓ Users should be the initiators of the actions rather than the responders.



Golden Rules for Better Interface Design

8. Reduce Short-Term Memory Load

- ✓ If we keep our interfaces simple and consistent, obeying to patterns, standards and conventions, we are already contributing to better recognition and ease of use.
- ✓ There are several features we can add to aid our users depending on their goals. For example, in an ecommerce environment, a list of recently viewed or purchased items.



EXERCISE

You are using many mobile applications. Surely you are not happy with all User interfaces of the apps you are using. Choose one of such app with poor user interface. And Redesign the User Interface for better usability. Write 5 sentence why your designed UI is more usable than the existing one.

USER INTERFACE EVALUATION

✓Some evaluation of a user interface design should be carried out to assess its suitability.

✓Full scale evaluation is very expensive and impractical for most systems.

✓Ideally, an interface should be evaluated against a usability specification. However, it is rare for such specifications to be produced.

Usability Criteria

Attribute	Description
Learnability	How long does it take a new user to become productive with the system?
Speed of operation	How well does the system response match the user's work practice?
Robustness	How tolerant is the system of user error?
Recoverability	How good is the system at recovering from user errors?
Adaptability	How closely is the system tied to a single model of work?

SIMPLE EVALUATION TECHNIQUES

✓Less expensive techniques for user interface evaluation:

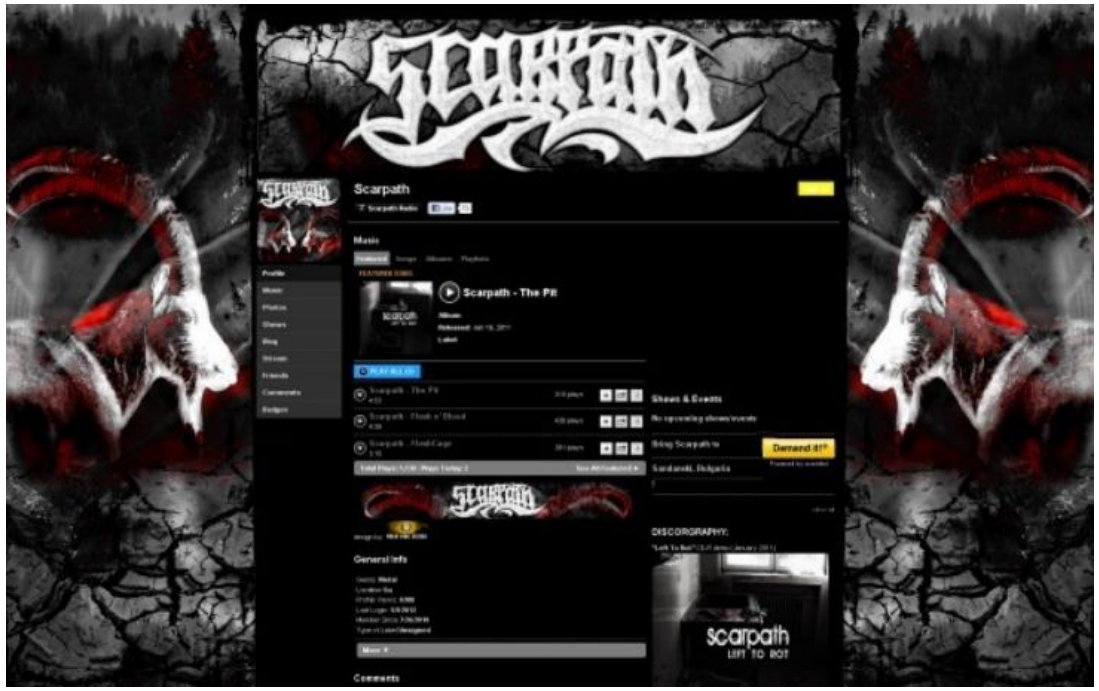
- ➢Questionnaires
- ➢Observations of users at work
- ➢Video snapshots of typical uses
- ➢Software components that gather information on the usage of the user interface
- ➢Software components that allow direct feedback from users

FAILED DUE TO POOR UI

Google Wave was an interesting project that supposed to improve collaboration

- Launched in 2009
- announced failure in 2010
- killed in 2012.
- Unfortunately Google forgot about user experience.
- It was a design nightmare.

FAILED DUE TO POOR UI



Sample of MySpace profile

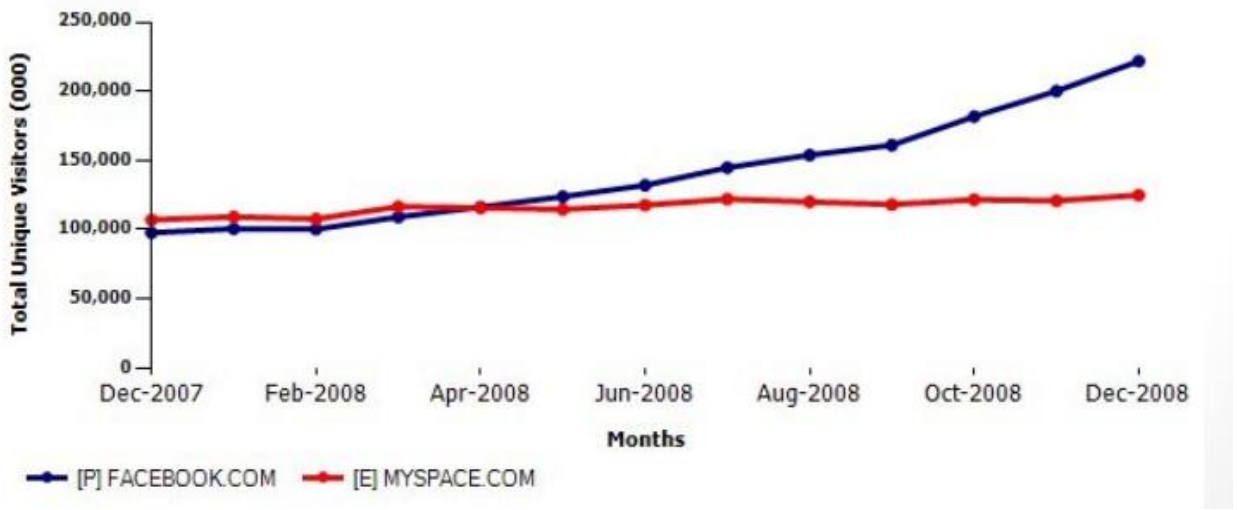
- One month into its initial launch, MySpace already had 1 million people registered
- 6 months later, they had 5 million users.
- It was the most popular social media site from 2005-2008

Number of MySpace users at its peak:

75.9 million users

FAILED DUE TO POOR UI

- Now a days people have no idea what MySpace is.
- Their website began losing members as Facebook started gaining them.
- The real question is: Why did this happen?

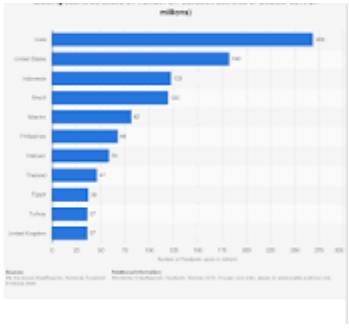


- Myspace's vast amount of resources was seen as a reason for its success, it actually turned out to be one of the reasons for their failure
- Facebook, without professional management, allowed their concept to be guided by what the users wanted

- The UI on Facebook takes seconds to master and constantly adapts around a user's network of friends and interests
- And MySpace user was forced to hunt and peck for information across a number of screens, which led to a frustrating user experience.

2.4 billion

With over 2.4 billion monthly active **users**, **Facebook** is the most popular social network worldwide. Jan 6, 2020



“Walk a mile in the user’s shoes”

Next Class

Software Design