

Human-Computer Interaction

CPSC 481 - Winter 2019

Design Principles, Guidelines
&
Patterns

What are Design Principles?

What are Design Principles?

- Principle: a fundamental truth or proposition that serves as the foundation for a system of belief or behavior or for a chain of reasoning.

What are Design Principles?

- Sets of generally applicable laws, human biases, and design considerations, all of which reflect the accumulated knowledge and experience of practitioners and researchers.

What are Design Principles?

- Sets of generally applicable laws, human biases, and design considerations, all of which reflect the accumulated knowledge and experience of practitioners and researchers.
- They serve as a starting point for the creation of new designs to solve problems.

What are Design Principles?

- Design principles are aimed at helping designers find ways to enhance usability, influence perception, increase appeal, teach users, and make sound design decisions during projects.

What are Design Principles?

- Design principles are aimed at helping designers find ways to enhance usability, influence perception, increase appeal, teach users, and make sound design decisions during projects.
- The careful selection and application of appropriate principles should **increase** the probability that a design will be successful.

What are Design Principles?

- Design principles are aimed at helping designers find ways to enhance usability, influence perception, increase appeal, teach users, and make sound design decisions during projects.
- The careful selection and application of appropriate principles should increase the probability that a design will be successful.
- Additionally, the way in which the designer can apply each principle also heavily depends on his or her ability to rationalize, understand, and contextualize the problems he or she has been called upon to solve.

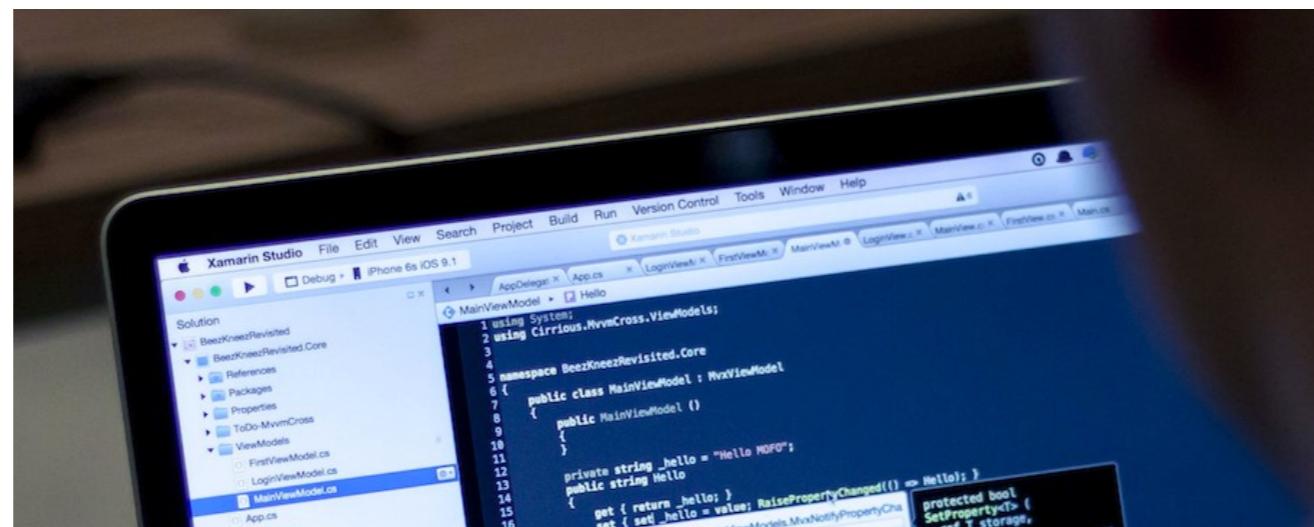
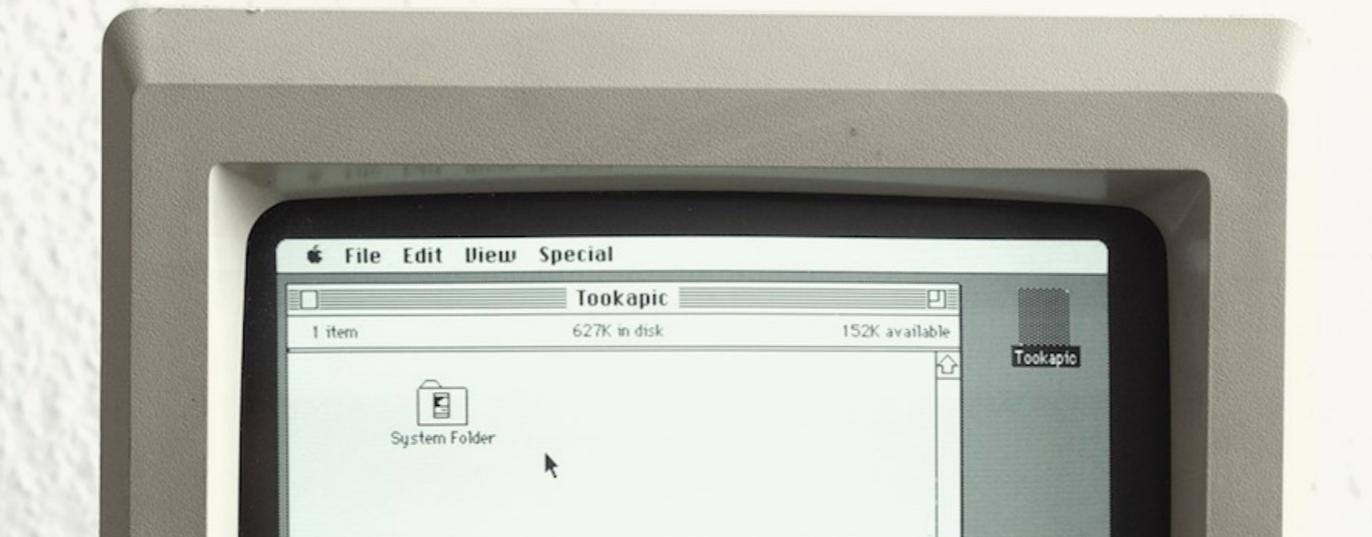
Design Principles

- Hick's Law
- KISS (Keep It Simple, Stupid)
- The Design of Everyday Things (DOET)
- Nielsen and Molich's 10 User Interface Design "Guidelines"
- Shneiderman's Eight Golden Rules

Shneiderman's Eight Golden Rules

- Great, productive and frustration-free user interfaces
 1. Consistency
 2. Shortcuts
 3. Informative Feedback
 4. Dialogue
 5. Error handling
 6. Permit reversal of actions
 7. Support internal locus of control
 8. Reduce short-term memory load

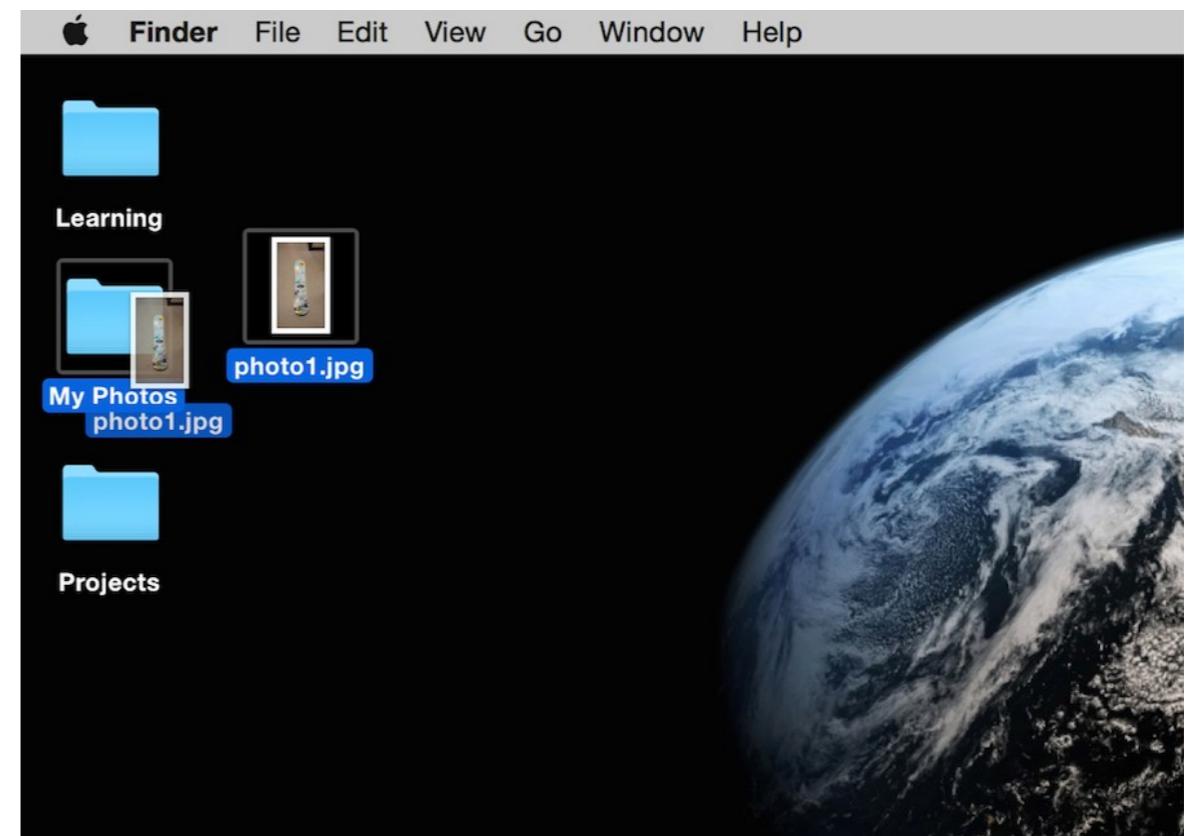
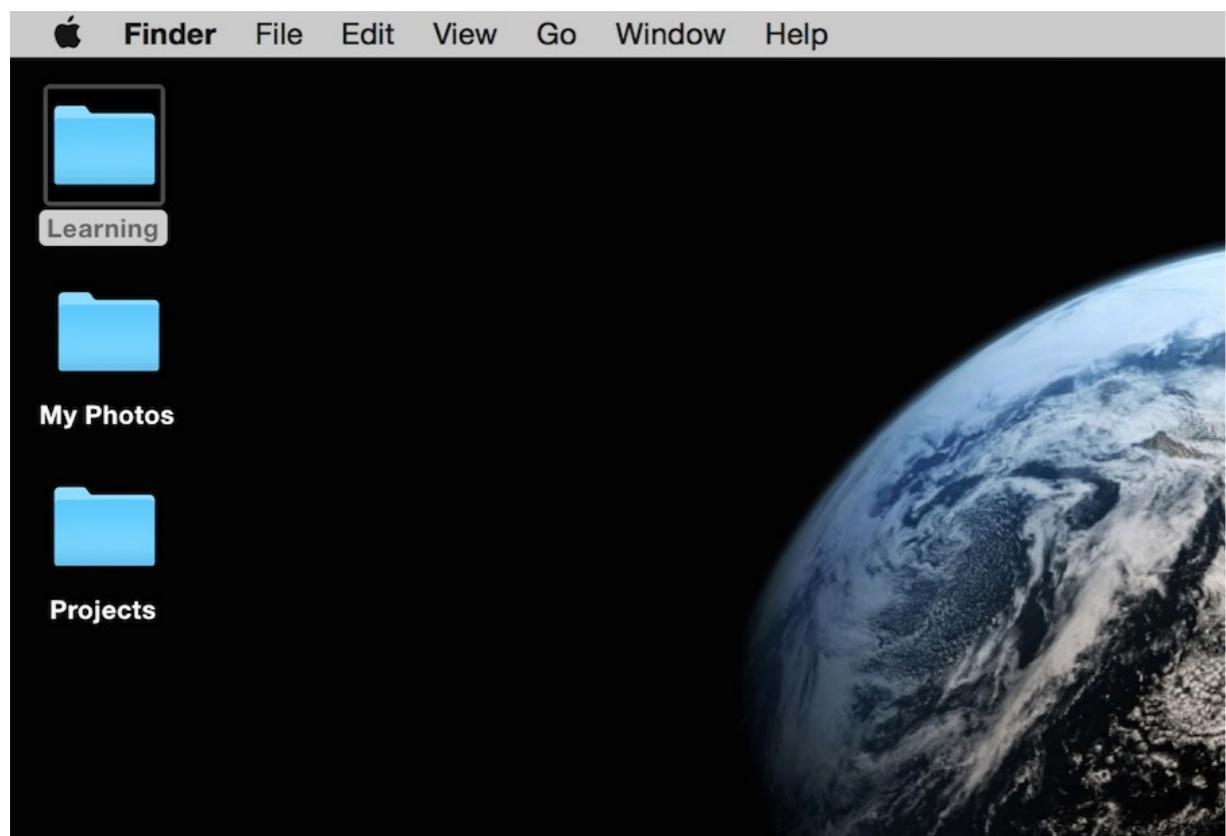
1. Consistency



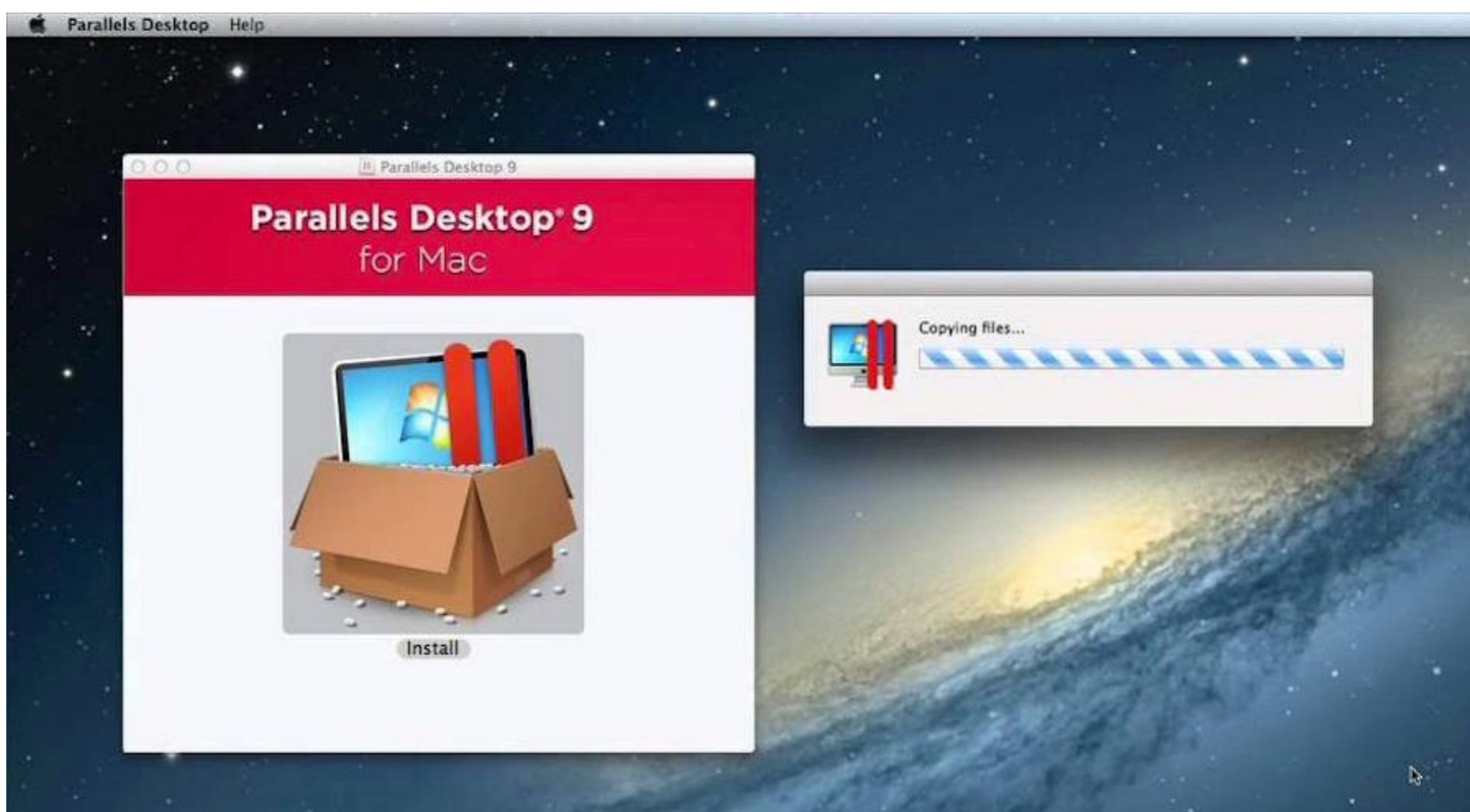
2. Shortcuts



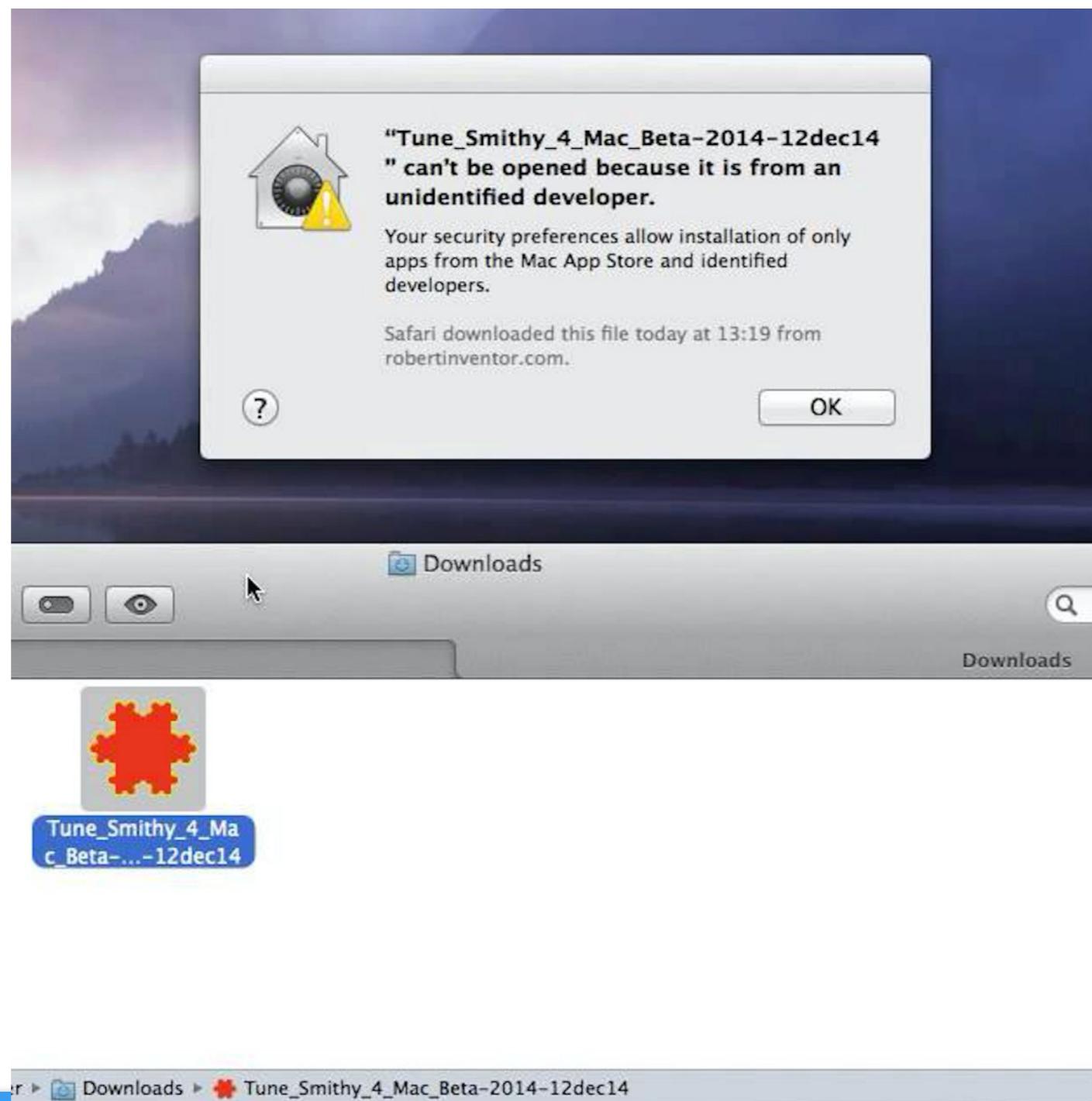
3. Informative Feedback



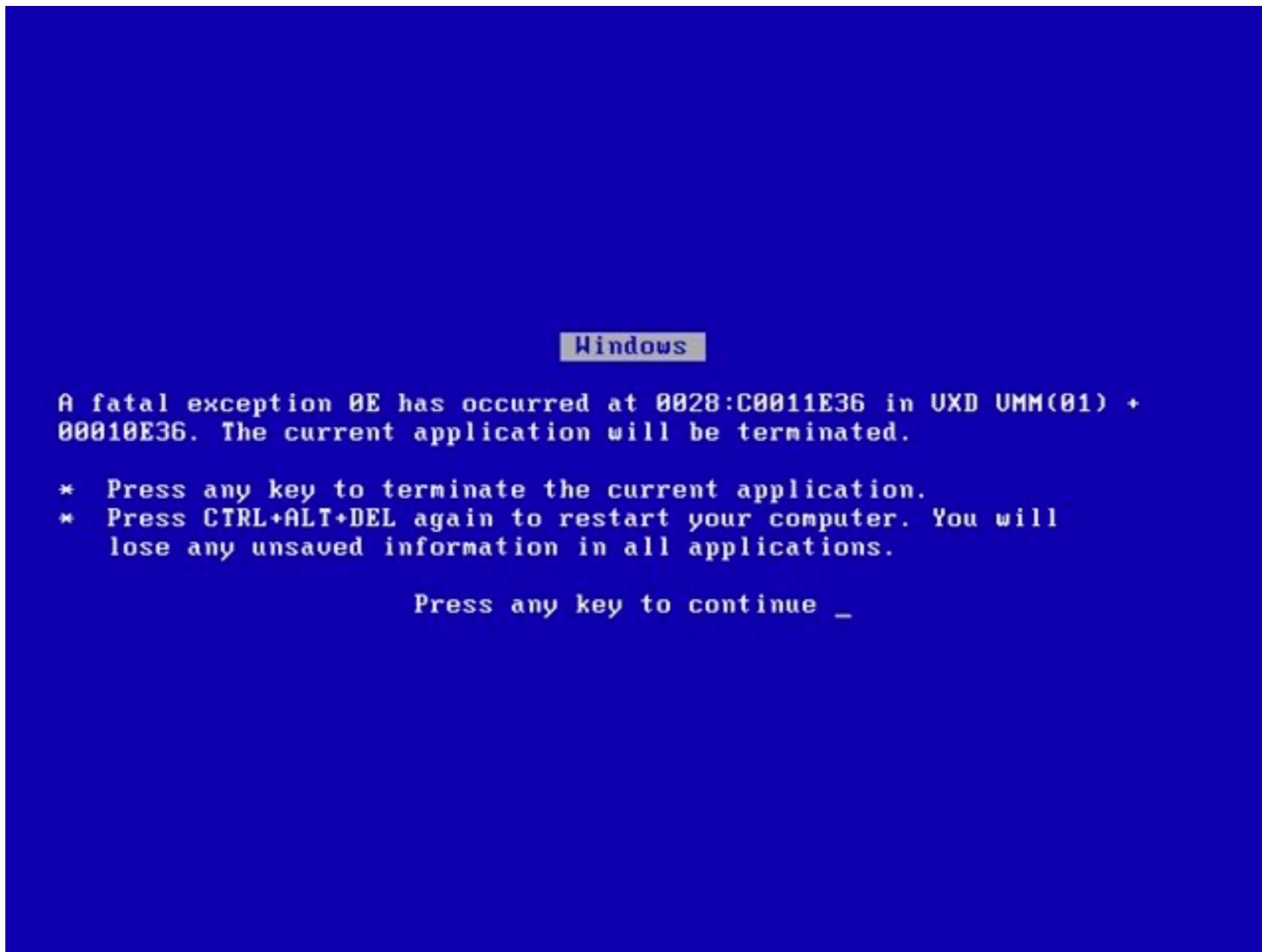
4. Dialogue



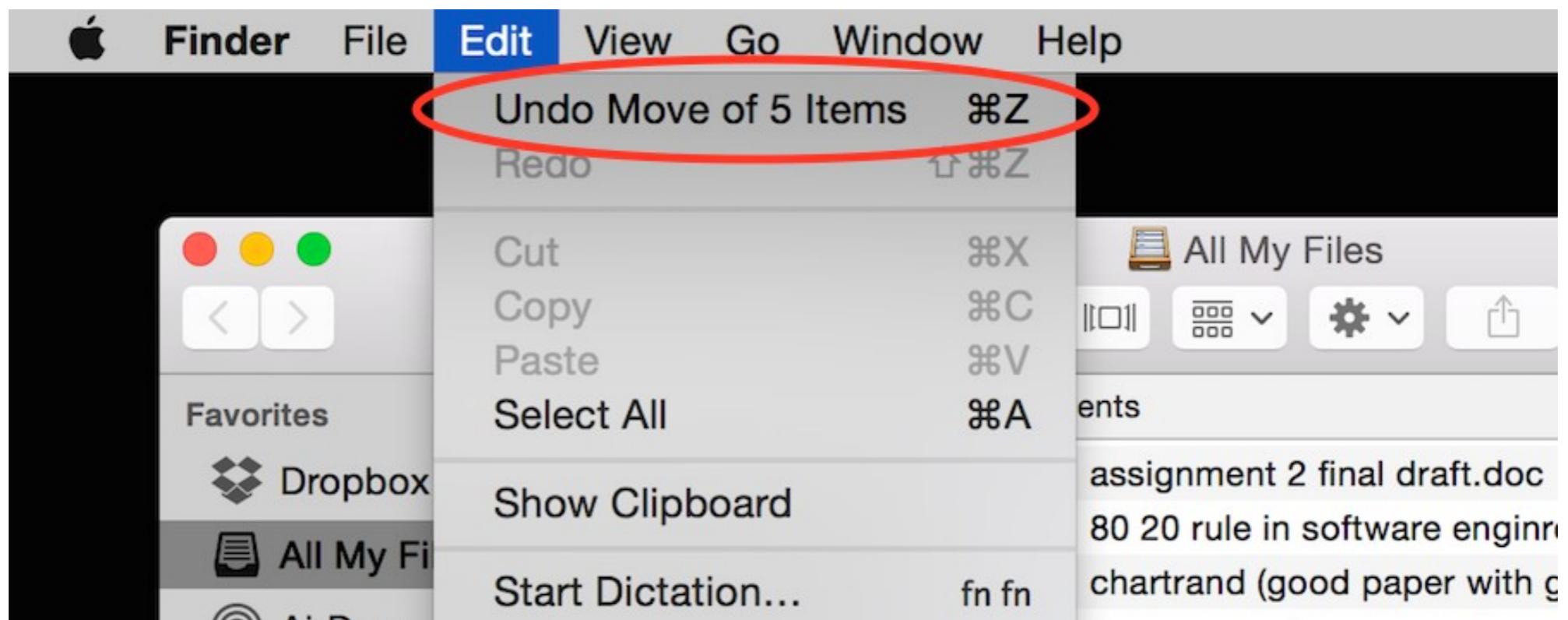
5. Error handling



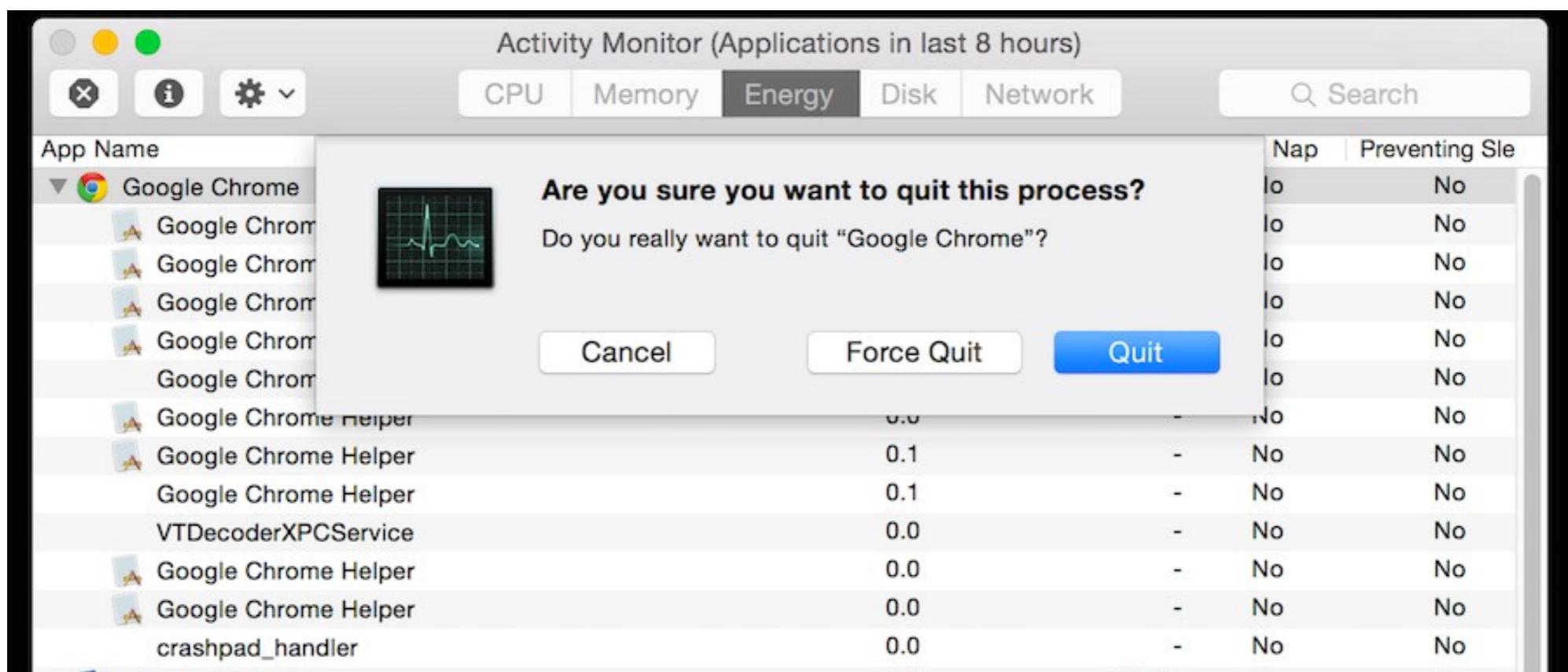
5. Error handling



6. Permit reversal of actions



7. Support internal locus of control



8. Reduce short-term memory load



iOS 4



Design Principles

- To help designers gain inspiration for implementing a particular principle, “guidelines” come into play...

What are Design Guidelines?

What are Design Guidelines?

- Sets of recommendations towards good practice in design.

What are Design Guidelines?

- Sets of recommendations towards good practice in design.
- They are intended to provide clear instructions to designers and developers on how to adopt specific principles, such as intuitiveness, learnability, efficiency, and consistency.

What are Design Guidelines?

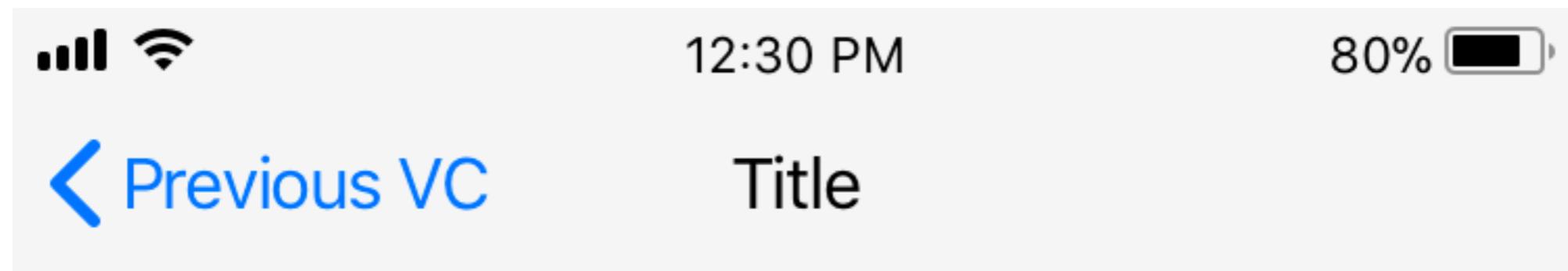
- Sets of recommendations towards good practice in design.
- They are intended to provide clear instructions to designers and developers on how to adopt specific principles, such as intuitiveness, learnability, efficiency, and consistency.
- Instead of dictating conventions, design guidelines provide helpful advice on how to achieve a design principle that can be platform-specific or cross-platform.

Design Guidelines

- Google Material Design
- iOS Design Guidelines
- Ubuntu Design
- Microsoft (Fluent Design System)

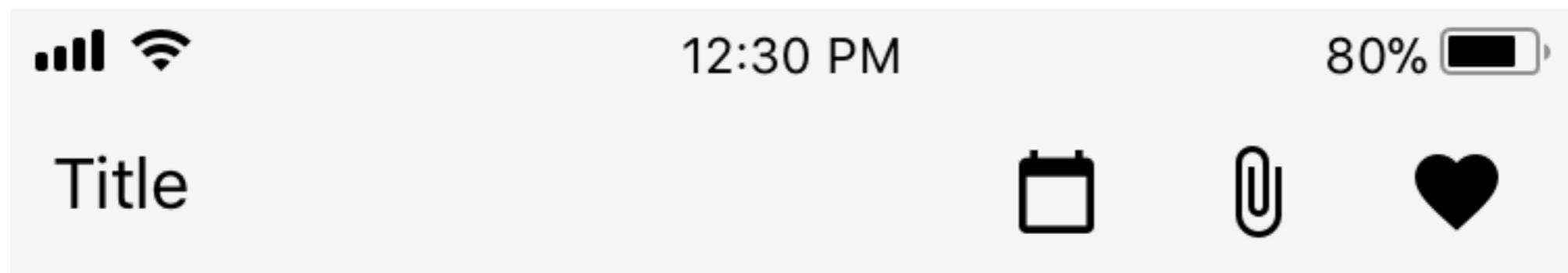
Design Guidelines

Toolbars



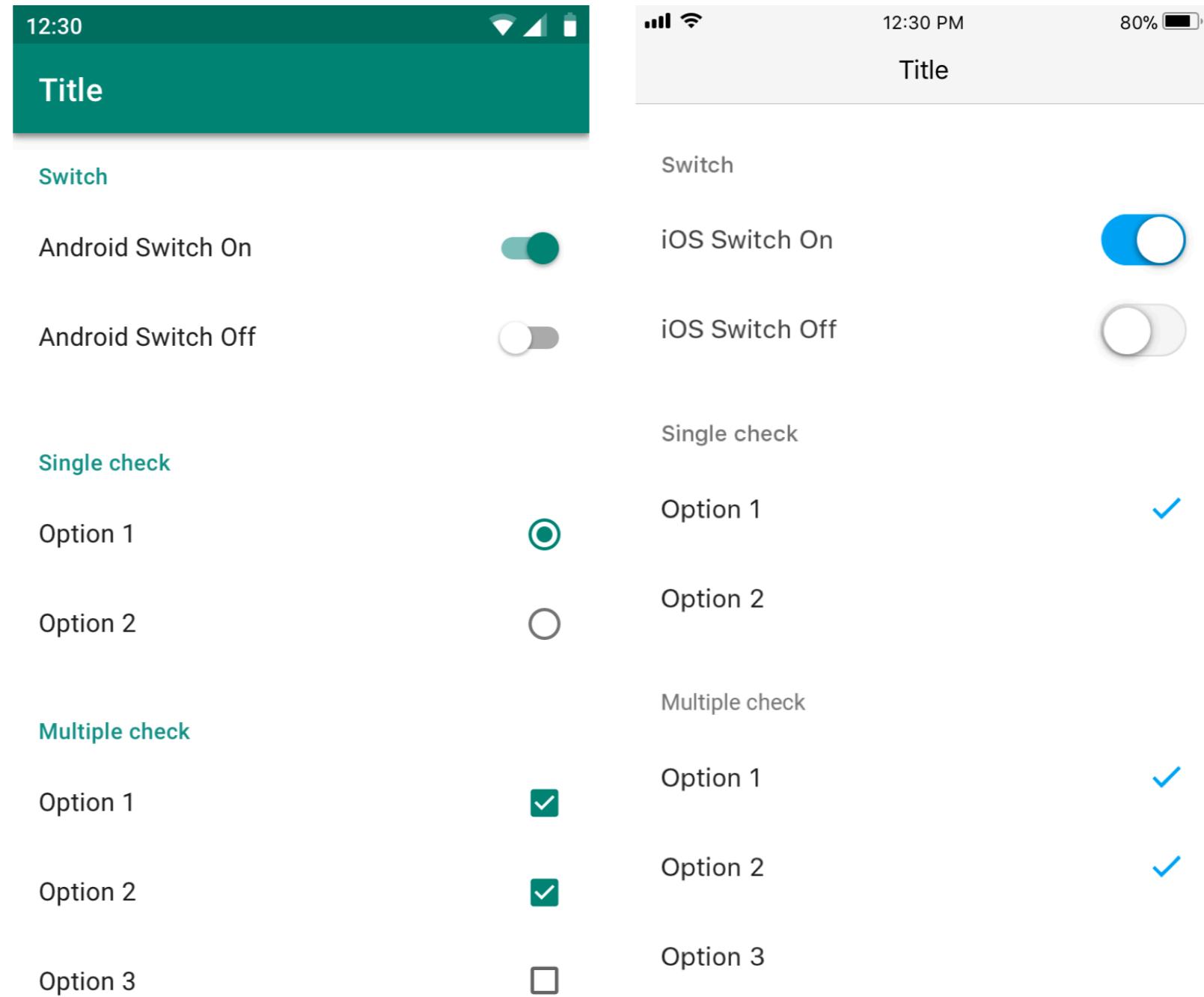
Design Guidelines

Toolbars



Design Guidelines

Controls



Design Guidelines



Design Guidelines

- A design guideline is thus intended to help designers understand how to implement a principle, without restricting their creativity in design, as the commanding inflexibility of a rule might.

What are Design Patterns?

What are Design Patterns?

- Recurring solutions that solve common design problems.
- Design patterns are standard reference points for the experienced user interface designer.

User Interface Design Pattern

User Interface Design Patterns

Getting input

Getting the user to input data is a task that should be tailored to the context of use.

Navigation

The user needs to locate specific features and content and needs navigation to accomplish this.

Dealing with data

Data can be searched, formatted, overviewed, and browsed in a variety of ways.

Social

Allow the user to associate, communicate, and interact with other people online.

Miscellaneous

Patterns that haven't found their main category yet.

Onboarding

The user needs to acquire the necessary knowledge, skills, and behaviors to become effective.

Persuasive Design Pattern

Persuasive Design Patterns

Cognition

Patterns of psychological tendencies that cause the human brain to draw incorrect conclusions.

Game mechanics

Games engage, involve, and influence us through its playful nature.

Perception and memory

Patterns in how we visually perceive, interpret, and remember meanings as we interact with systems.

Feedback

As the users interacts with your system feedback motivate them to take the next step.

Social

Allow the user to associate, communicate, and interact with other people online.

Summary

- A design **principle** thus reflects a *philosophy or aim of design*, whereas a **guideline** is intended to help designers understand *how to implement a principle*.

Summary

- A design **principle** thus reflects a *philosophy or aim of design*, whereas a **guideline** is intended to help designers understand *how to implement a principle*.
- A principle in design (e.g., “**an interface should be easy to use**”)

Summary

- A design **principle** thus reflects a *philosophy or aim of design*, whereas a **guideline** is intended to help designers understand *how to implement a principle*.
- A principle in design (e.g., “**an interface should be easy to use**”)
- A design guideline (e.g., “**text should be easy to read**”) sits between the above principle and the below standard

Summary

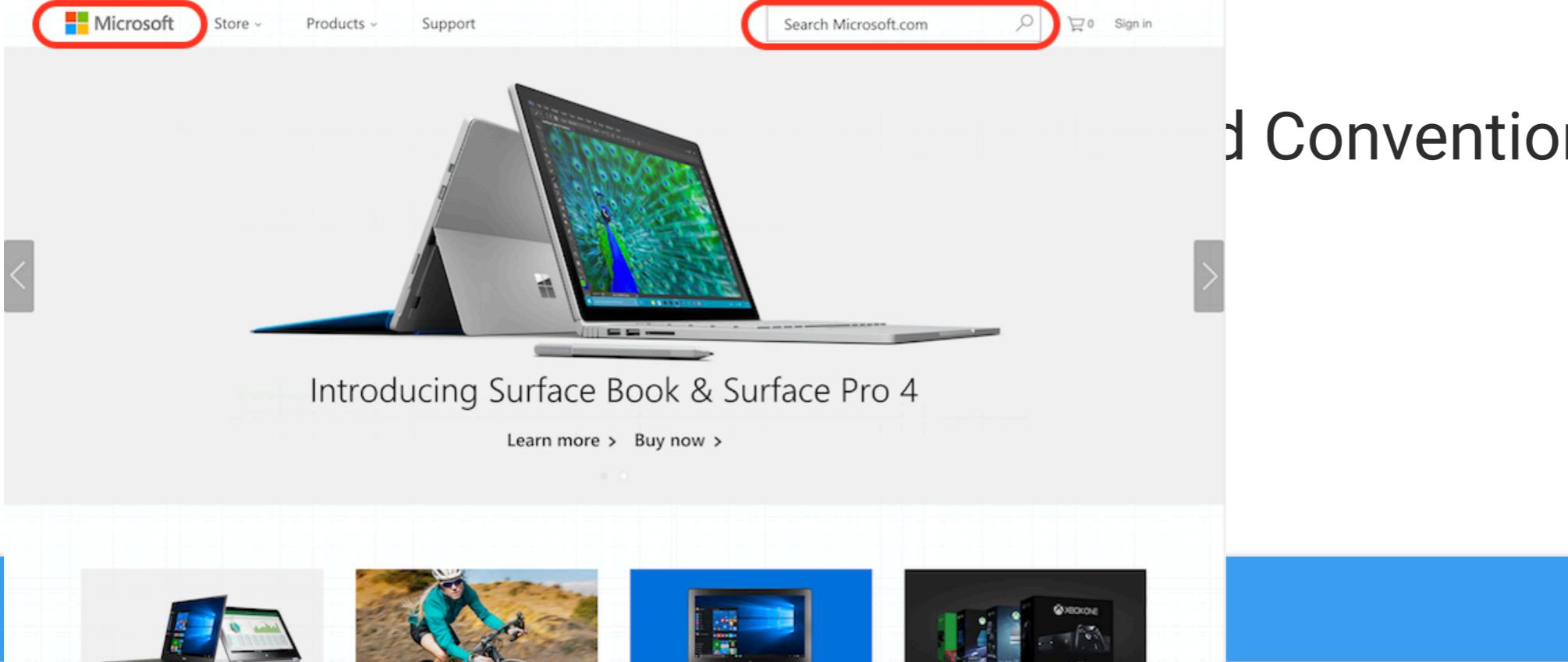
- A design **principle** thus reflects a *philosophy or aim of design*, whereas a **guideline** is intended to help designers understand *how to implement a principle*.
- A principle in design (e.g., “**an interface should be easy to use**”)
- A design guideline (e.g., “**text should be easy to read**”) sits between the above principle and the below standard
- a standard or rule for implementing it (e.g., “**background: white; font-color: black; font-size: 20px**”).

Principle of Consistency and Standards

- 1. Consistency (Shneiderman)
- 4. Consistency and standards (Nielsen and Molich)
 - Consider Various Well-established Conventions When Deciding on Layout

Principle of Consistency and Standards

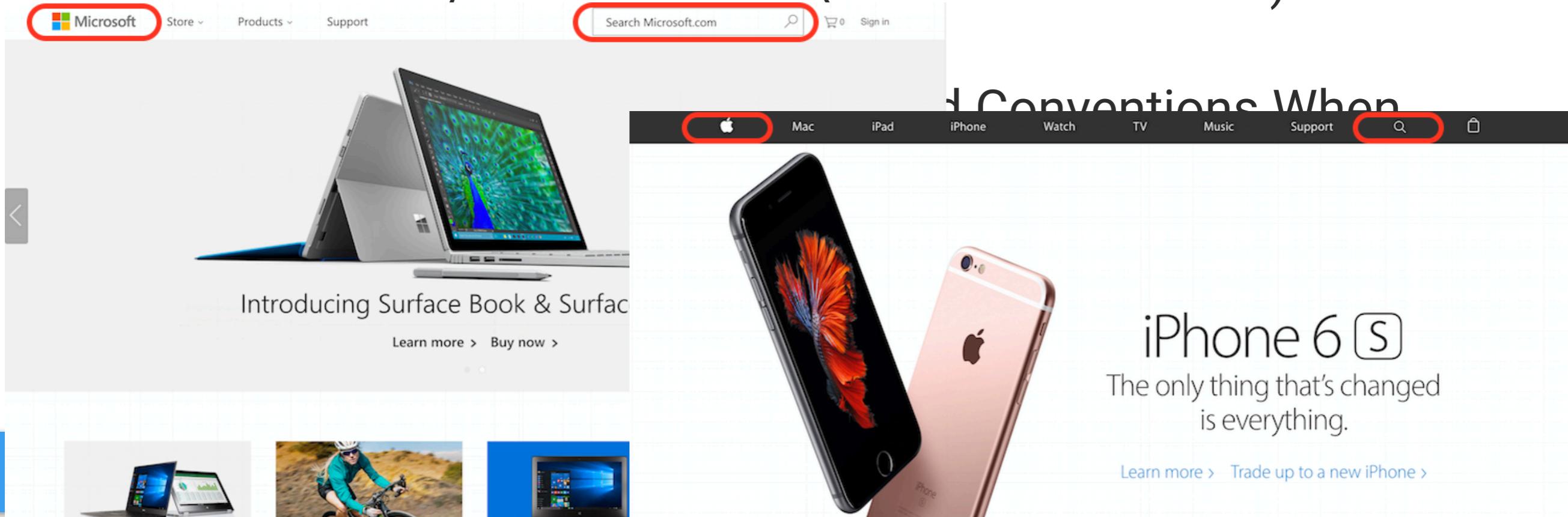
- 1. Consistency (Shneiderman)
- 4. Consistency and standards (Nielsen and Molich)



d Conventions When

Principle of Consistency and Standards

- 1. Consistency (Shneiderman)
- 4. Consistency and standards (Nielsen and Molich)



References

- **Design Principles:** <https://www.interaction-design.org/literature/topics/design-principles>
- **Design Guidelines:** <https://www.interaction-design.org/literature/topics/design-guidelines>
- **Shneiderman's Eight Golden Rules Will Help You Design Better Interfaces:** <https://www.interaction-design.org/literature/article/shneiderman-s-eight-golden-rules-will-help-you-design-better-interfaces>
- **User Interface Design Guidelines: 10 Rules of Thumb:** <https://www.interaction-design.org/literature/article/user-interface-design-guidelines-10-rules-of-thumb>
- **User Interface Design Patterns:** <http://ui-patterns.com/>

Course information

- Website
 - GitHub Pages <https://silvadasilva.github.io/CPSC481-2019W/en/#!index.md>
- Communications
 - Slack <https://cpsc481-2019w.slack.com/>
- Readings and Slides
 - Posted online at the main website