UI Design Patterns

Mobile and Ubiquitous Computing

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Motivation

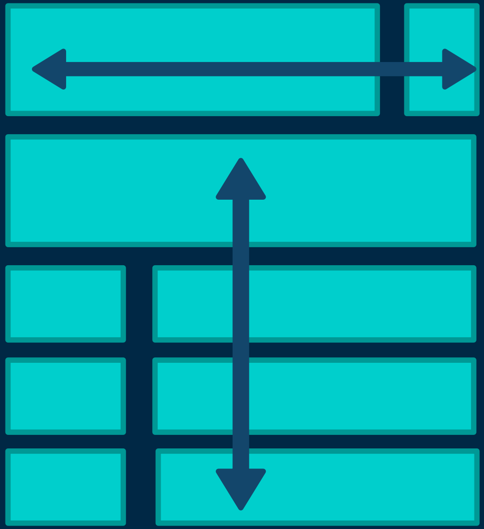
- Useful for developers that are starting to develop Mobile UIs
  [**Which might be your case!**]
- Increase your Application Usability
- Increase User adoption to your Application
- Use Standard techniques
- Speed up UI development

Introduction

Main Problem Area	Problem Area	Individual Problems
Utilizing Screen Space	Screen Space in general	Horizontal Scrolling
	Flexible User Interfaces	Show and Hide SW Keyboard
Interaction Mechanisms	Handling Input	Mechanisms for entering text
	Not Using Stylus	Stylus Free Interaction
Design at Large	Guidelines	Branding
	Difficult to understand	Long Lasting Operations

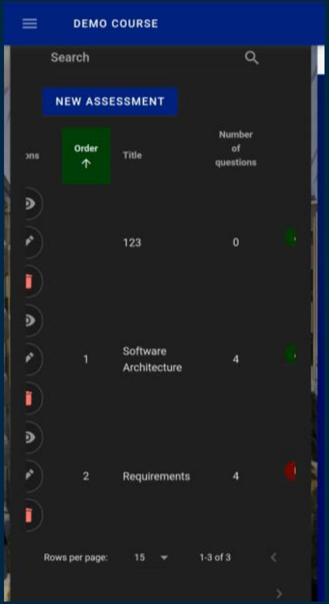
Horizontal Scrolling

- Usually worse than Vertical Scrolling;
- Its use should be reduced or even avoided;
- Solutions:
  - Optimize sequence and size of attributes;
  - Simple Redesign;
  - Minor Redesign;
  - Medium Redesign;
  - Major Redesign.



Horizontal Scrolling

Design pattern: Change the screen orientation



DEMO COURSE

Search

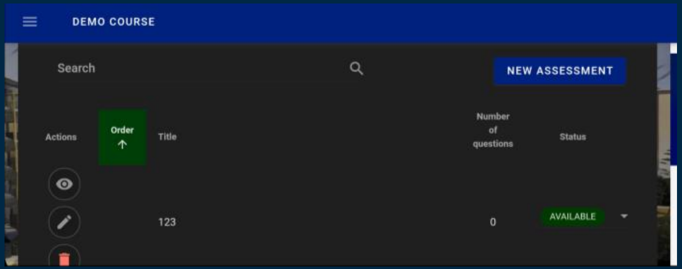
NEW ASSESSMENT

ons	Order ↑	Title	Number of questions
		123	0
	1	Software Architecture	4
	2	Requirements	4

Rows per page: 15 1-3 of 3

Portrait Mode on “Quizzes Tutor”

Simple Redesign



DEMO COURSE

Search

NEW ASSESSMENT

Actions	Order ↑	Title	Number of questions	Status
		123	0	AVAILABLE

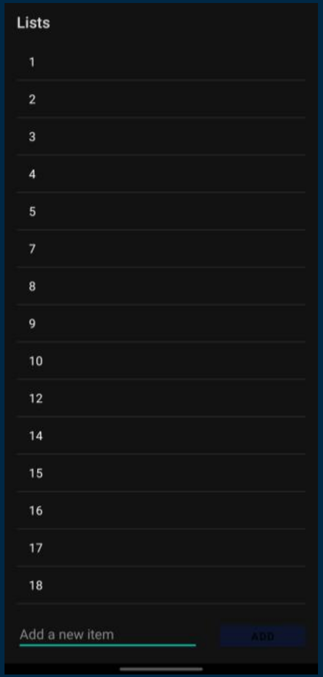
Landscape Mode on “Quizzes Tutor”

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

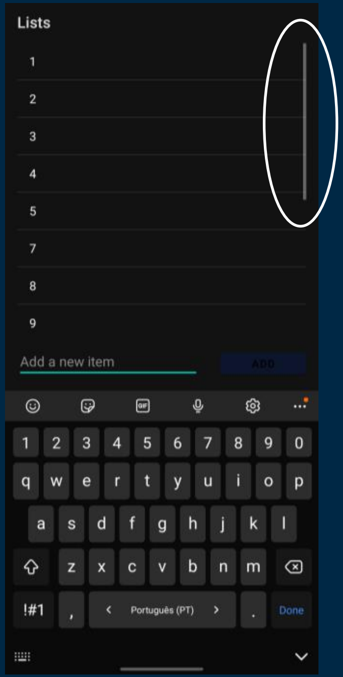
- Software keyboard reduces the normal space of the application;
- Dialog resizing needs to be handled;
- 5 Design patterns to solve this problem.

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

Design pattern: Add or adjust scroll bars



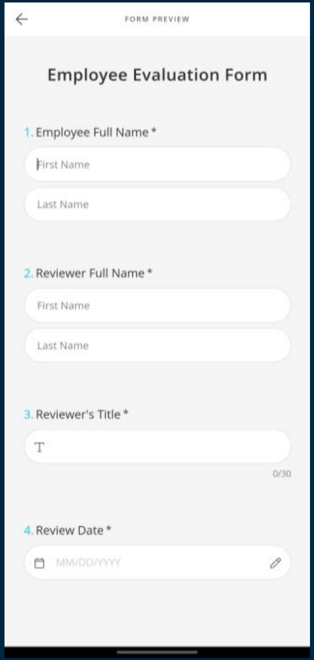
Keyboard is hidden



Keyboard is shown and enables a scrollbar

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

Design pattern: Let the keyboard cover part of the UI



FORM PREVIEW

Employee Evaluation Form

1. Employee Full Name *

First Name

Last Name

2. Reviewer Full Name *

First Name

Last Name

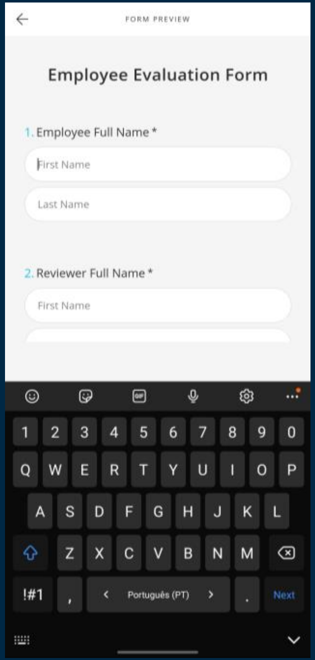
3. Reviewer's Title *

0/30

4. Review Date *

MM/DD/YYYY

Keyboard is hidden



FORM PREVIEW

Employee Evaluation Form

1. Employee Full Name *

First Name

Last Name

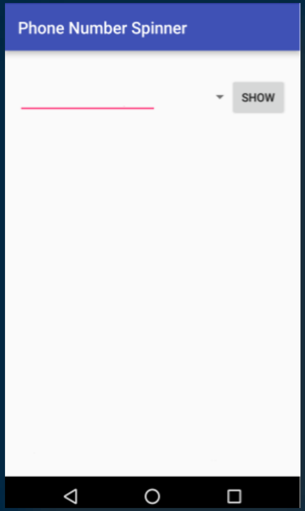
2. Reviewer Full Name *

First Name

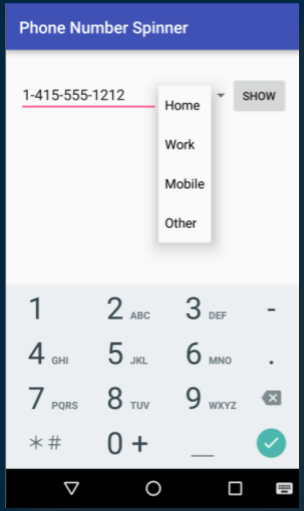
Keyboard is shown and covers part of the UI

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

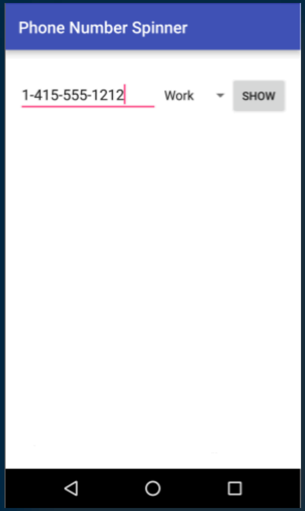
Design pattern: Only use the part of the screen that will not be covered by the keyboard



UI that does not use part of the screen



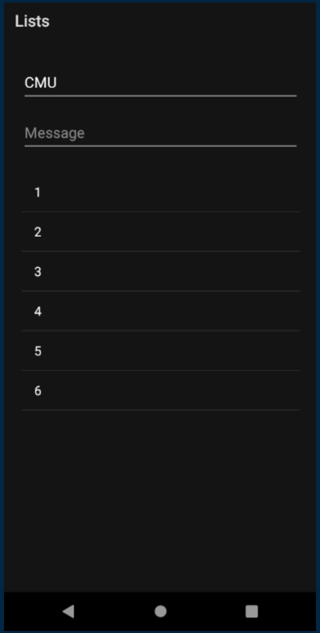
Keyboard is shown and does not hide anything



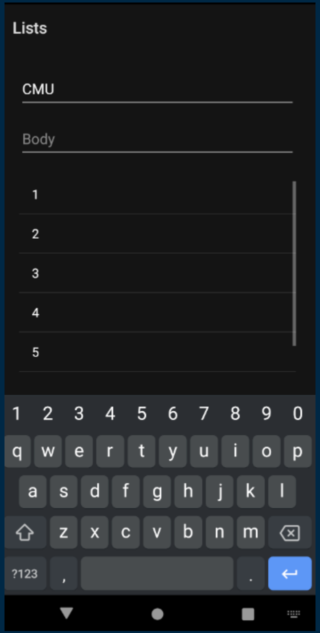
UI that does not use part of the screen

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

Design pattern: Use one large UI control as a buffer



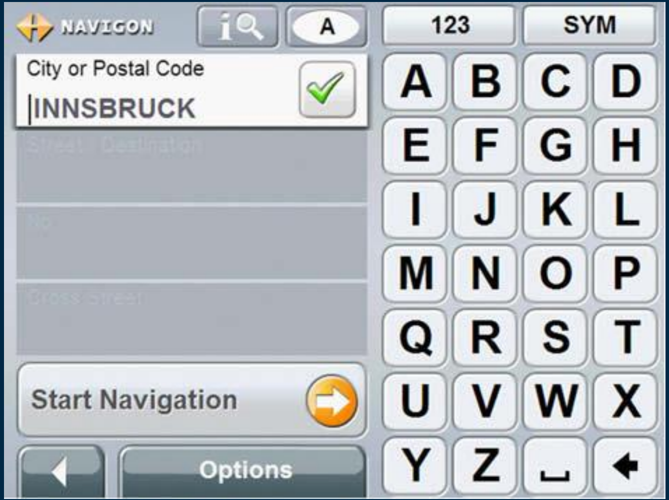
Keyboard is hidden



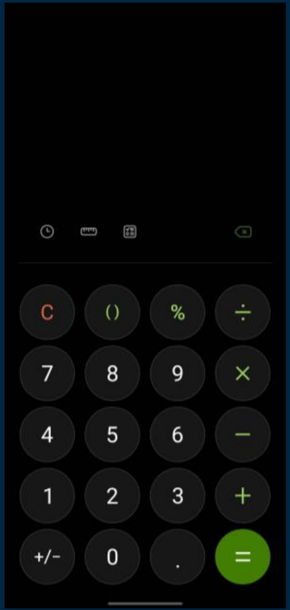
Keyboard is shown and only the list box control his resized

Handling Crowded Dialogs When SW Keyboard Is Shown And Hidden

Design pattern: Keyboard as part of layout



Apple Application that has a built-in keyboard



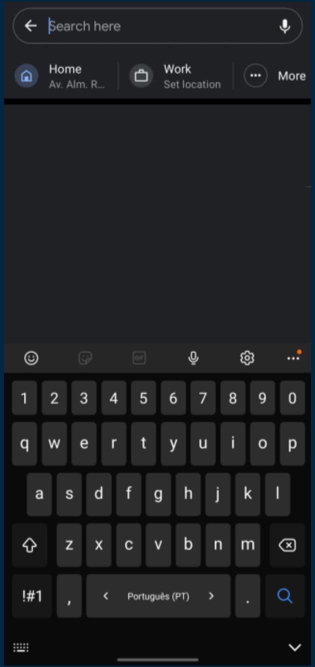
Android Application that has a built-in numerical keyboard

Mechanisms For Entering Text

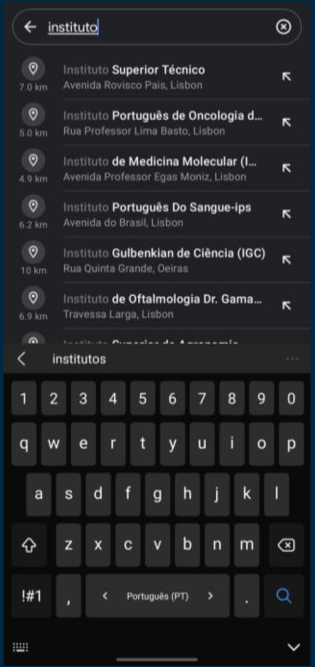
- Two main concerns:
  - How to avoid the need for the user to insert text?
  - How to make it easier for the user to insert text?
- Main Goal: Avoid using generic text entering mechanisms;
- 4 Design Patterns to Solve these problems.

Mechanisms For Entering Text

Design pattern: Auto complete



Search on “Google Maps” App

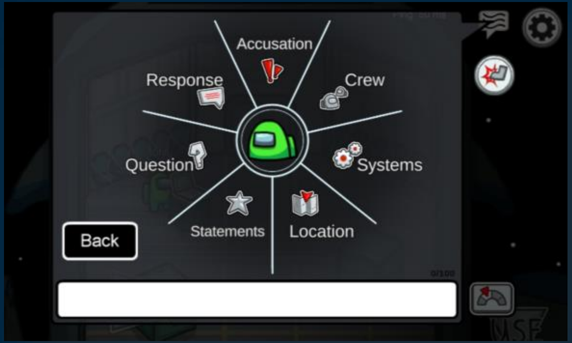


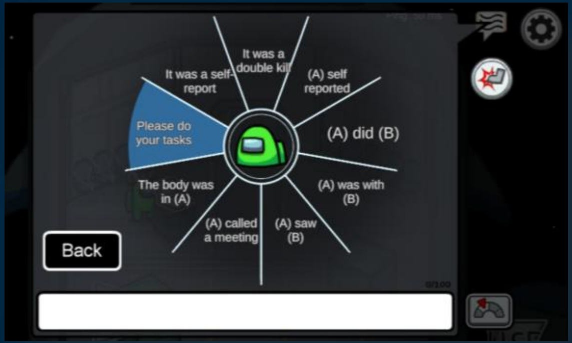
7.0 km	Instituto **Superior Técnico** Avenida Rovisco Pais, Lisbon
5.0 km	Instituto **Português de Oncologia d...** Rua Professor Lima Basto, Lisbon
4.9 km	Instituto **de Medicina Molecular (I...** Avenida Professor Egas Moniz, Lisbon
6.2 km	Instituto **Português Do Sangue-ips** Avenida do Brasil, Lisbon
10 km	Instituto **Gulbenkian de Ciência (IGC)** Rua Quinta Grande, Oeiras
6.9 km	Instituto **de Oftalmologia Dr. Gama...** Travessa Larga, Lisbon

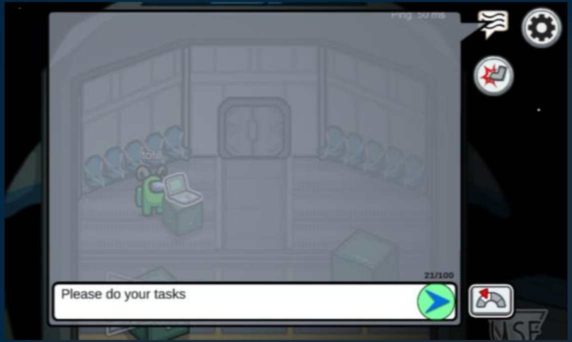
Auto-Complete for my search “instituto”

Mechanisms For Entering Text

Design pattern: Predefined values



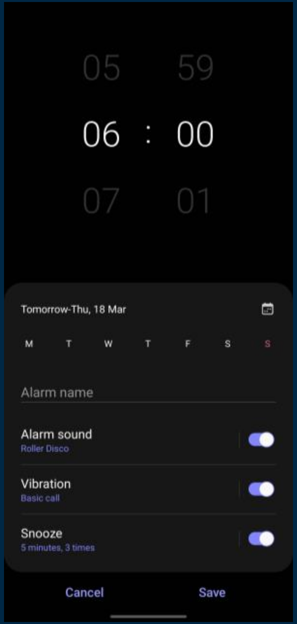




The game "Among Us", predefine values for talking in the chat

Mechanisms For Entering Text

Design pattern: Alternative input mechanisms


05 59

06 : 00

07 01

Tomorrow-Thu, 18 Mar

M T W T F S S

Alarm name

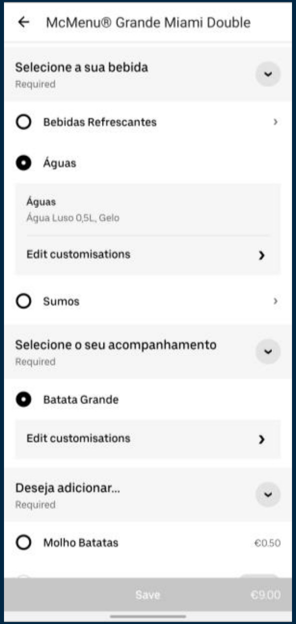
Alarm sound
Roller Disco

Vibration
Basic call

Snooze
5 minutes, 3 times

Cancel Save

Adding an alarm on “Clock” App
Using a scrolling mechanism for the time, and a multiple selection for the day of the week


McMenu® Grande Miami Double

Selecione a sua bebida
Required

Bebidas Refrescantes

Águas

Águas
Água Luso 0,5L, Gelo

Edit customisations

Sumos

Selecione o seu acompanhamento
Required

Batata Grande

Edit customisations

Deseja adicionar...
Required

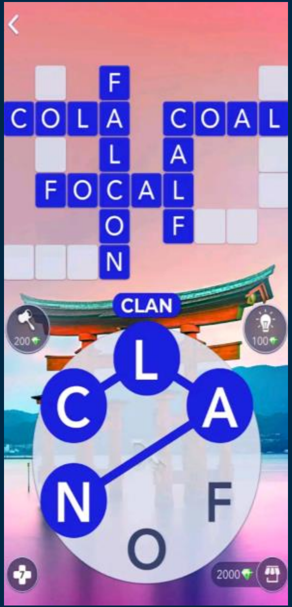
Molho Batatas €0.50

Save €9.00

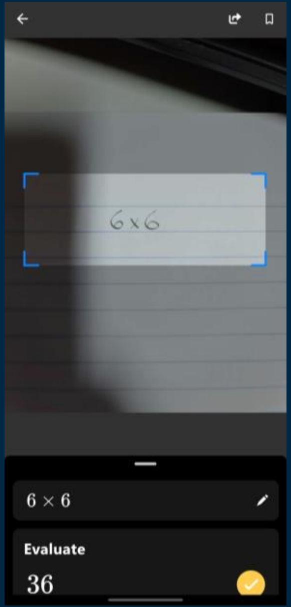
Making a request on “Uber Eats”
Using multiple selection

Mechanisms For Entering Text

Design pattern: Specialized input mechanisms



Adding a word on "Words of Wonders" App, using a slide mechanism



Scanning a Math Problem using the "Microsoft Maths Solver" App

Interaction With Applications Without Using Stylus

- There are users that do not use Stylus

↓

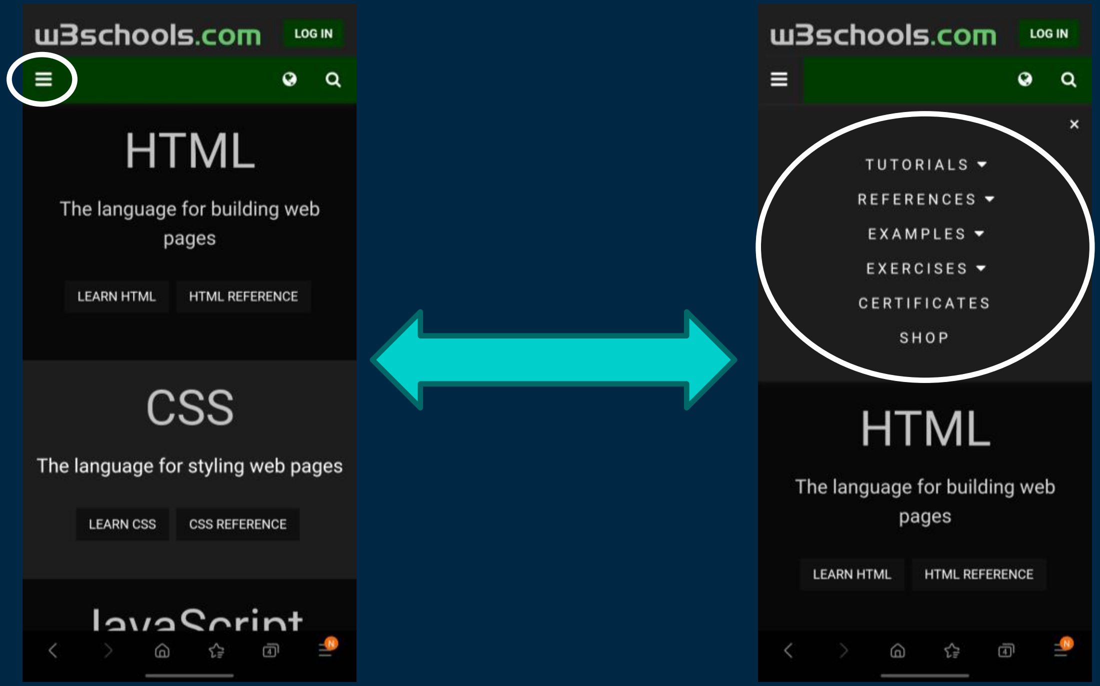
- Pointing Accuracy Coarser

- Make UI controls bigger?
    - Which impact could it have?
    - How simple is it?

Stylus

Interaction With Applications Without Using Stylus

Design Pattern: Finger friendly menu choices



The language for building web pages

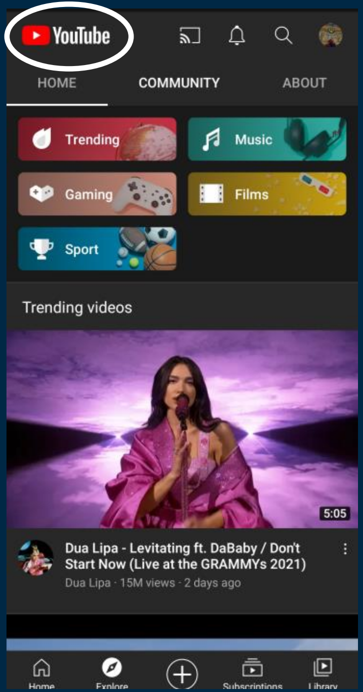
The language for styling web pages

The language for building web pages

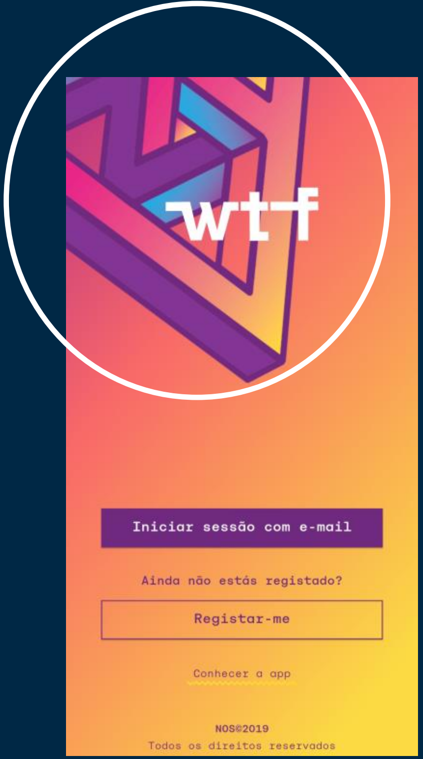
Hidden menu pops into the screen when needed

Design That Supports Branding, Is Aesthetic, And Utilize Screen Space Optimally

- Branding VS Standard
- Challenges:
  - Unconventional can cause usability issues;
  - Manage screen space.


YouTube
HOME
COMMUNITY
ABOUT
Trending
Music
Gaming
Films
Sport
Trending videos
5:05
Dua Lipa - Levitating ft. DaBaby / Don't Start Now (Live at the GRAMMYs 2021)
Dua Lipa · 15M views · 2 days ago
Home
Explore
Subscriptions
Library

Company logo in the UI

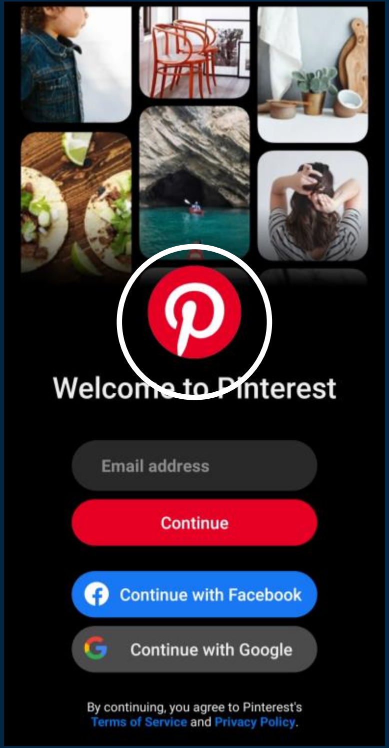

wtf
Iniciar sessão com e-mail
Ainda não estás registado?
Registar-me
Conhecer a app
NOS©2019
Todos os direitos reservados

Company colors in the background of the UI

Design That Supports Branding, Is Aesthetic, And Utilize Screen Space Optimally

Design pattern: Brand the standard

- Customize platform standard elements;
- Brand should be subtle;
- Challenge:
  - Subtle VS Recognizable.


Welcome to Pinterest

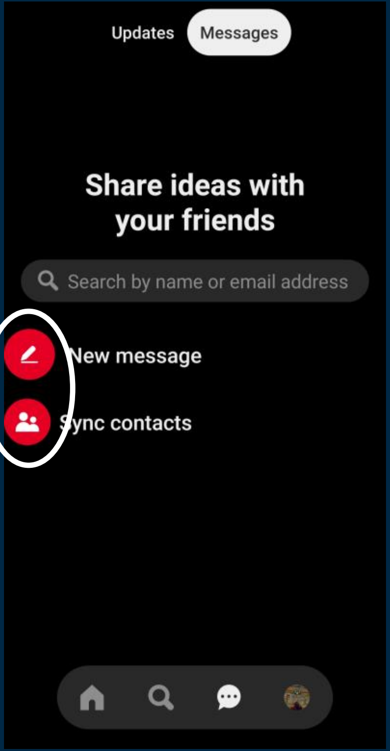
Email address

Continue

Continue with Facebook

Continue with Google

By continuing, you agree to Pinterest's Terms of Service and Privacy Policy.



Share ideas with your friends

Search by name or email address

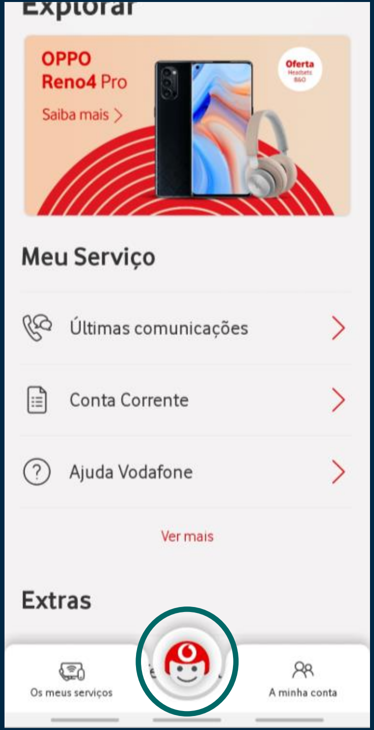
New message

Sync contacts

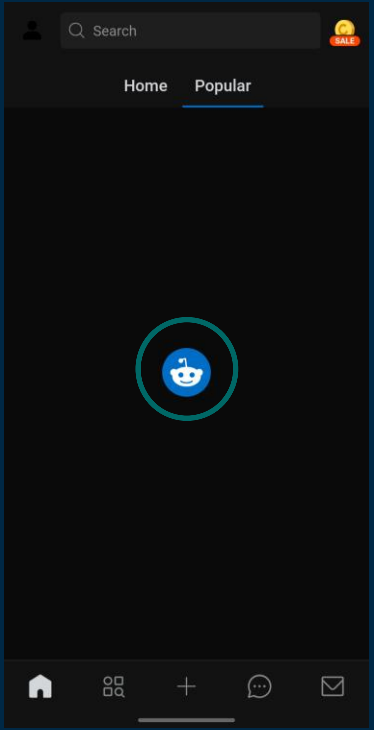
Customize buttons with logo colors pattern

Design That Supports Branding, Is Aesthetic, And Utilize Screen Space Optimally

Design Pattern: Branding the controls



Company logo as help button

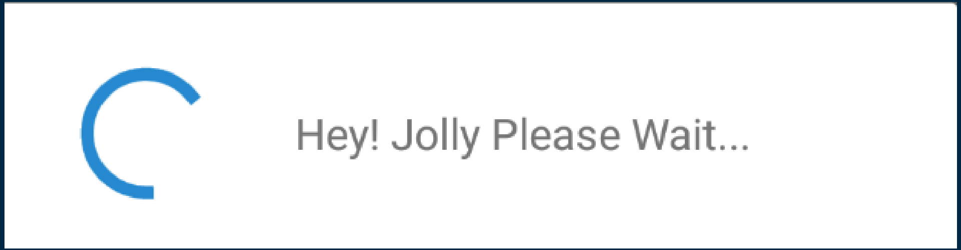


Company logo as loading indicator

User Interaction During Waiting For Long-Lasting Operations To Complete

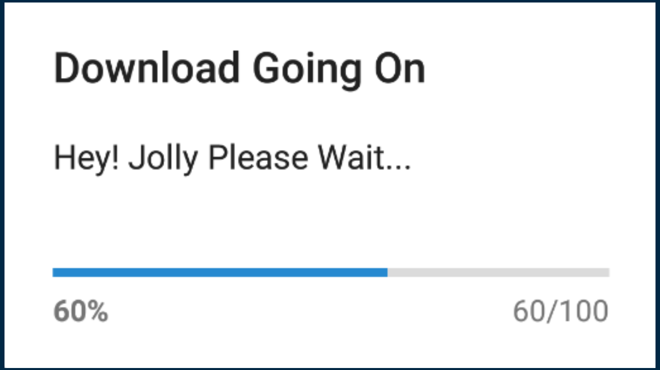
- Why is Good feedback important?
  - Maximize user patience

- Example of two approaches:



Hey! Jolly Please Wait...

Cursor with user-friendly message “Please Wait (...)”



Download Going On

Hey! Jolly Please Wait...

60%

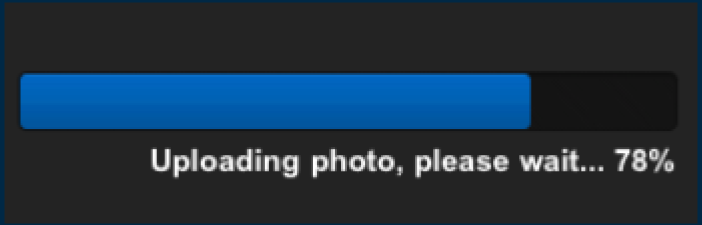
60/100

Progress indicator with percentage of time spent

User Interaction During Waiting For Long-Lasting Operations To Complete

Design Pattern: Inform the user about what is happening

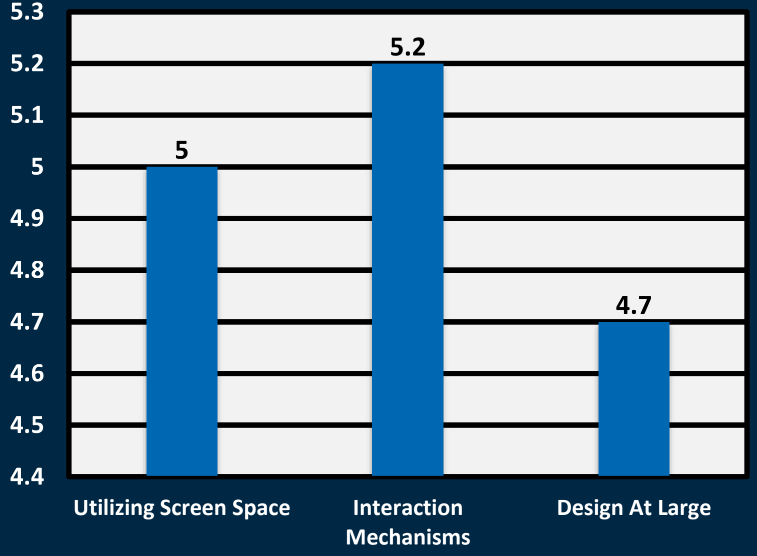
- Provides the user with more details about what is happening
- Events should be as user-friendly as possible
- Solutions:
  - Scrolling text
    [Events are appended at the top]
  - Single text
    [New Events overwrite older ones]



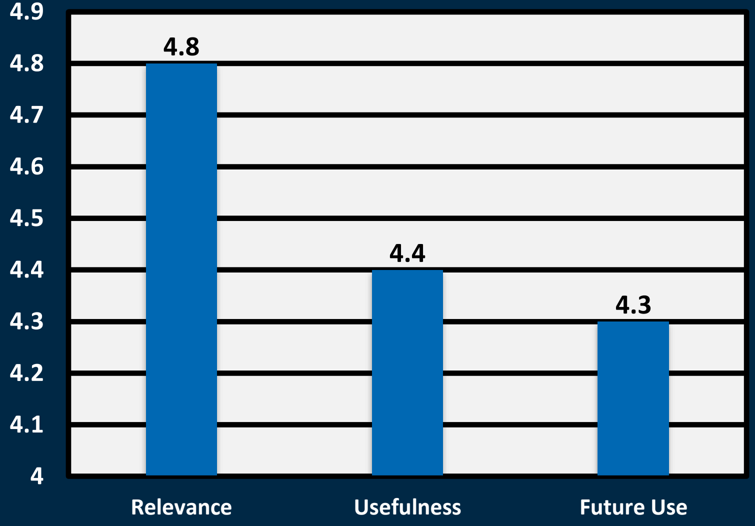
Progress indicator with single text displaying the events that are happening

Validation And Results

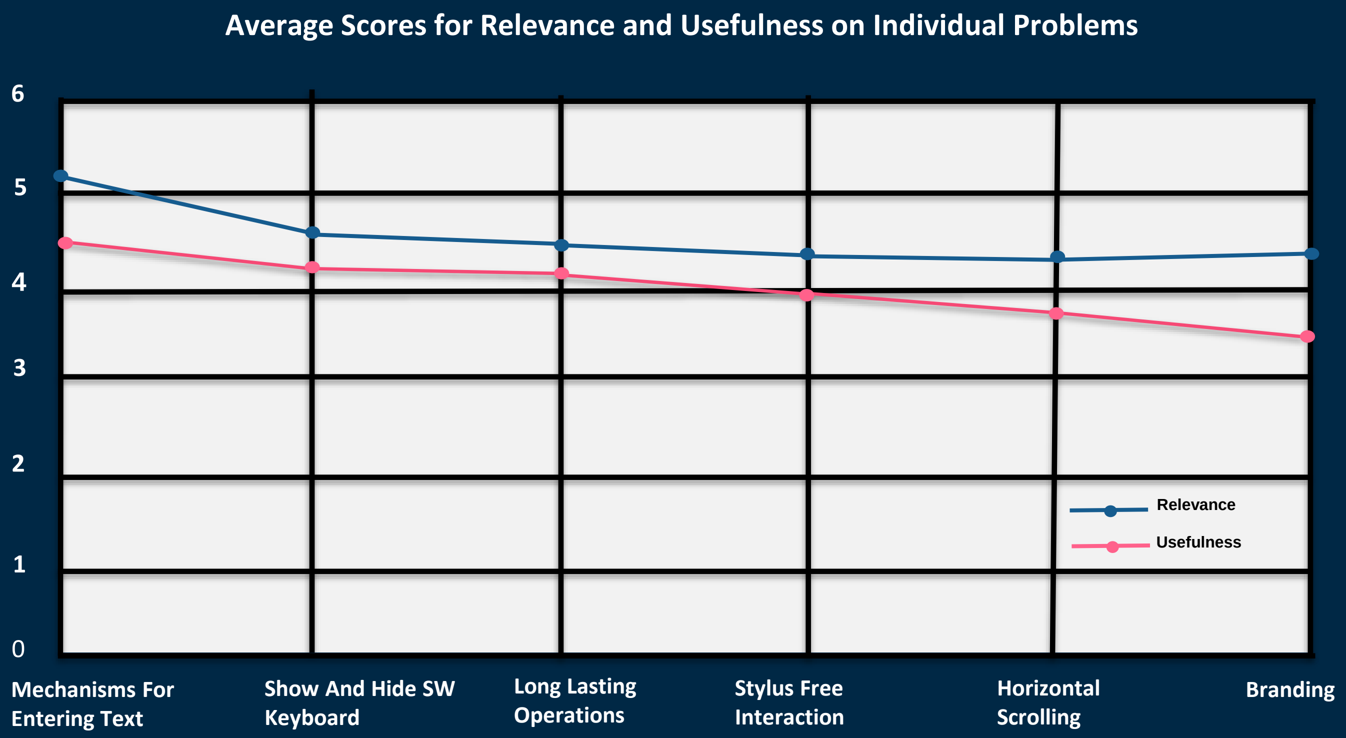
Average Scores for Relevance on Main Problems Areas



Average Scores for Relevance, Usefulness and Future Use on the Patterns Collection



Validation And Results



Conclusion

Individual Problems:

- Horizontal Scrolling: Avoid this type of scrolling;
- Show And Hide SW Keyboard: When keyboard appears, deal with the layout;
- Mechanisms For Entering Text: Try different ways of inserting input to improve usability;
- Stylus Free Interaction: Handling interaction using your finger;
- Branding: How to properly brand an UI Application;
- Long Lasting Operations: How to display proper Feedback progress;

Validation and Results (Score between 1 and 6):

- Three main problems score was between 4.7 and 5.2 in Relevance;
- Pattern collections score was between 4.3 and 4.8 in Relevance, Usefulness and Future Use;
- The 6 individual problems score was between 3 and 5 in Usefulness and between 4 and 5.5 in Relevance;