Module 8 – Introduction to Usability and Accessibility
HTTP5221

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HTTP5221 Schedule

Week	Topic	Activity	Assigned	Due
9	Introduction: Definitions, Heuristics		**Group assignment**	
10	Planning and preparing Usability Testing	Lab I	**Report**	**Group assignment**
11	Collecting data - Conducting Usability Testing	Lab II		
12	Usability Test Analysis and Reporting	Lab III		**Report check-in**
13	Accessibility: The DOM and assistive devices	Quiz I		
14	Content & Inputs	Quiz II		
15	Presentations	Presentation		**Report**

Course overview

Usability (includes accessibility).

Usability is **how useful something is**.

- **who's going to use it**,

- get data about **how well it works for them**,

- **interpret that data**

- **make recommendations**

Why does it matter?

In most of your courses, you learn **how to make things**.

In this course, you will learn how to make things **for real people, better.**

How will we learn it?

- **Labs and Quizzes**

- **Group assignment**: Work in a team of 4-5 with fellow experts to evaluate a website based on an industry-standard checklist (a.k.a. a 'heuristic evaluation').

- **Usability Report and Presentation**: Design and run a usability test on your JS prototype

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Group assignment: Heuristic evaluation

A heuristic evaluation is a type of usability auditing based on a **checklist of good ideas**.

A <u>group</u> of 'experts' generally yields better results than auditing separately.

<mark>Due Week 10</mark>

Module 8 concepts:

1. Define general terms and concepts for both usability and accessibility

2. Learn how to perform a heuristic evaluation

3. Accessibility component of the week: The img element

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Why Usability and Accessibility Matter –

- Creates inclusive and engaging experiences.
- Ensures that products and systems are easy to use, efficient, and enjoyable for users.
- access to digital content and services regardless of abilities or disabilities

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The Growing Significance of usability & accessibility

- Essential for user satisfaction and business success.
- Can improve customer loyalty, increase user engagement, and drive positive brand perception.

What is Usability?

- Ease of use and effectiveness of a product or system
- how well users can navigate the interface to achieve their goals

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USABILITY

The extent to which specified users can find, understand and use information and services online. Web usability can be measured through the effectiveness and efficiency with which users can complete defined tasks online.

Government of Canada, Standard on Web Usability

Things that are *not* usability: UX

User experience (UX) is how people **feel** about their experience of using the product

Usability : uncovering problems, stress points

UX : understanding positive experiences

Things that are *not* usability: Accessibility

Accessibility is how people with impairments (temporary, permanent or situational) can access information

Usability

Ease of use
Users can navigate without frustration or difficulty.

Efficiency
The design allows the user to complete the needed task.

User centric design
The "look and feel" of the design is appealing to the user.

ENHANCED USER EXPERIENCE FOR ALL USERS

Accessibility

W3C Standars
Content meets the law established requirements.

Assistive tech
Users with physical needs can use tech to overcome limitations.

Access to content
All users have the ability to access the content on a site.

Usability === average number of steps to listen to a song.

UX === people like using the ipod

Accessibility === Can someone who has low vision or is blind find and play a song?
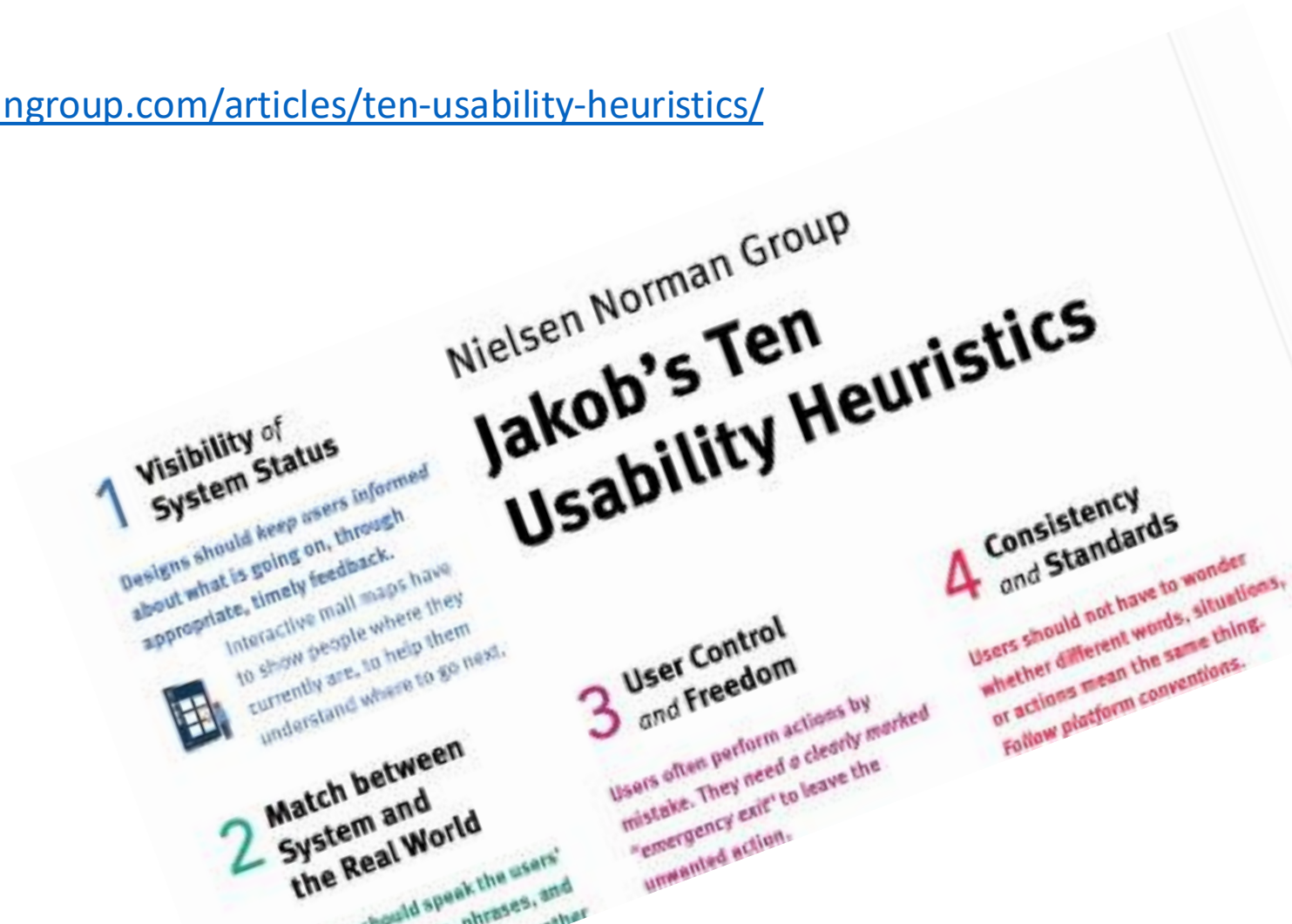
Heuristics

Checklist of good usability principles.

 Jakob's Heuristic

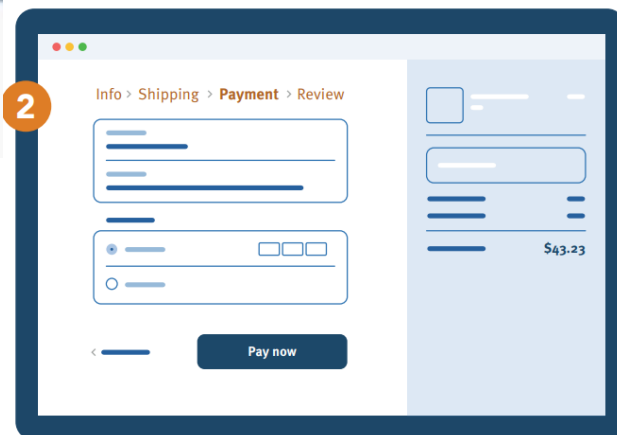# 10 Usability Heuristics for User Interface Design

https://www.nngroup.com/articles/ten-usability-heuristics/

Nielsen Norman Group

Jakob's Ten Usability Heuristics

1 **Visibility of System Status**
Designs should keep users informed about what is going on, through appropriate, timely feedback.
Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 **Match between System and the Real World**
...ould speak the users' ...phrases, and ...

3 **User Control and Freedom**
Users often perform actions by mistake. They need a clearly marked "emergency exit" to leave the unwanted action.

4 **Consistency and Standards**
Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform conventions.

#1: Visibility of System Status

1 *"You Are Here" maps*
Interactive mall maps have to show people where they currently are, to help them understand where to go next.

2 *Checkout flow*
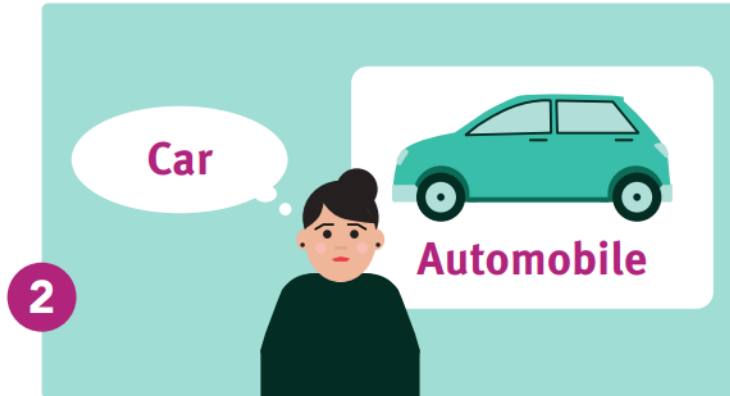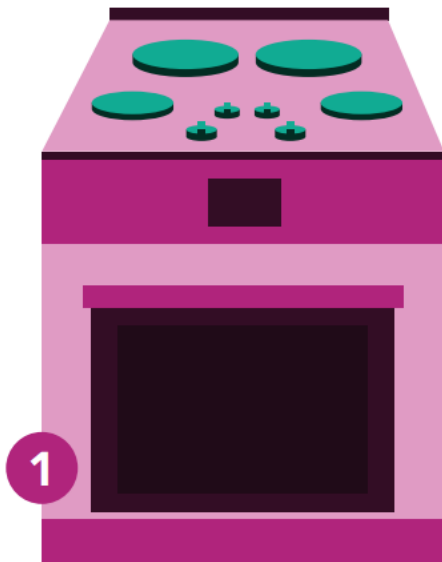Multistep processes show users which steps they've completed, they're currently working on, and what comes next.

3 *Phone tap*
Touchscreen UIs need to reassure users that their taps have an effect — often through visual change or haptic feedback.

![Jakob's Heuristic]
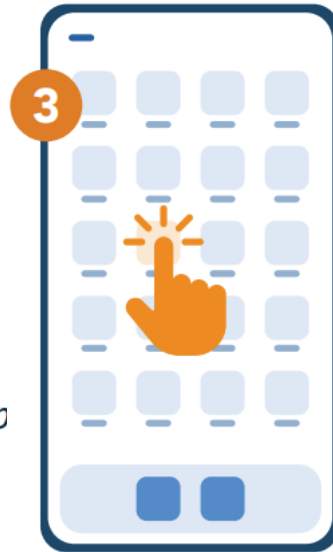
#2: Match between system and the real world

1 Stovetop controls
When stovetop controls match the layout of heating elements, users can quickly understand which control maps to each heating element.

2 "Car" vs. "automobile"
If users think about this object as a "car," use that as the label instead.

3 Shopping cart icon
A shopping cart icon is easily recognizable because that feature serves the same purpose as its real-life counterpart.

#3: User control and freedom

Users often perform actions by mistake. They need a clearly marked "**emergency exit**" to leave the unwanted action without having to go through an extended process.
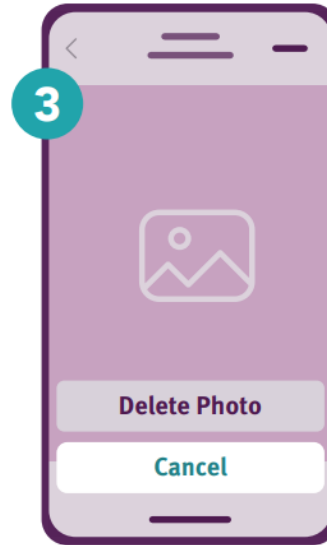
1 **Exit sign**
Digital spaces need quick "emergency" exits, just like physical spaces do.

2 **Undo and redo**
These functions give users freedom because they don't have worry about their actions — everything is easily reversible.
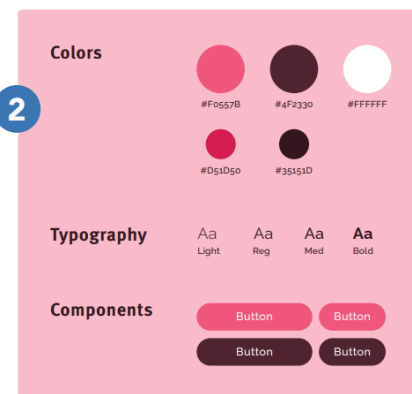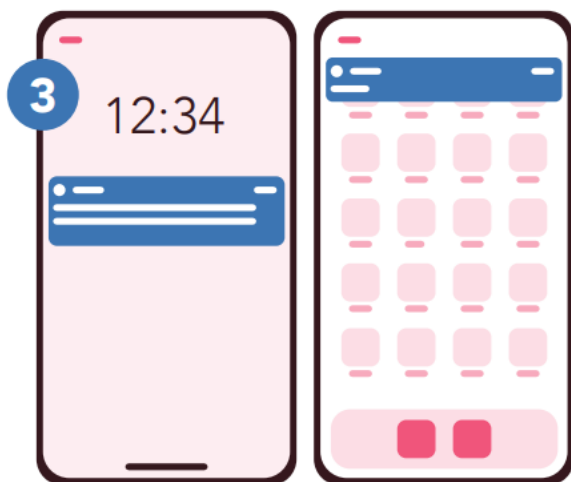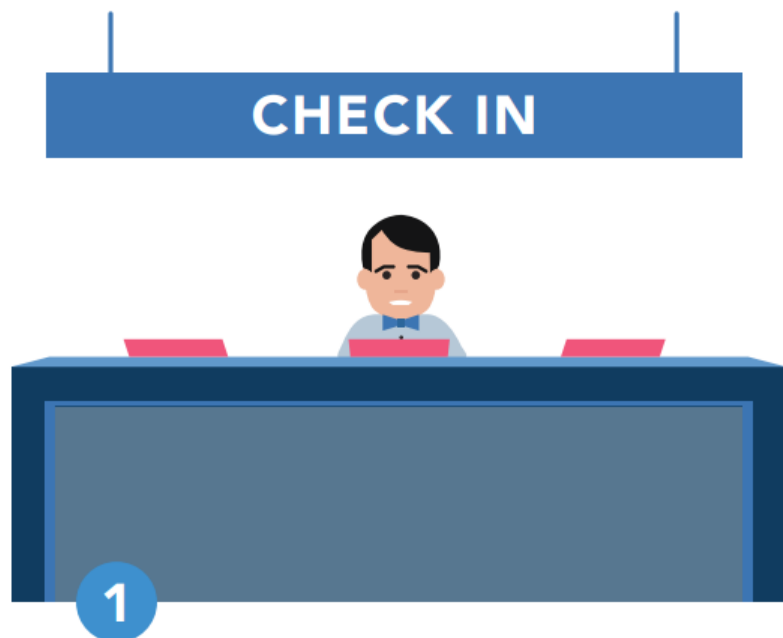
3 **Cancel button**
Users shouldn't have to commit to a process once it's started — they should be able to easily cancel and abandon.

Delete Photo

Cancel

EXIT

Untitled document
Undo   Redo

#4: Consistency and standards

CHECK IN

Colors

#F0557B   #4F2330   #FFFFFF

#D51D50   #35151D

Typography

Aa   Aa   Aa   **Aa**
Light   Reg   Med   Bold

Components

Button   Button

Button   Button

12:34

Users should not have to wonder whether different words, situations, or actions mean the same thing. **Follow platform and industry conventions.**

1 Check-in counter

Check-in counters are usually located at the front of hotels. This consistency meets customers' expectations.
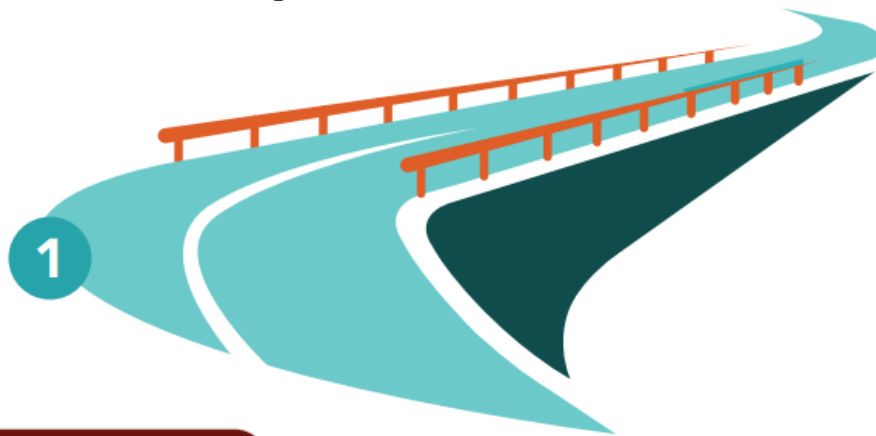
2 Design system

Using elements from the same design system across the product lines lowers the learning curve of users.

3 Notifications

A standardized notification design provides a similar but distinguishable look and feel for different app pop-ups.

#5: Error prevention

Good error messages are important, but the best designs **carefully prevent problems** from occurring in the first place.

1 Guard rails
Guard rails on curvy mountain roads prevent drivers from falling off of cliffs.

2 Airline confirmation
The confirmation page before checking out on airline websites gives users another chance to review the flight details.
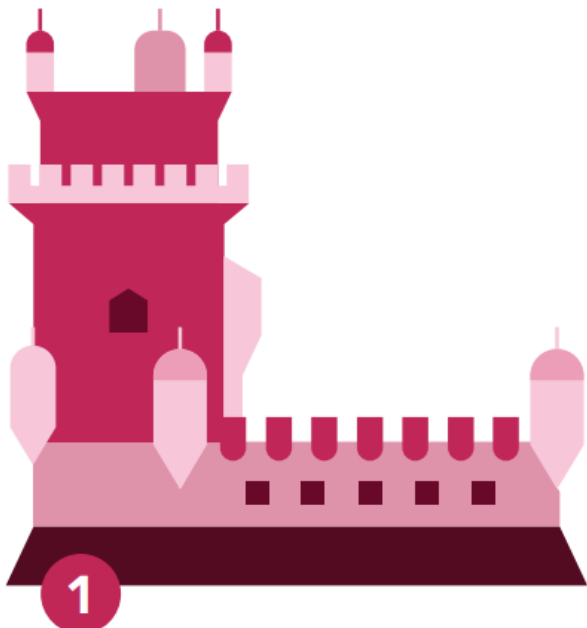
3 Date selection on calendar
Offer good defaults and set boundaries when people book services by dates. Grey out unavailable options.

Nov 17 – Nov 26

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17 18 19 20 21 22
23 24 25 26

Review Flights and Pay

Confirm Booking
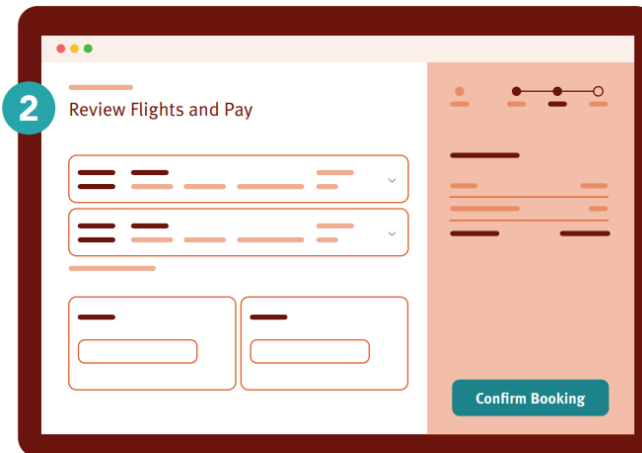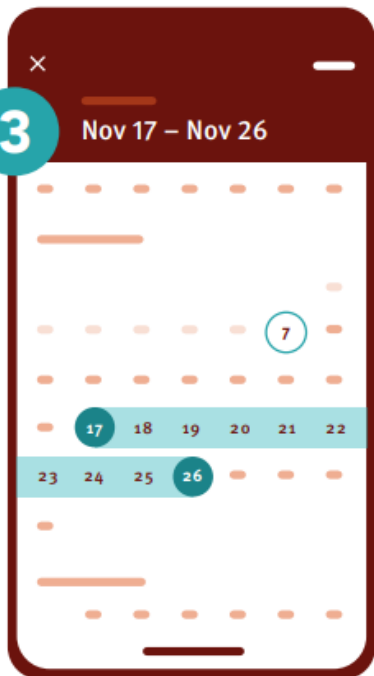
#6: Recognition rather than recall

Minimize the user's memory load by making elements, actions, and options visible. The user should **not have to remember information** from one part of the interface to another. Information required to use the design should be visible or easily retrievable when needed.

1 *Lisbon*

People are more likely to correctly answer the question "Is Lisbon the capital of Portugal?" rather than "What's the capital of Portugal?"

2 *Comparison table*

Comparison tables list key differences so that users don't need to remember them to make comparisons.

3 *Search*

Search queries are presented together with the results as a reference.

The Lion King

Search results

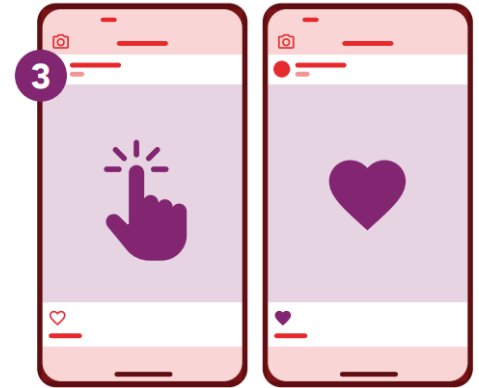iPad Pro 12.9-in. (4th gen)   iPad Air (3rd gen)   iPad (7th gen)

#7: Flexibility and efficiency of use

Shortcuts — hidden from novice users — may speed up the interaction for the expert user so that the design can **cater to both inexperienced and experienced users.** Allow users to tailor frequent actions.

❶ Shortcuts

Regular routes are listed on maps, but locals with more knowledge of the area can take shortcuts.
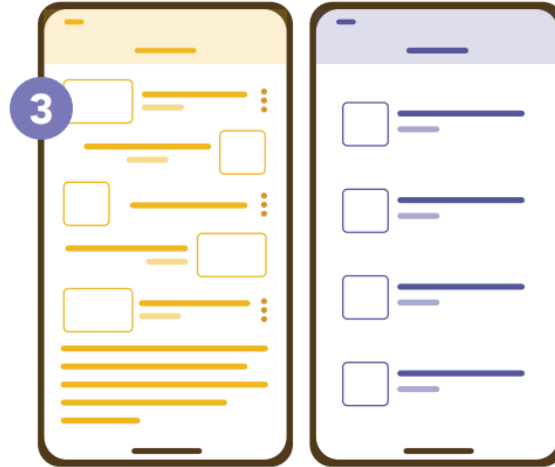
❷ Keyboard shortcut

Keyboard shortcuts for complex products can help expert users finish their tasks more efficiently.

❸ Tap to like

Social apps allow two ways to like posts. Experienced users can tap to like because it speeds up their browsing.

#8: Aesthetic and minimalist design

Interfaces should not contain information which is irrelevant or rarely needed. Every extra unit of information in an interface **competes** with the relevant units of information and diminishes their relative visibility.

① *Ornate vs. simple teapot*
Excessive decorative elements can interfere with usability.

② *Communicate, don't decorate*
Over-decoration can cause distraction and make it harder for people to get the core information they need.

③ *Messy vs organized UI*
Messy UI increases the interaction cost for users to find their desired content; Organized UI lowers the cost.
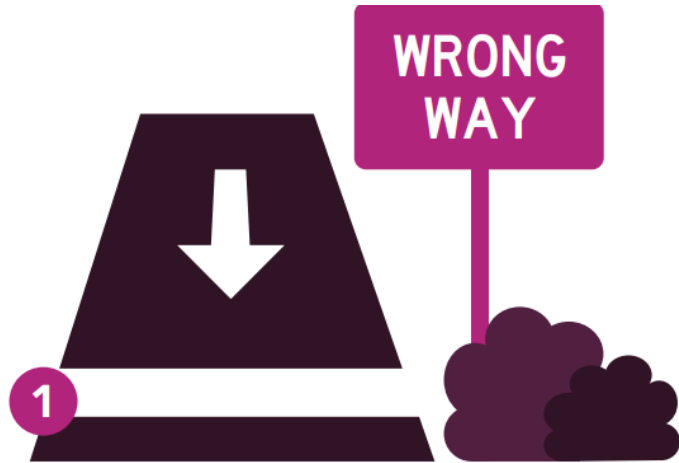
②

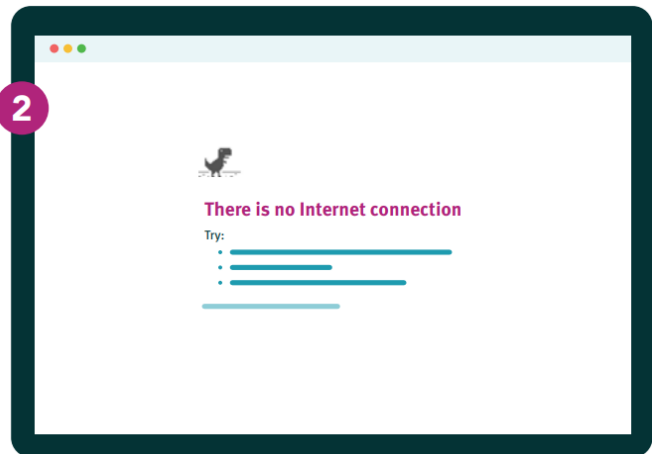## COMMUNICATE, DON'T DECORATE

One of our favorite slogans

#9 Help users recognize, diagnose, and recover from errors

Error messages should be expressed in **plain language**, specify the problem, and give constructive solution.
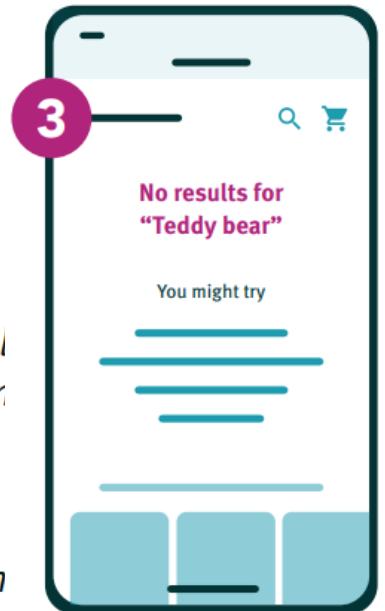
WRONG WAY

1 *Wrong way sign*
Wrong-way signs on the road remind drivers that they are heading in the wrong direction and ask them to stop.

2 *Internet connection error*
Good internet connection error pages show what happened and constructivel instruct users on how to fix the problem

3 *No search results*
Provide useful help when people encounter search-result pages returnin zero results, such as popular topics.

There is no Internet connection
Try:

No results for "Teddy bear"

You might try

#10: Help and documentation

It's best if the system **doesn't need** any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

Frequently Asked Questions

❶ Airport information center
Information kiosks at airports are easily recognizable and solve customers' problems in context and immediately.

❷ Frequently asked questions
Good frequently-asked-question pages anticipate and provide the helpful information that users might need.

❸ Information icon
Information icons reveal tooltips to explain jargon when users touch or hover over them, which provides contextual help.

Accessibility

A subset of usability

Helps to identify where we might be **putting up barriers** for people who want to access our web application's content or functionality,

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Barriers might be…

 …**physical**

…**social**

 …in **the built environment**

Accessibility (the law)

- This is **the law**.

- Primarily addresses visual, hearing and mobility impairments.

AODA [Access for Ontarians with Disabilities Act](#)

(4) Designated public sector organizations and large organizations for their internet websites shall meet the requirements of this section.
By January 1, 2021, all internet websites and web content must conform with WCAG 2.0 Level AA,

WCAG **[Web Content Accessibility Guidelines](#)**.

World Wide Web Consortium, which is the organization that creates **standards around things like HTML and CSS**.

WAI-ARIA

Standards **to make dynamic content accessible** by W3C

a11y

abbreviation for "accessibility

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Accessibility component of the week

\<img> element.
Along with it came the alt attribute for specifying alternate text

What should the alternative text be?

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```
<img src="/images/play.svg"
     alt="Play the song 'Misty'">
```

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"A picture is worth a thousand words... "

```
<img src="/images/testing.jpg"
    alt="A graph showing COVID-19 testing
    in Ontario, having exceeded
    the April 29 goal of 14,000 per day." >
```
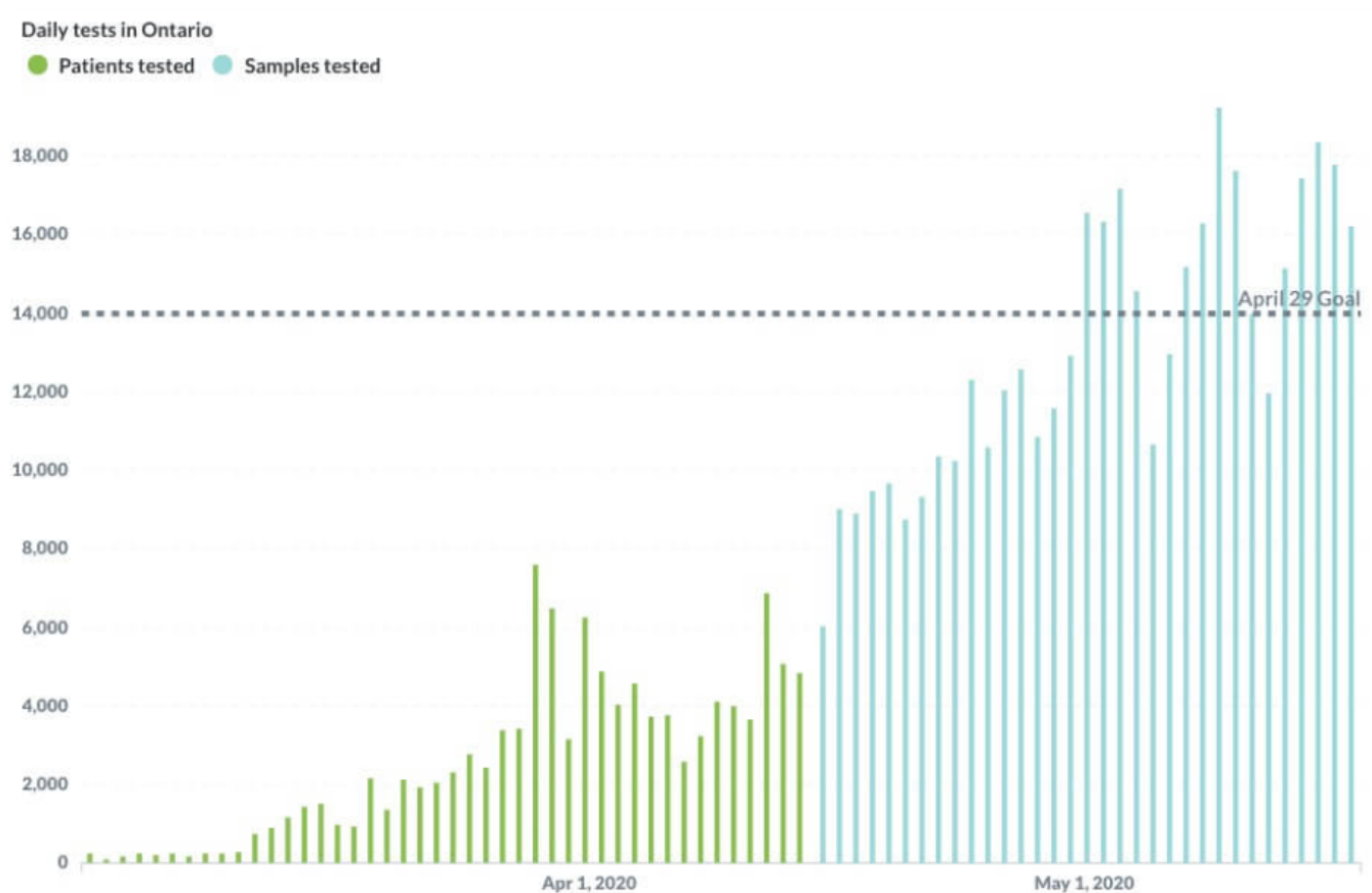
Things people get wrong about the alt attribute:

- ***It's an attribute, not a tag***
- **It is not interchangeable with *title* attribute**.
- **All images** should have alternative text
- Not all images need alt attribute

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This image, if used for decoration, **should have an alt attribute, and it should be empty**

```
<img src="rounded-box.png" alt="">
```

Describing images: how to write effective alternative text

Inequivalent content	Equivalent content
Seat belts are comprised of a buckle and a tongue. ALT tag: "Seat belt"	Seat belts are comprised of a buckle and a tongue. ALT tag: "Insert the seat belt tongue into the buckle"
 ALT tag: ASU football fans.	 ALT tag: Football stands filled with ASU students, yelling and giving the Fork-em-Devils hand sign.
 ALT tag: A student	 ALT tag: Undergraduate student performing an experiment in the chemistry lab

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Meaningful images convey essential or useful information

Group Assignment

The Group Project

Step 1: Individually, go to https://torontocupcake.com/

Step 2: Individually, evaluate the website based Jakob Nielsen's [10 Usability Heuristics for User Interface Design](#) based on the following use-case:

Using the excel template, provide one or more examples of where this heuristic was done well, or needs improvement. Don't forget to **poke around to see if things are working**

Work on this first individually and then as a group.

Your group will be assigned to you.

Due **Week 10 (next week)** via BlackBoard