

# FLEX Computing

## UX Foundation Overview

Sanjiv Sirpal

November 18, 2010



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Target Audience

**MOBILE PROFESSIONAL**

# Target Audience

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## Summary

- Younger than 40
- Mobile Professionals
- Use a Smartphone and a Notebook

# Primary Persona – Mobile Professional



## Uri Sudoko – Real Estate Agent

The Mobile Professional needs to be in constant contact with their business. They need to have access to business tools at all times in a mobile footprint. But from time to time they need more than what the mobile UX offers. They may need to customize a presentation, fill in an order, or write a proposal.

Uri is a up and coming real estate agent with Evergreen Realty. He has been a real estate agent only for a couple years. His previous career was a geologist, but since he has started his family, he decided to find something that didn't take him away from home for months on end. His desire to interact with people, and not be confined into an office made his choice of becoming a real estate agent pretty easy.

His day starts of at six, when he begins to go through the auto reports sent to his email box, by MLS. They tell him that there new properties on the market. If he finds one that's appealing, he'll dig in deeper and do some more research. The whole time he's thinking about his clients. In this game you have to be aggressive, and an early bird!

### Current Equipment

Office - Landline, Printer, Scanner, Fax, Secondary Display, Keyboard, etc

Automobile - GPS, Digital Camera, Portable Printer, Hands free Unit

On Person – Smart Phone, Laptop

Home - Landline, All-in-one

### Sub-Categories

Small Office/Home Office  
Owner, Real Estate Agent,  
Franchise Operator,  
Independent Consultant, Field  
Sales Representative, Field  
Service Agent

### High Level Tasks

- Surf the Web
- Create and View Presentations that will be given to clients
- Create and view documents about the business
- Create and view spreadsheets about the business.
- Create and view calendar appointments
- Fill out forms for the business.
- View client/customer database.
- Custom Applications

### Challenges

- How does this Persona work while on the road? If they don't have a keyboard/screen, then its pointless for them to have the dual OS experience
- What kind of dock do we envision?
- How will this connect to Portable Printers?
- How will we install custom applications?

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Hardware Overview

# PRODUCT SUITE

# Product Suite Overview



Handset



Smart Pad



SmartDock

# Hardware | Handset

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Key Opportunity

# **VISUAL DUAL TASKING**

# Sample Application – Dual Screen Application



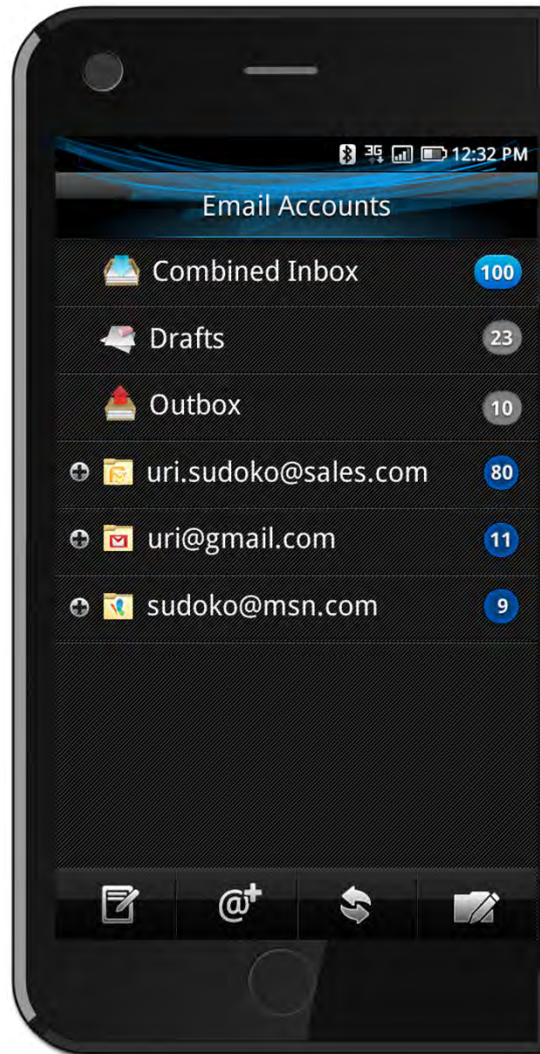
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Key Opportunity

# DUAL SCREEN APPLICATIONS

# Sample Application – Dual Screen Application

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# Sample Application – Dual Screen Application



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## Hardware Overview

# HANDSET

# Hardware | Handset

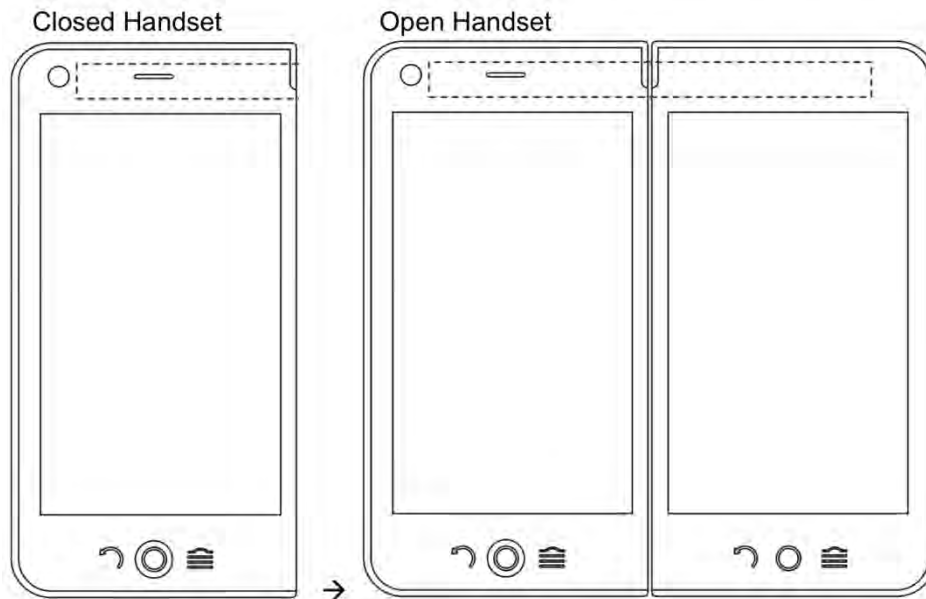
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## Description

- 2 x 3.97" AMOLED Screens
- 480 x 800 / screen (with 240DPI)
- Single / Dual Screen Mode
- 2 sets of capacitive Buttons (Back / Home / Menu)



# Hardware | Handset Device Modes



## Description

- Only one screen is available when handset is closed
- Both screens area available when handset is open
- The action of opening, simply provides further screen real-estate
- User decides how this space is used, not the system
- Closing the handset automatically forces applications to minimize (if they were previously maximized)

| Button | Name | Function                            |
|--------|------|-------------------------------------|
|        | Back | Standard Android back functionality |
|        | Home | Returns to the home screen          |
|        | Menu | Launches the application menu       |

# Hardware | Handset Device Modes

| Device State                   | Appearance                                                                          | Supported Applications                                                                                    | Effective Resolution<br>(width x height) |
|--------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------|
| Closed – Portrait Single (PS)  |    | 1 single screen app*                                                                                      | 480x800                                  |
| Open – Portrait Dual (PD)      |    | 2 single screen apps<br>or<br>1 maximized dual screen app<br>or<br>1 single screen app* on either side    | 960x800                                  |
| Closed – Landscape Single (LS) |   | 1 single screen app*                                                                                      | 800x480                                  |
| Open – Landscape Dual (LD)     |  | 2 single screen apps*<br>or<br>1 maximized dual screen app<br>or<br>1 single screen app* on either screen | 800x960                                  |

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## Hardware Overview

# SMARTPAD

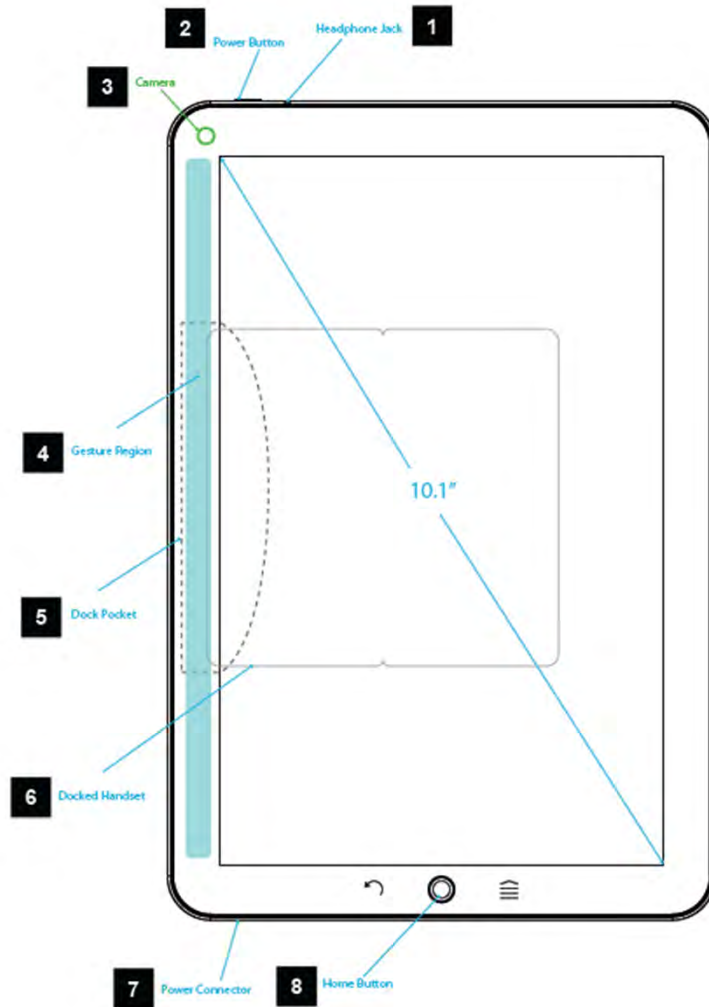
# Hardware | SmartPad

## Description

- 10.1" LCD Screen
- 1280 x 800
- Single Application / Dual Screen Application Mode
- 1 set of capacitive Buttons (Back / Home / Menu)



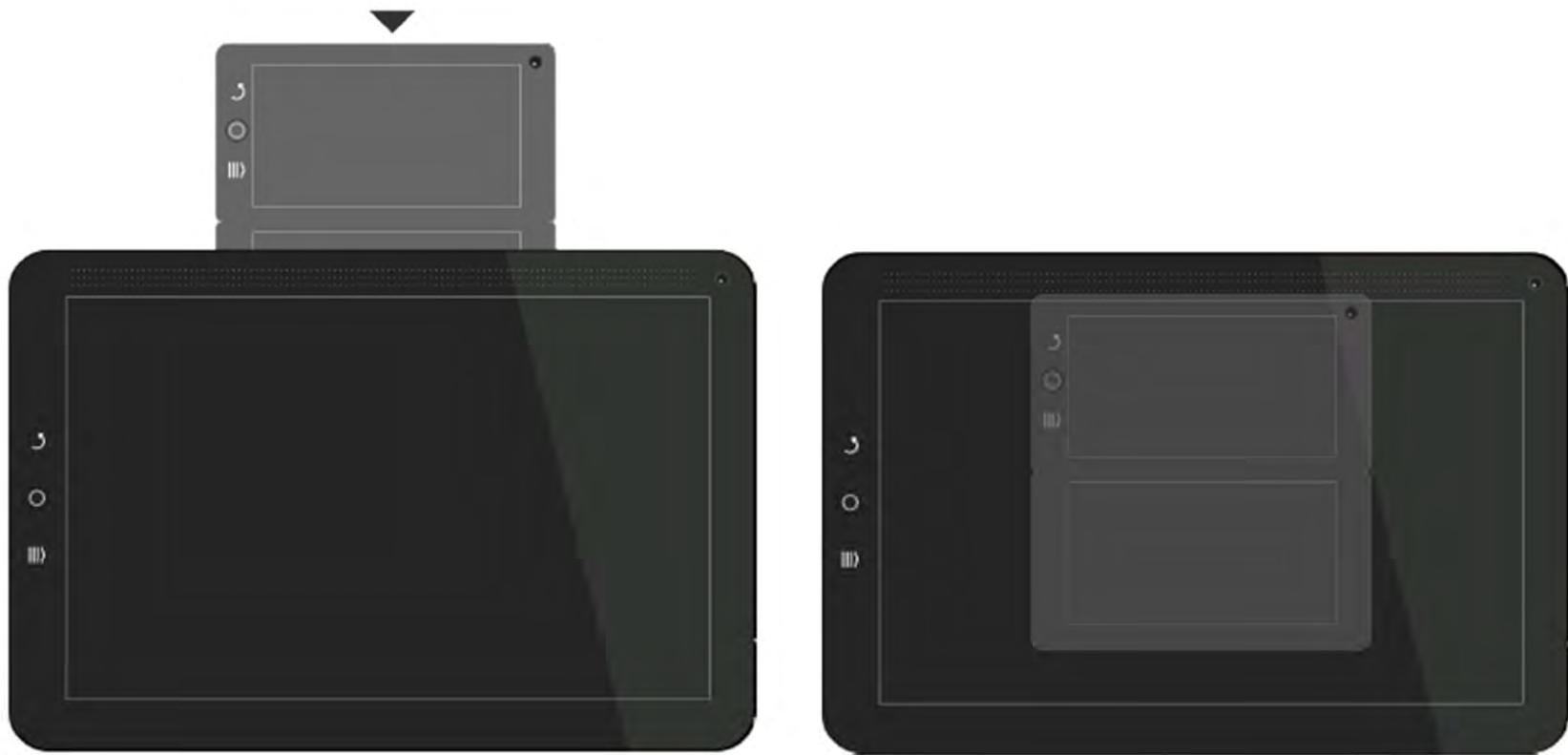
# Hardware | Layout



1. Headphone Jack
2. Power Button
3. Camera
4. Gesture Region
5. Dock Pocket
6. Docked Handset
7. Power Connector
8. Android Buttons [Back | Home | Menu]

# Hardware | Docking Handset

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# Hardware | Application Re-alignment

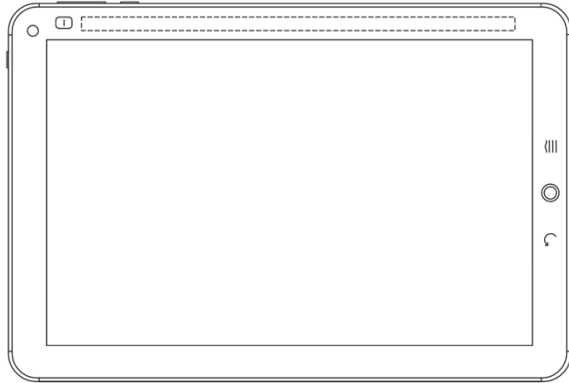
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# Hardware | Tablet Device Modes

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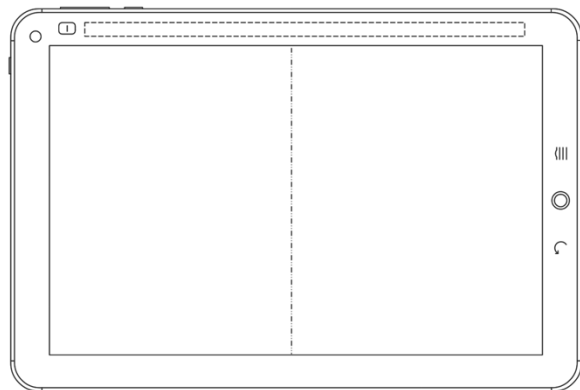
## Tablet – Single Application Mode



### Description

- Operates similar to the handset being closed
- One Application displayed only
- Windowing system moves one application at a time
- No Minimizing / Maximizing

## Tablet – Dual Application Mode

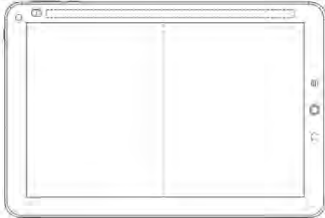


### Description

- Operates like the handset being open
- Displays dual applications
- Windowing system moves one application from one side to the other
- Minimizes and maximizes is supported

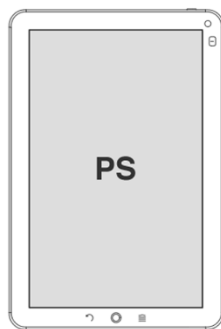
# Hardware | Tablet Device Modes

| Device State                 | Appearance                                                                         | Supported Applications                                                                                 | Effective Resolution (width x height)     |
|------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Portrait Tablet Single (PTS) |   | 1 single screen app*                                                                                   | 800x1280                                  |
| Portrait Tablet Dual (PTD)   |  | 2 single screen apps<br>or<br>1 maximized dual screen app<br>or<br>1 single screen app* on either side | 800x1280<br>(Two Virtual screens 800x640) |

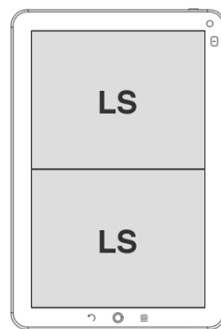
|                               |                                                                                     |                                                                                                           |                                           |
|-------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Landscape Tablet Single (LTS) |  | 1 single screen app*                                                                                      | 1280x800                                  |
| Landscape Tablet Dual (LTD)   |  | 2 single screen apps*<br>or<br>1 maximized dual screen app<br>or<br>1 single screen app* on either screen | 1280x800<br>(Two Virtual screens 640x800) |

# Hardware | Tablet Orientation Overview

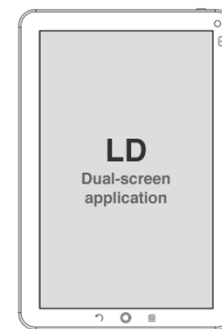
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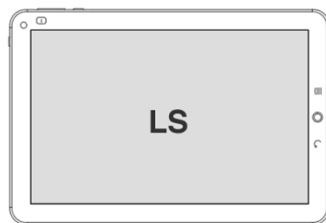
**PTS**



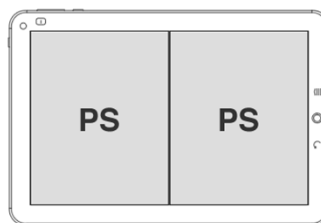
**PTD**



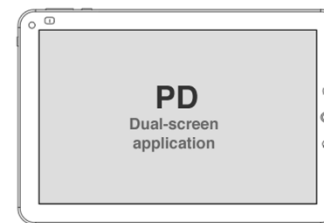
**PTS/PTD**



**LTS**



**LTD**



**LTS/LTD**

# Hardware | Tablet Docking Simulations

## 7.2 Docking to a portrait tablet

two single-screen applications docked to a portrait tablet in dual-application mode.

## 7.2 Docking to a portrait tablet

The handset with one dual application is docked to a portrait tablet in dual-application mode. Gravity drop is applied.

## 7.3 Docking to a landscape tablet

The handset with two applications is docked to a landscape tablet in dual-application mode.

## 7.3 Docking to a landscape tablet

The handset with one application is docked to a landscape tablet in dual-application mode.

## 7.4 Docking stickiness

Application 1 is in focus upon docking to a single application mode. Application 1 remains visible after docking.

## 7.4 Docking stickiness

Application 2 is in focus upon docking to a single application mode; Application 2 remains visible after docking.



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## Hardware Overview

# SMARTDOCK

# Hardware | Smartdock

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## Description

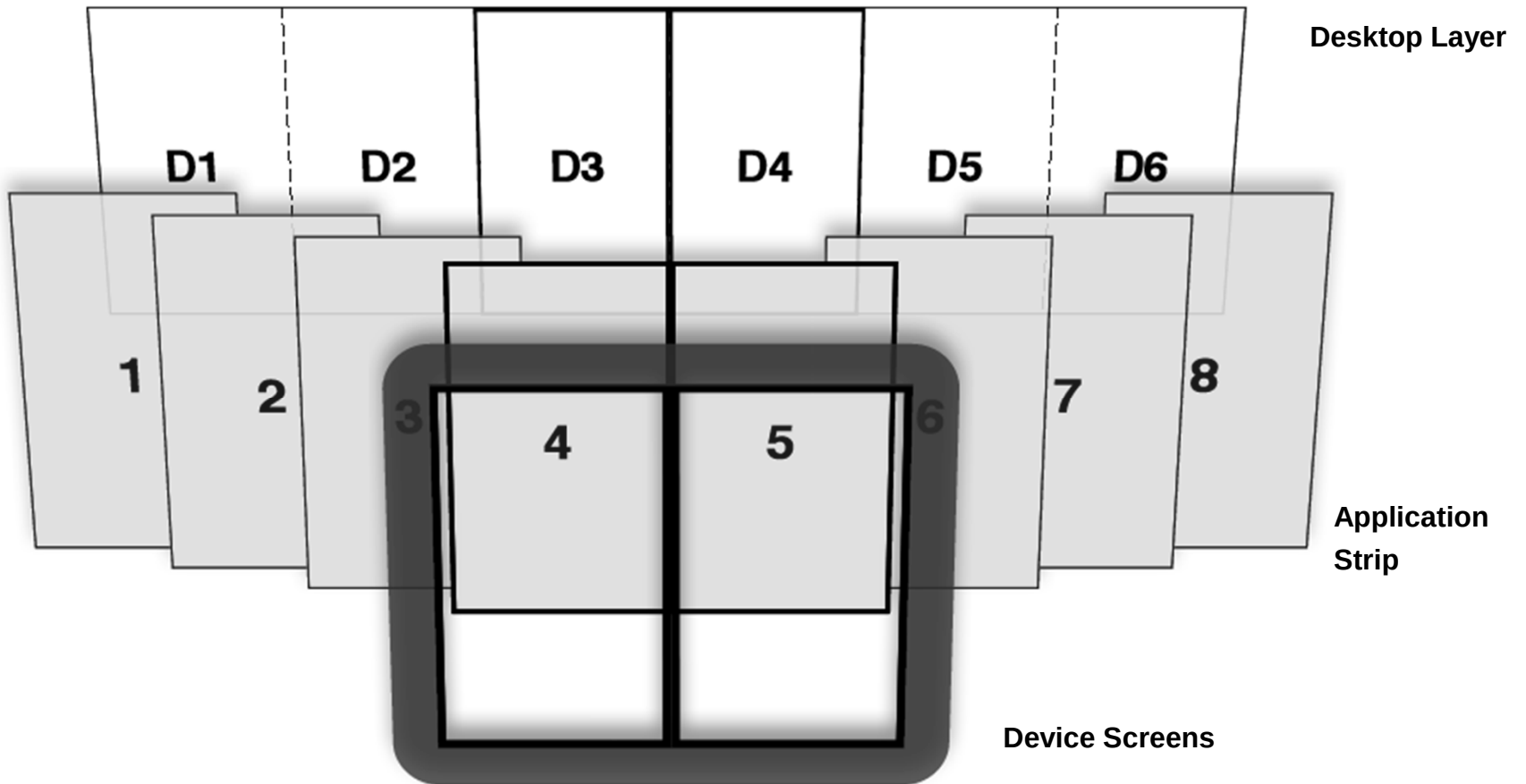
- Docking Cradle
- Power Supply
- Analog Audio Output

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Application Management

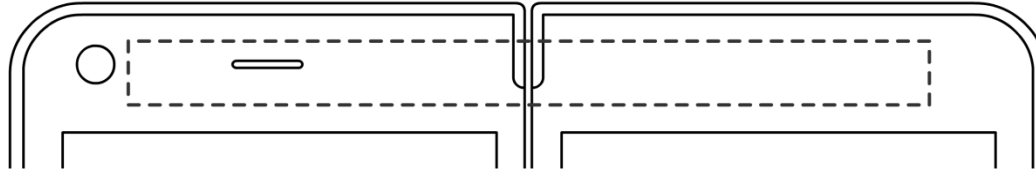
# WINDOW POSITION CONTROL

## WPC – Application Shuffling – Conceptual Model



# WPC – Capacitive Gesture Strip

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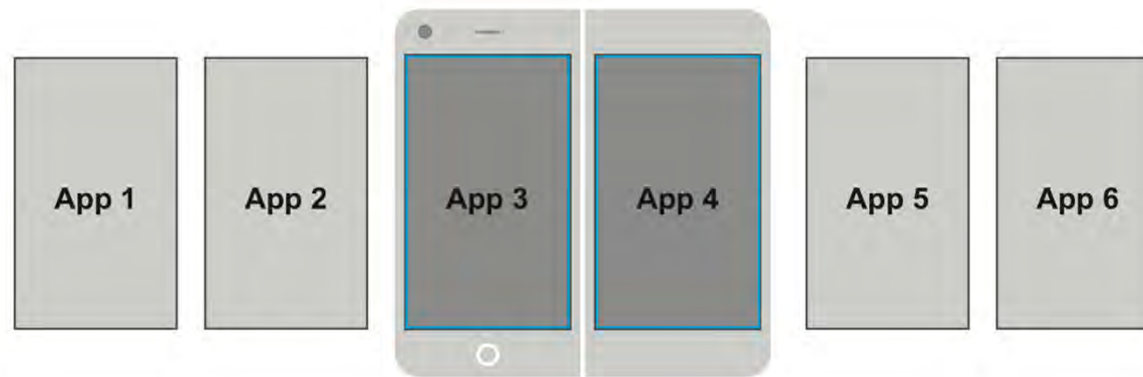


## Gesture Strip

- The Dual Screen Handset provides a capacitive strip across the top of the dual screens.
- Gestures Supported
  - Drag
  - Flick
  - Long Drag
- Region is used to track the gestures that are used to:
  - Move
  - Maximize
  - Minimize
- Provides the ability to navigate through the applications running on the handset.
- This functionality is strictly OS level and is not accessible by applications. Applications only need to be able to respond to the applicable action notification.

# WPC – Application Shuffling

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## Application Shuffling

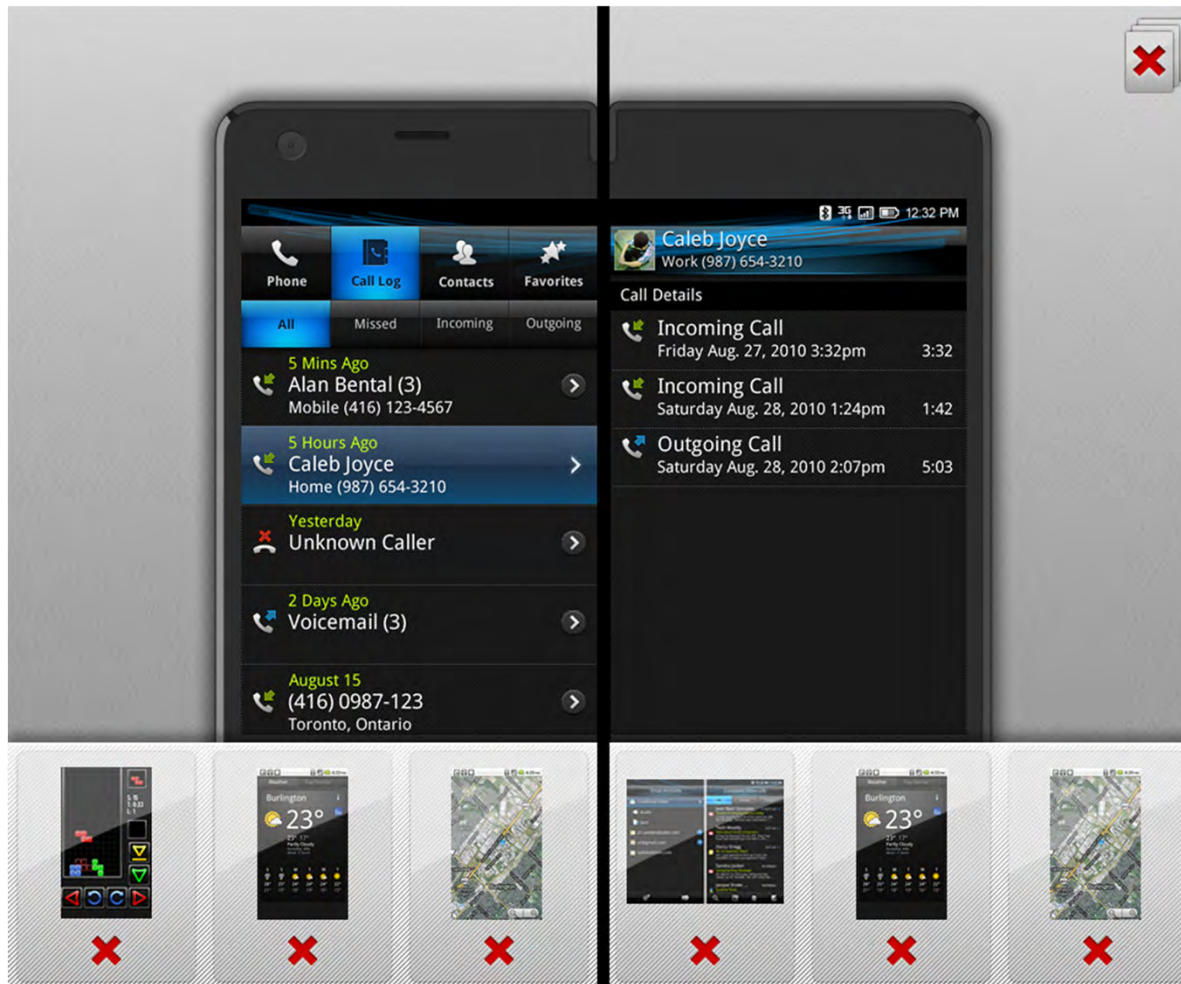
- Applications are ordered in a ‘film strip’, and only one or two are displayed in the view port
- When new applications are launched, they insert themselves into the screen they were launched from. The previous application is not replaced, merely pushed out of view.
- The Desktop is a layer underneath the applications, and is a temporary state accessed by selecting the ‘Home’ button on the device. This is known as a ‘Desktop Reveal’
- Application’s can be shuffled by dragging a finger across the gesture region. Applications will ‘move’ along with the users fingers
- Dual screen capable applications will first maximize, and then minimize.

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Application Management

# **APPLICATION MANAGER**

# Application Manager



## Application Manager

- Application manager provides a secondary way of navigating applications
- Allows for easily navigating, closing, and rearranging applications.
- Open applications are represented as cards of thumbnails
- Each accompanied with a close-button used to terminate the application.
- Cards can be dragged to and between the screens in order to bring them into view.

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Application Behavior

# MINIMIZING / MAXIMIZING

# Maximizing and Minimizing

## Rules

- Manual Maximize/Minimize via WPC
- Automatic minimization can occur at anytime – be prepared (gracefully degrade).
  - The Handset is closed, or the Tablet is changed from multi-application mode to single-application mode
  - A new application is launched on either screen, forcing a minimization of the dual-screen application to the other screen
  - An incoming phone call is accepted, forcing a forcing a minimization of the dual-screen application to the secondary screen
- Automatic Maximization via Gravity Drop



# Maximizing

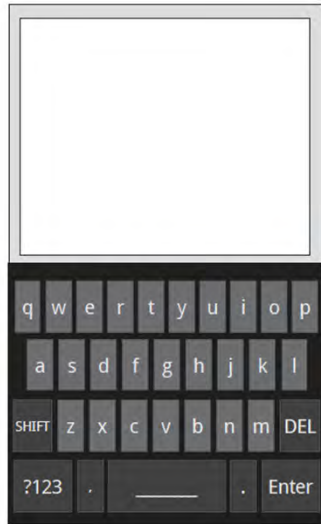


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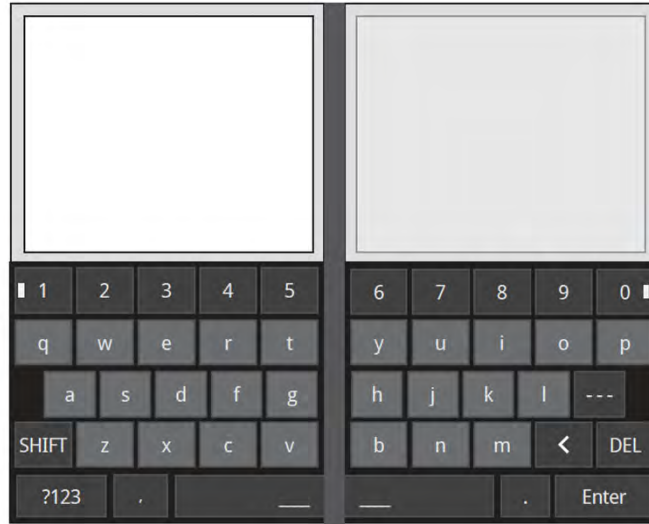
Essential to Productivity

# KEYBOARD

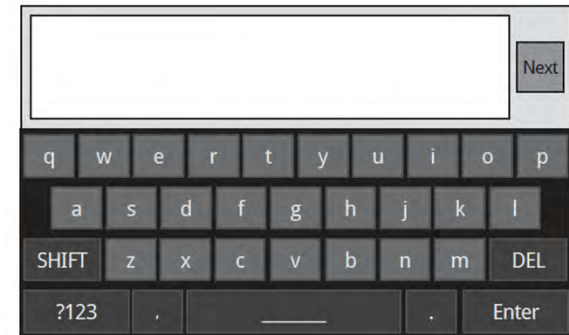
# Keyboard – Supported Orientations



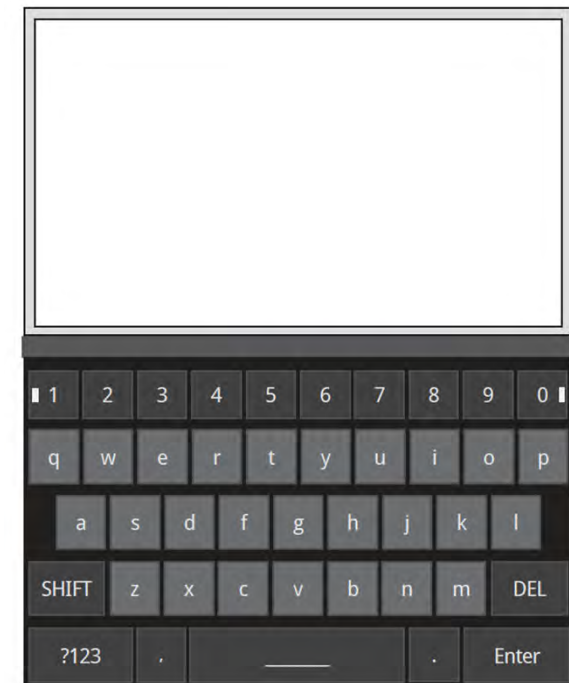
PS KB



PD KB

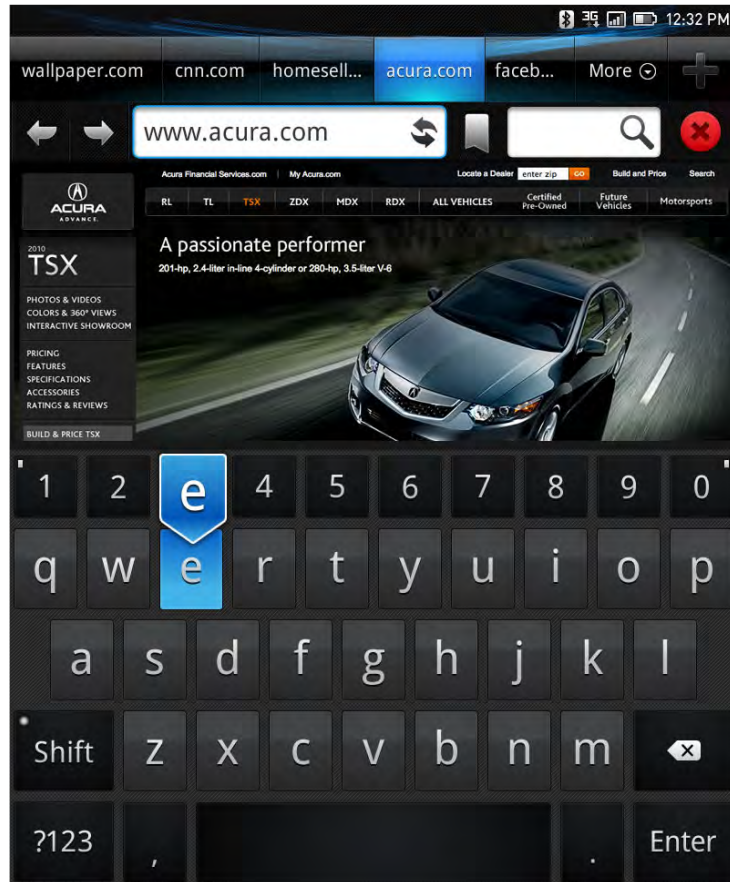


LS-KB

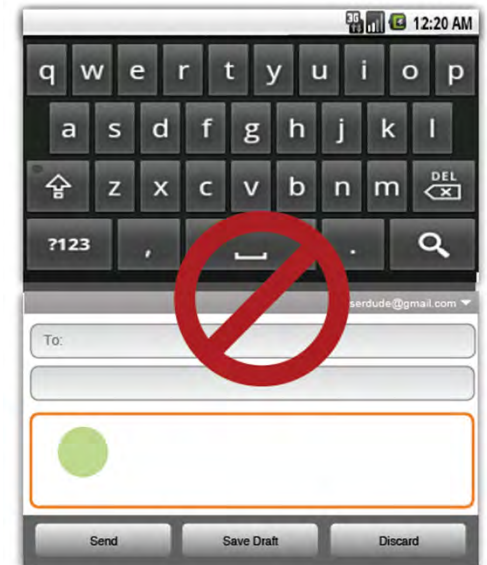
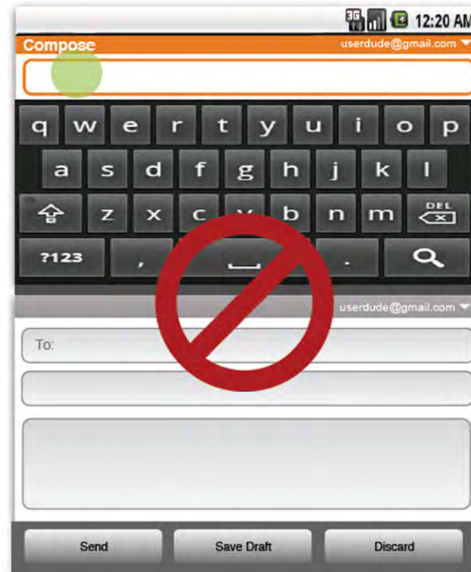
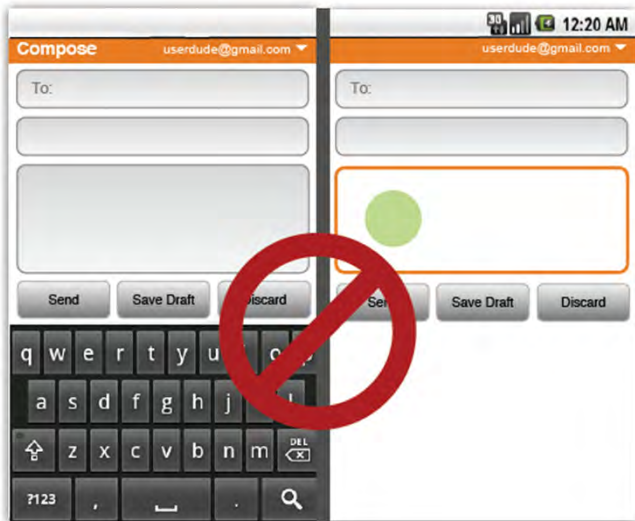
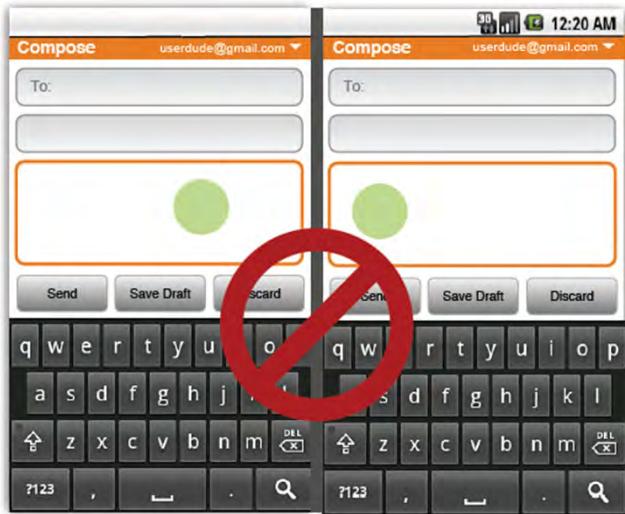


LD-KB

# Keyboard



# Keyboard – Not supported



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Theory

# DESIGN PRINCIPALS

# Designing for Dual Screen Applications

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- + Simple**
- + Responsive**
- + Fluid (Smooth Transitional)**
- + Dual Screen Utility & Design**

# Design Principles

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## Simple

The experience needs to be simple and intuitive so the user can work in a robust manner without confusion or having to think about what to do.

## User In Control

"Allow users, not your application, to initiate and control actions. Keep actions simple and straightforward so users can easily understand and remember them. Whenever possible, use standard controls and behaviors that users are already familiar with.

Provide ample opportunity to cancel operations before they begin, and be sure to get confirmation when the user initiates a potentially destructive action. Whenever possible, allow users to gracefully stop an operation that's underway."

The underlying system can be very complex; however as designers, we make well thought- out decisions to remove system complexity from the user; yet allow them to feel in control. When there are two equally good options we rule in favor of the user.

# Design Principles

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## Responsive

Every action should result in a fast, consistent reaction. Make sure feedback is sufficient, and that responsive times to touch events are always minimal.

## Fluid (Smooth Transitions)

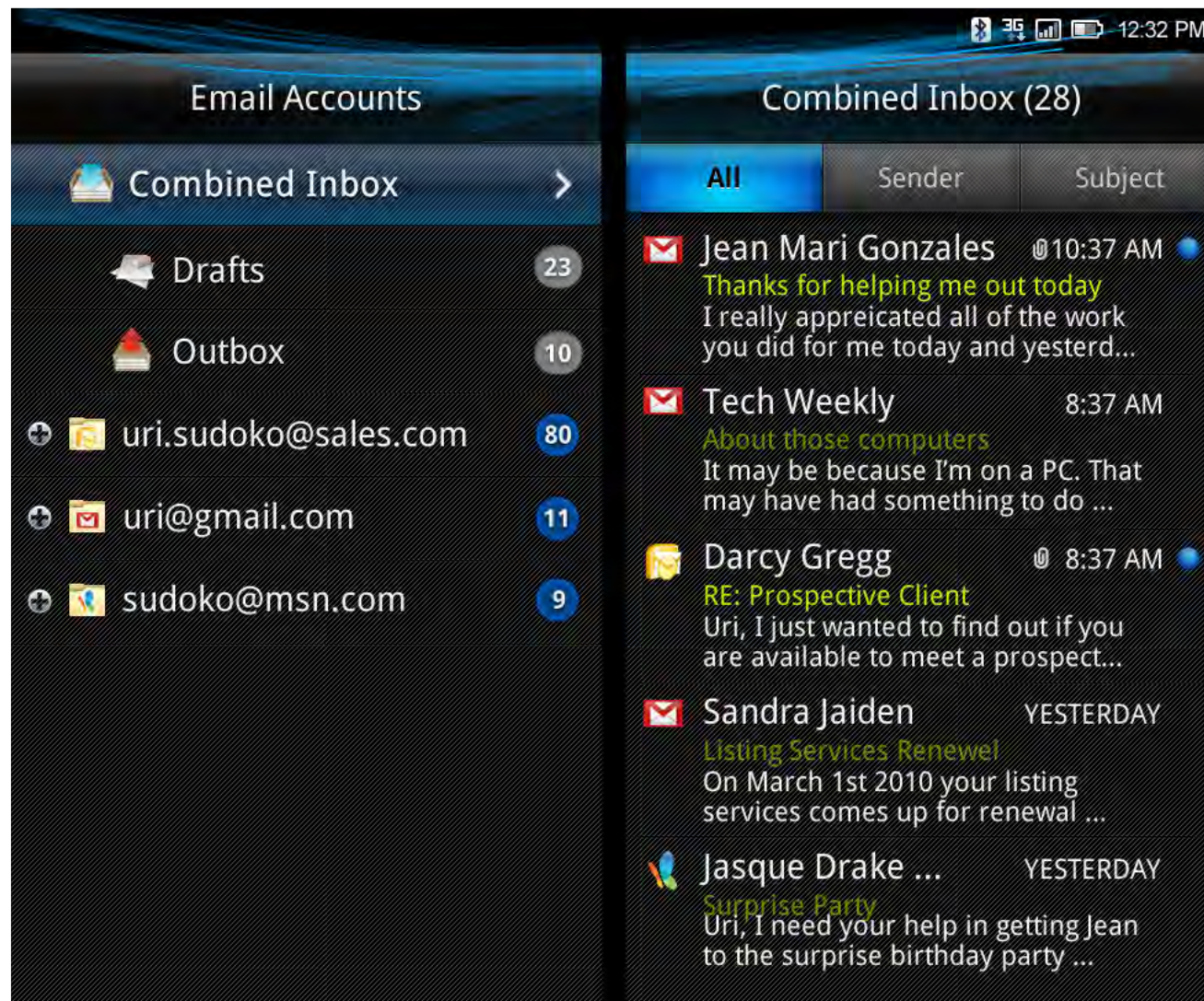
A core facilitator for building a pleasant user experience, applications that provide smooth transitions and fluid motion feel more responsive, reactive, and satisfying.

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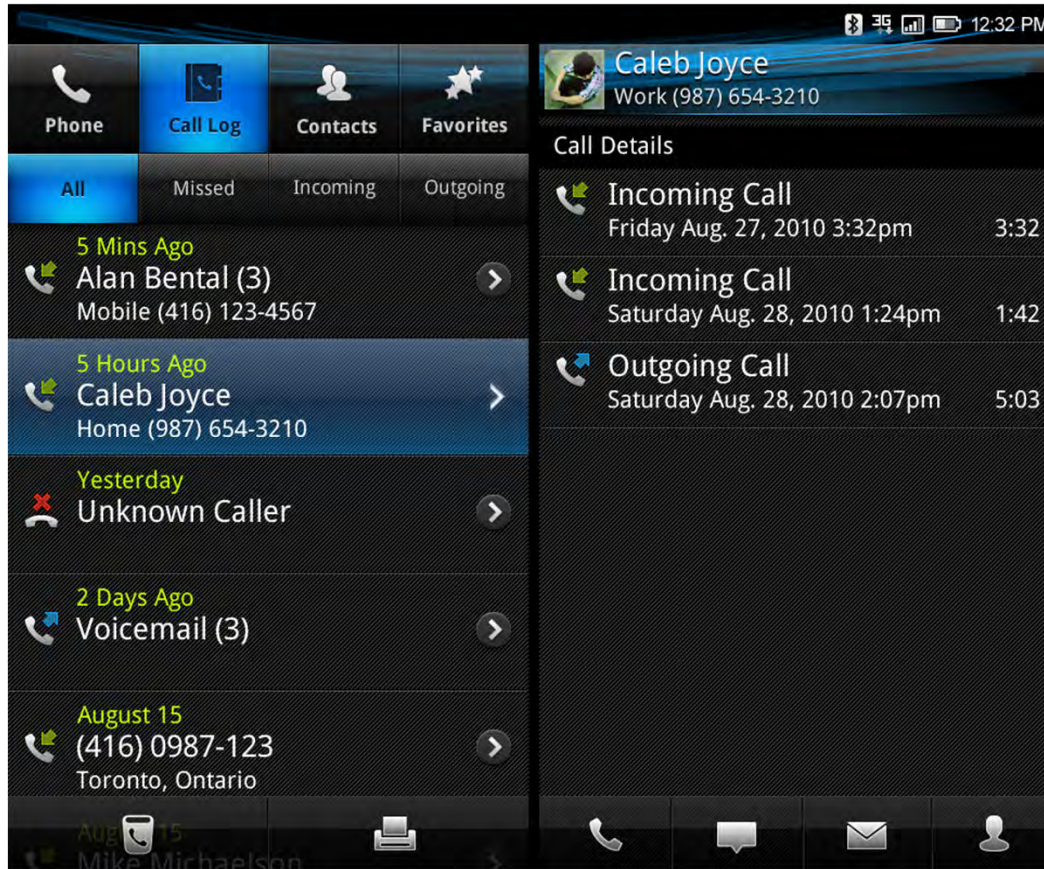
Interaction Design

# DUAL SCREEN APP DESIGN

# Dual Screen Application



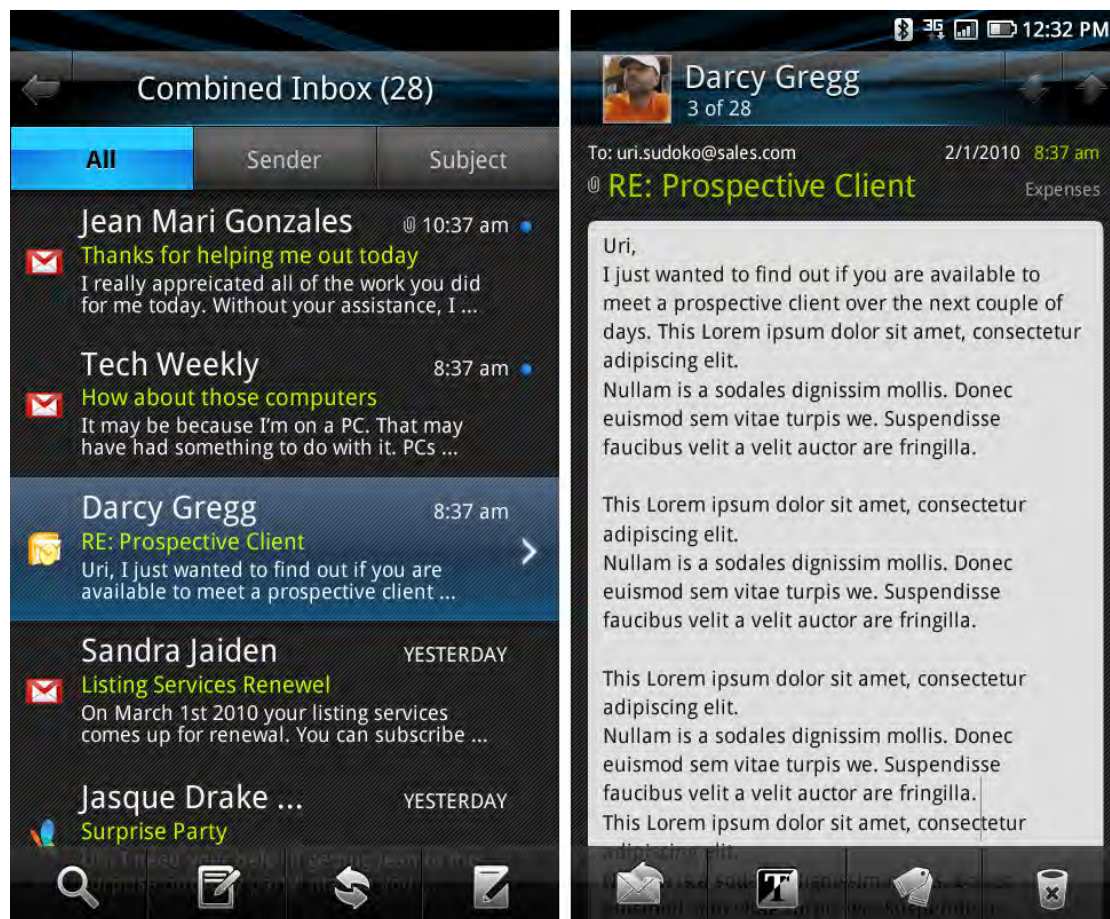
# Dual Screen Utility & Design



## Rules of Thumb

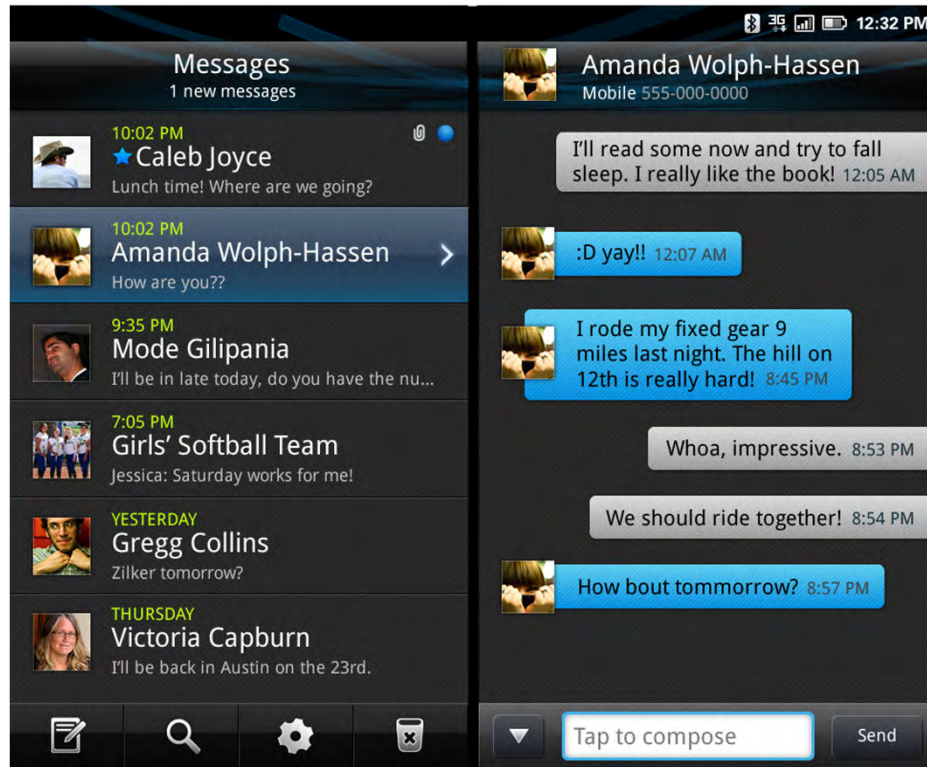
- Applications must work both in single screen mode
- Support all orientations
- Support for multiple resolutions and pixel densities
- Support seamless transitions between single and dual screen modes
- Using the second screen to provide enhanced interactivity and functionality
- Providing a consistent experience
- Provide in-application navigation
- Always provide support to OS-Level Actions
- Support Auto-minimizing at anytime

# Dual Screen Utility & Design– Building Relationships

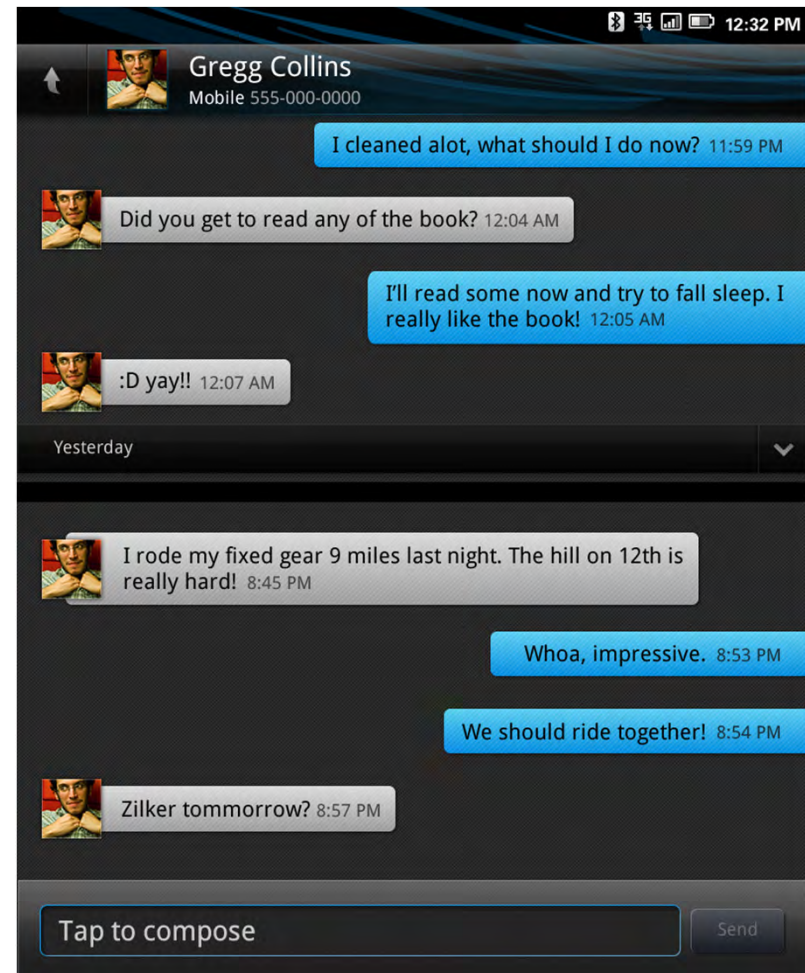


- It is important to remember to clearly display the relationship between the two views
- Maintain a selection state or otherwise representing a dependency between the screens.
- Maintain a consistent visual look-and-feel between the two views in order to further emphasize that the two screens are in fact parts of the same application

# Special Application Modes



**+ Productivity Focused**



**+ Content Focused**

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# Interaction Design **MODALS**

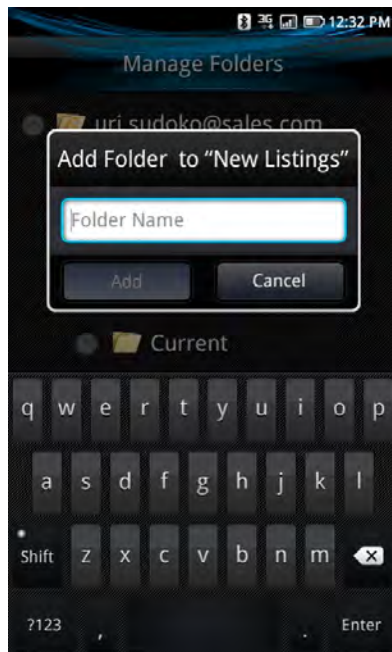
# Modals

## Introduction

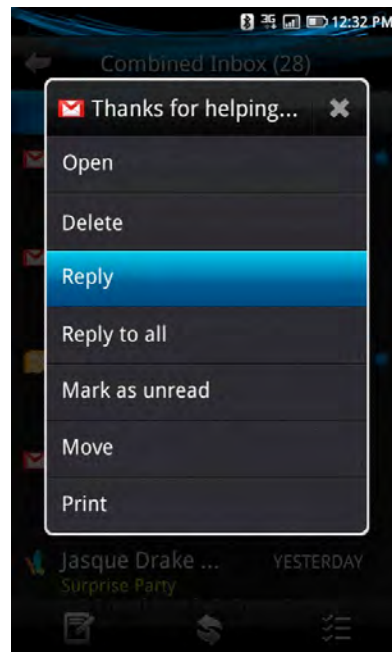
Modals are broadly considered as modal states of an application. While a Modal is active, a new set of actions can be performed until the modal state is dismissed.

There are several types and classes of Modals:

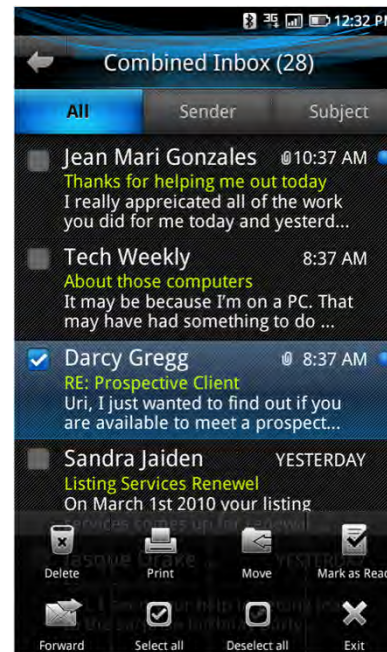
### Pop-up Modal



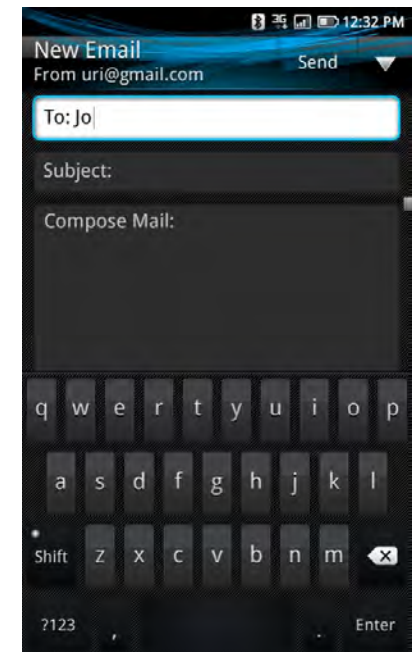
### Long-press Menu



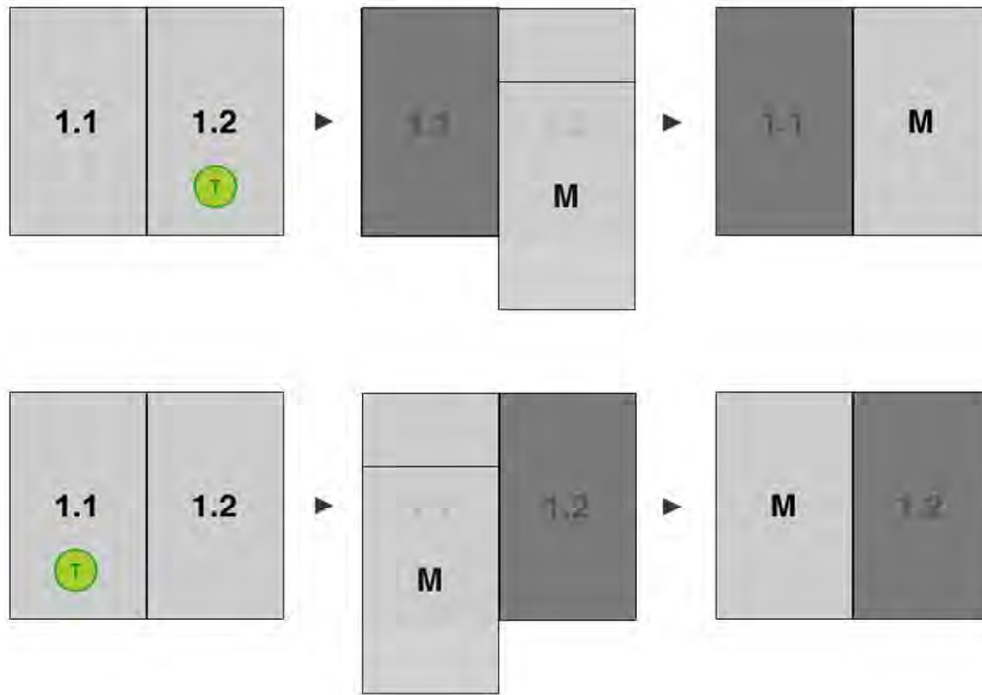
### Inline Modal (Edit Mode)



### Full-screen Modal



# Modals



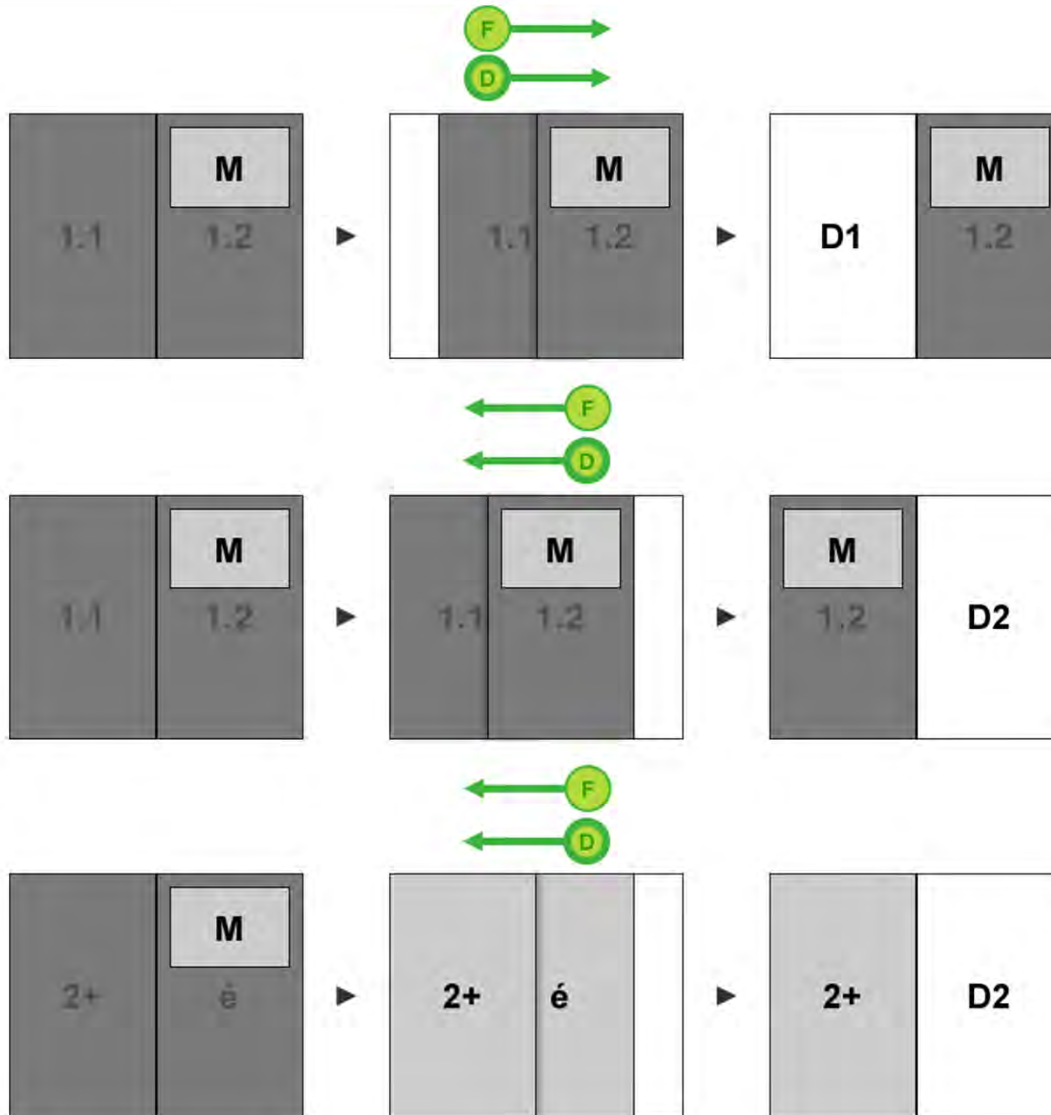
## Modal positioning

A modal is always presented on the screen which it was initiated from.

In this example, a full-screen modal is summoned from different screens of a dual-screen application.

Modals always dim out the other screen.

# Modals



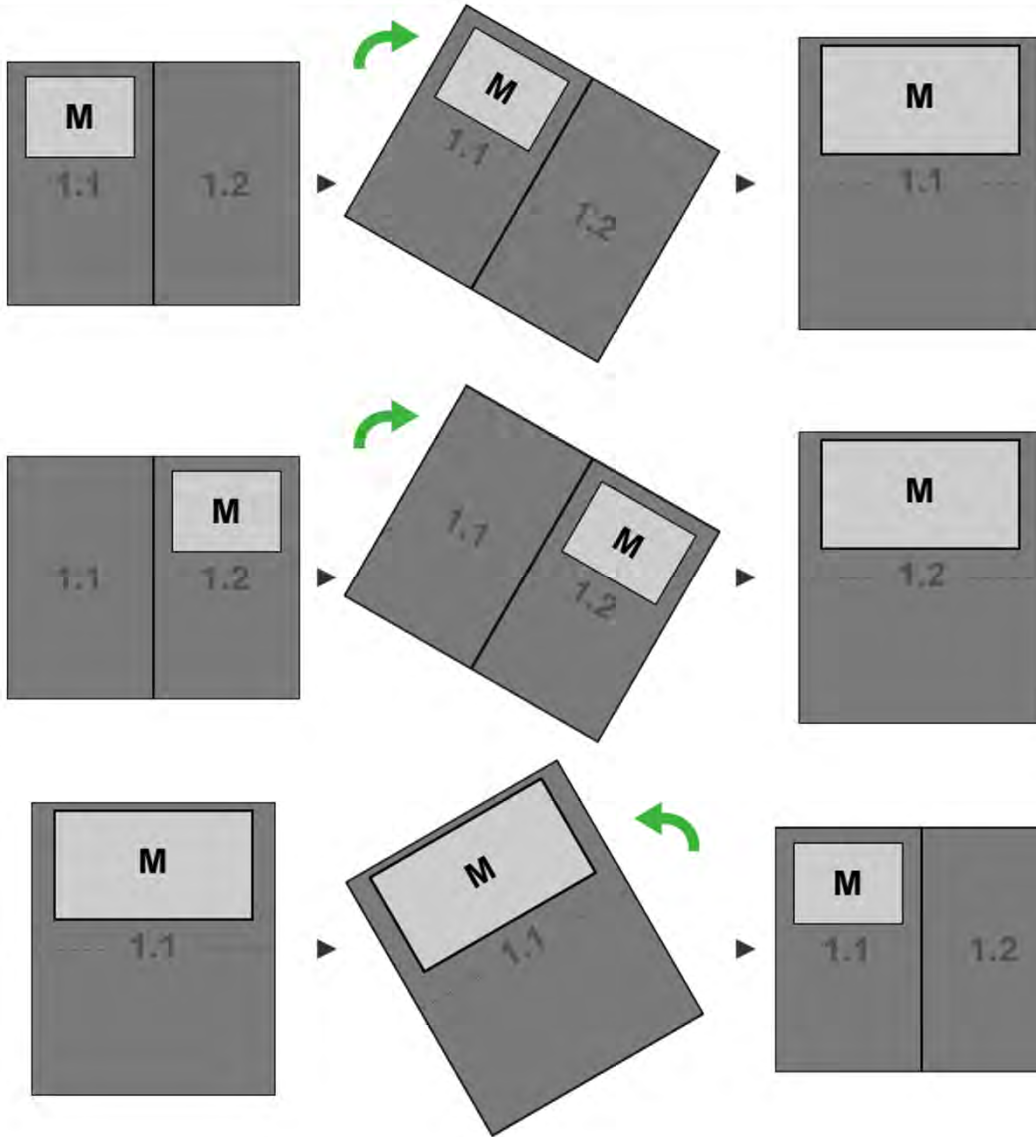
## Modals while minimizing applications

As a rule of thumb, modals are always preserved when an application is minimized.

This rule overrides other minimization rules when necessary.

If it is not possible to preserve a modal, the modal is cancelled.

# Modals



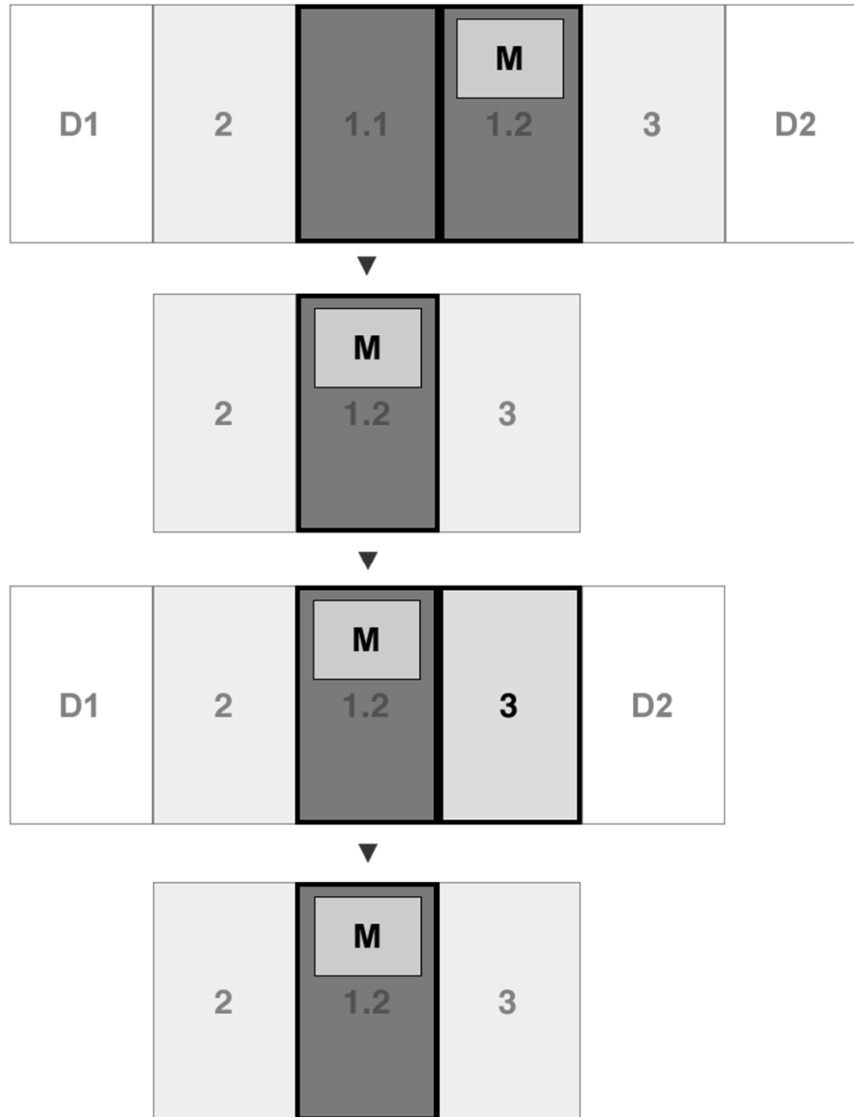
## Modals during rotation

As a rule of thumb, modals are preserved during rotation whenever possible.

This rule overrides the standard Gravity drop maximization when necessary. If it is not possible to preserve the modal, it is cancelled.

When rotating from LD to PD, the modal is preserved on the respective screen.

# Modals



## Modals during device closing and opening

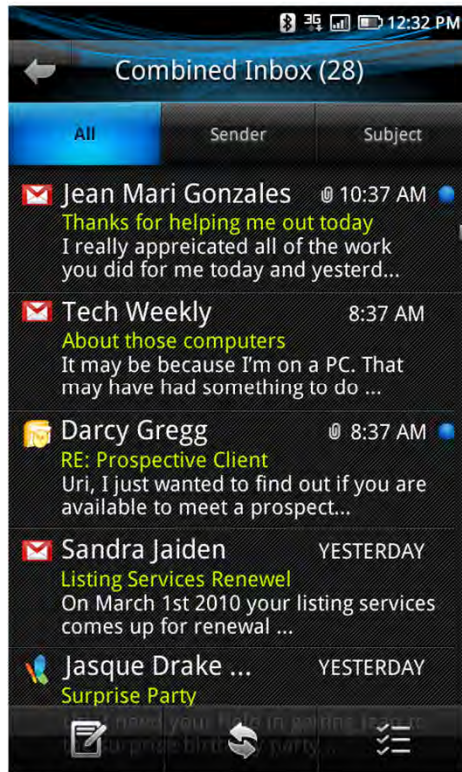
Since device closing is considered an auto-minimization event, modals are preserved as per standard modal minimization rules.

Modals are also preserved when the device is opened.

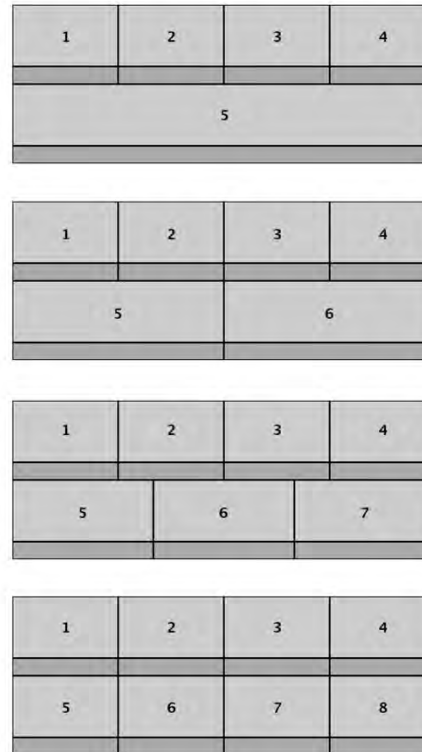
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# Interaction Design **ACTION BAR**

# Action bar



Action bar in Email



Examples of action bars with various amounts of commands

## Introduction

The action bar is a menu element that provides quick access to fundamental features.

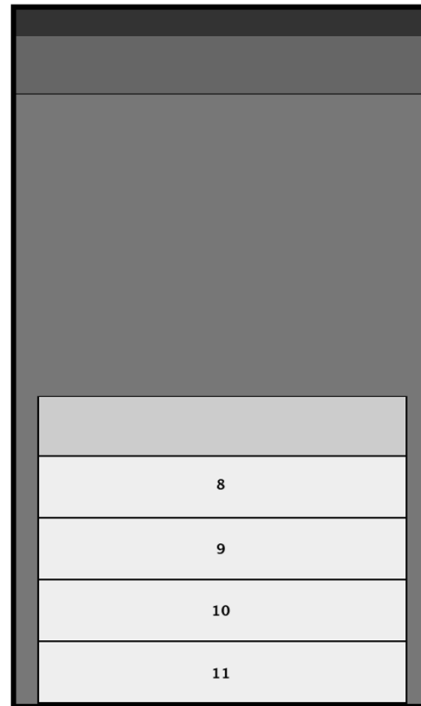
The action bar can contain up to two rows of commands, with four actions per row (both portrait and landscape).

By default, the first row of the bar is shown. The bar can be expanded by hitting the hardware menu button.

Action bar commands also contain labels, which are displayed whenever the bar is expanded.

# Action bar

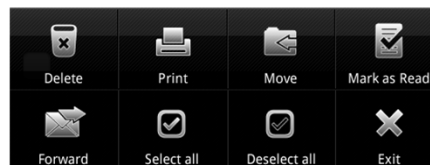
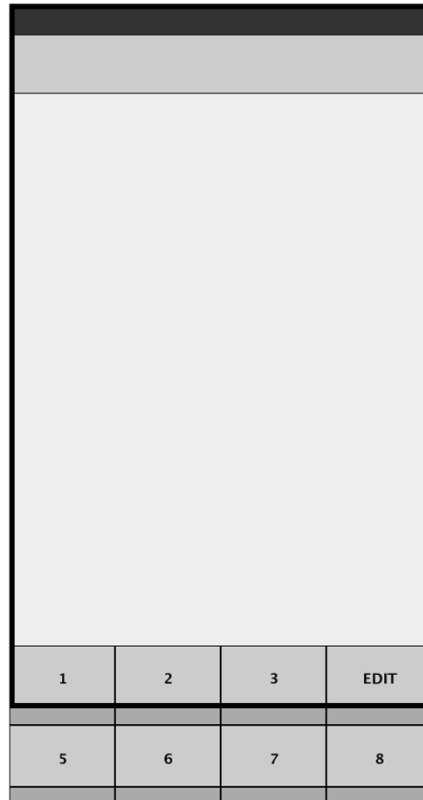
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## Additional commands

If the action bar requires more than eight commands, the last item in the bar can be used to present an additional “more”-menu containing all commands.

# Action bar



## Edit bar

The action bar may provide a command to enter an “edit mode” for the current view.

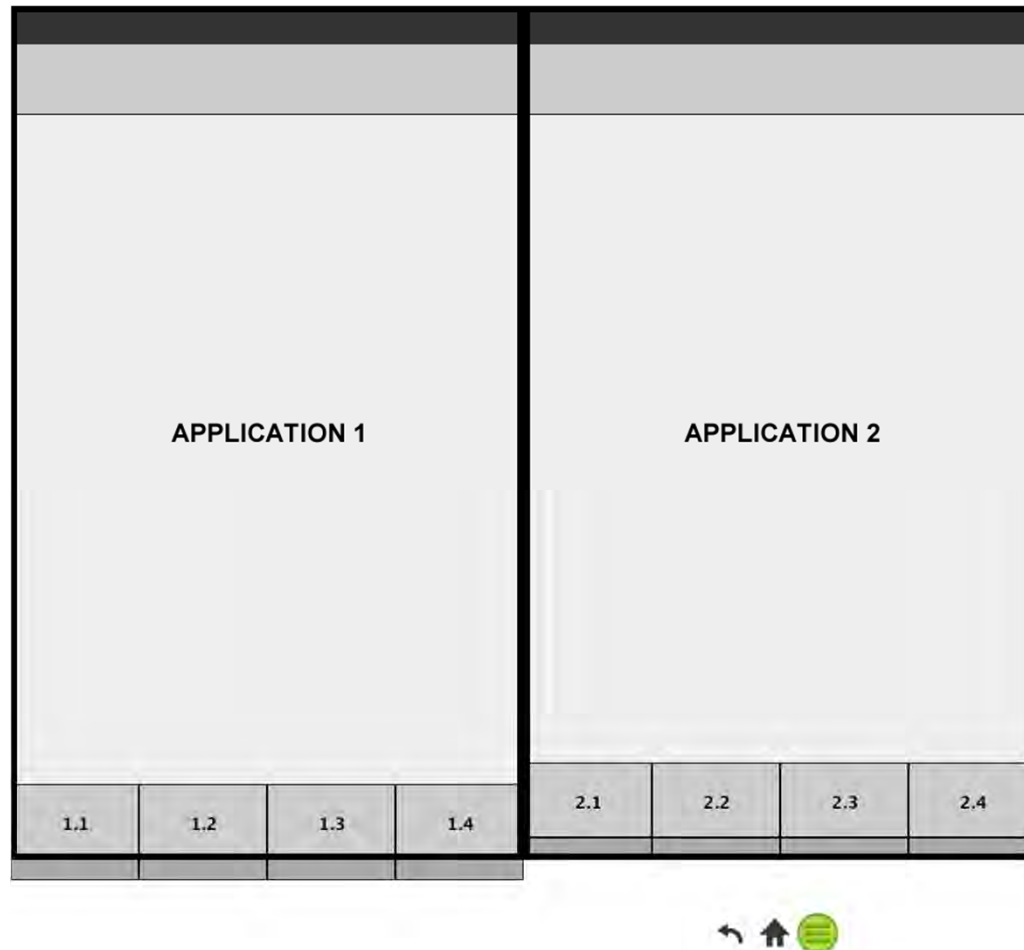
The command is always presented in the right-most slot in the bar, on the first row.

When entering edit mode, the bar changes to an edit bar; functionally, it is the same as an action bar. The main difference is that it expanded by default.

The edit bar contains a command to exit the edit mode, located in the bottom-right slot of the bar.

# Action bar

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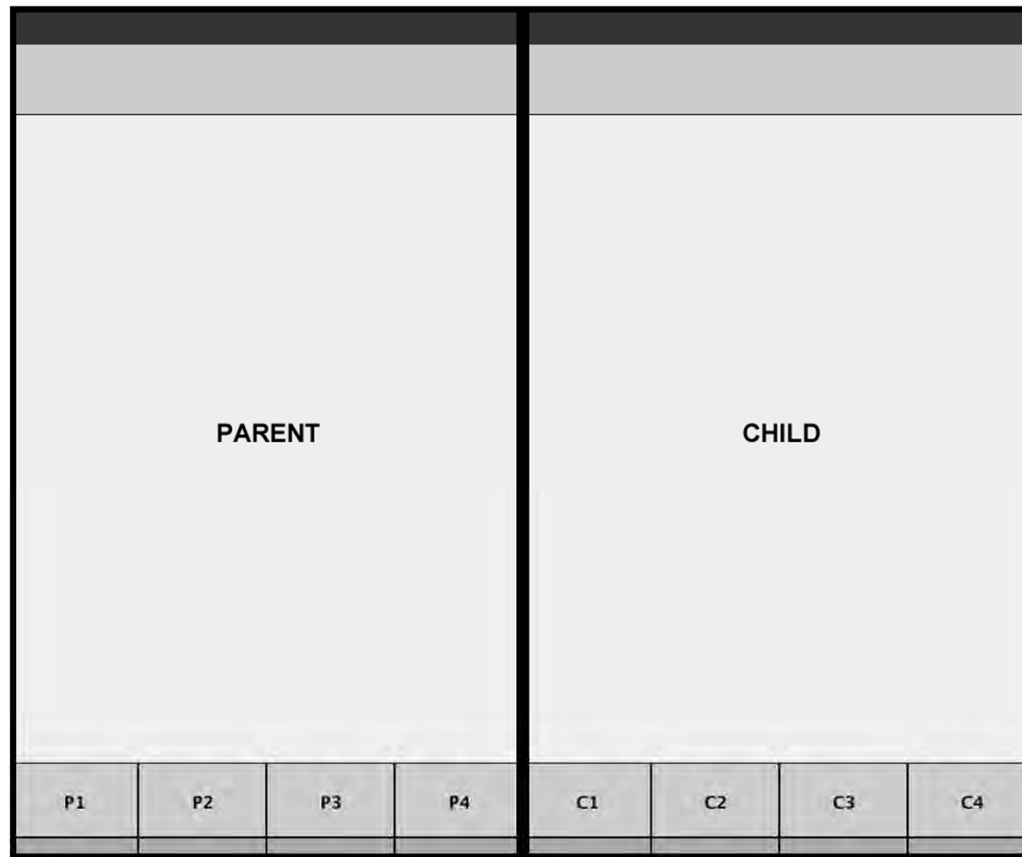


## PD action bar

In PD orientation, two applications side-by-side may contain their own action bars.

The menu button for the application in focus manipulates the bar for that respective application.

# Action bar

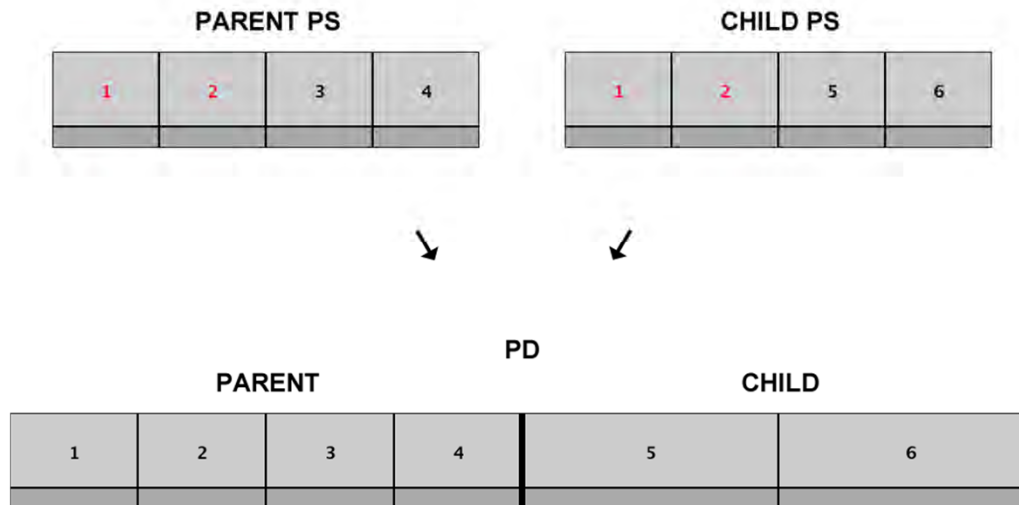


## Dual-screen application action bar

An action bar in a maximized dual-screen application responds to the menu button on both screens.

In this example, a maximized parent-child application extends both views' action bars simultaneously when pressing on the menu button.

# Action bar



## Dual-screen application action bar design

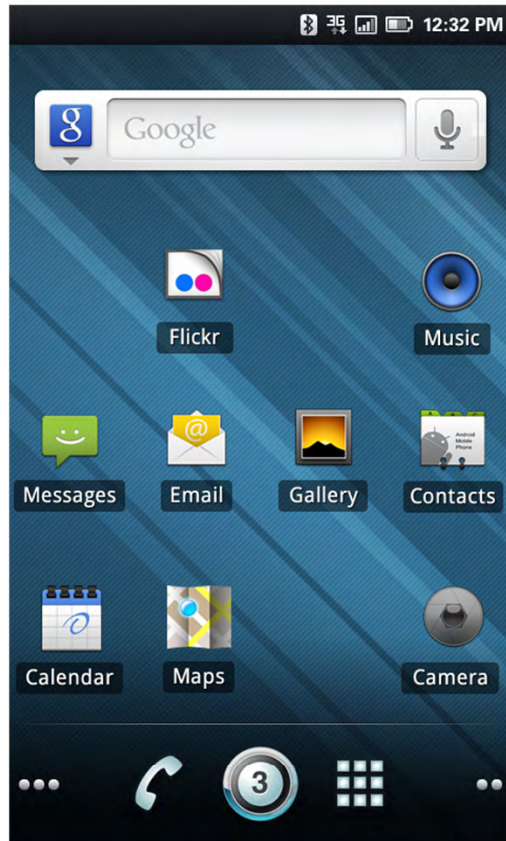
When maximizing a dual-screen application, it is possible that commands of individual views are now duplicated.

In order to avoid this, dual-screen applications may need to provide custom action bar layouts for combined PD views.

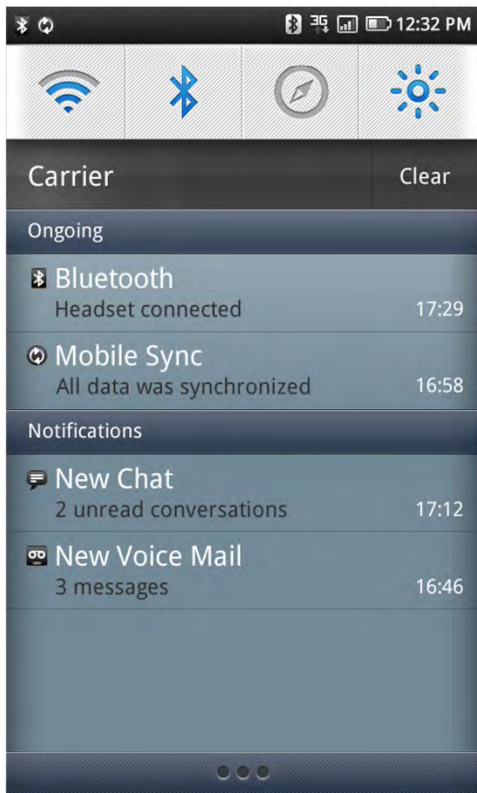
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Visual DNA  
**DESKTOP**

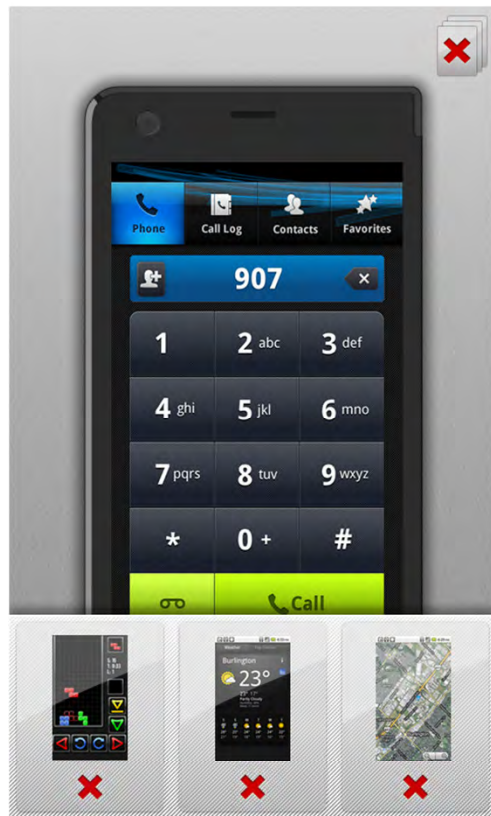
# Desktop & Triad



# Annunciator Bar



# Application Manager

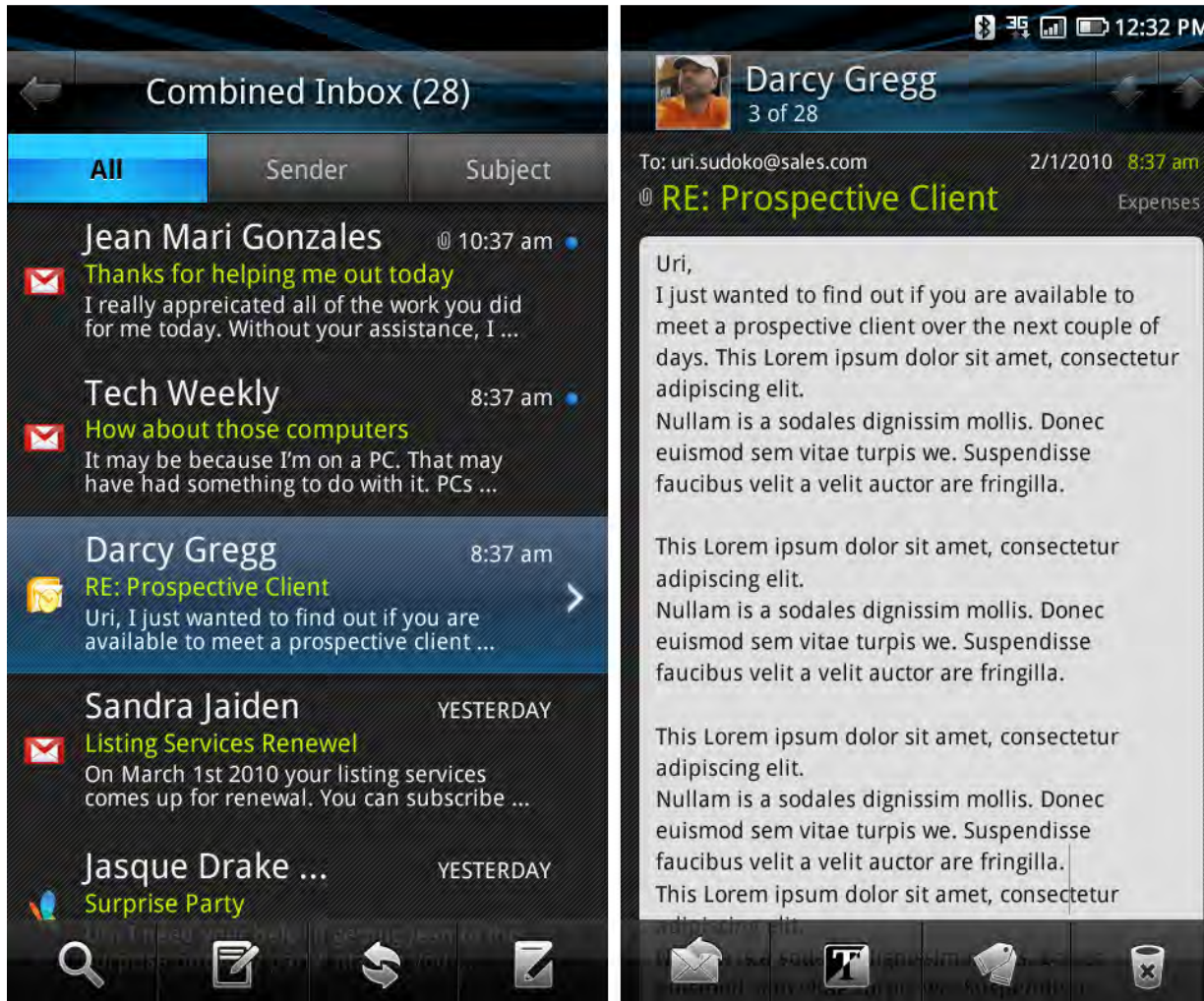


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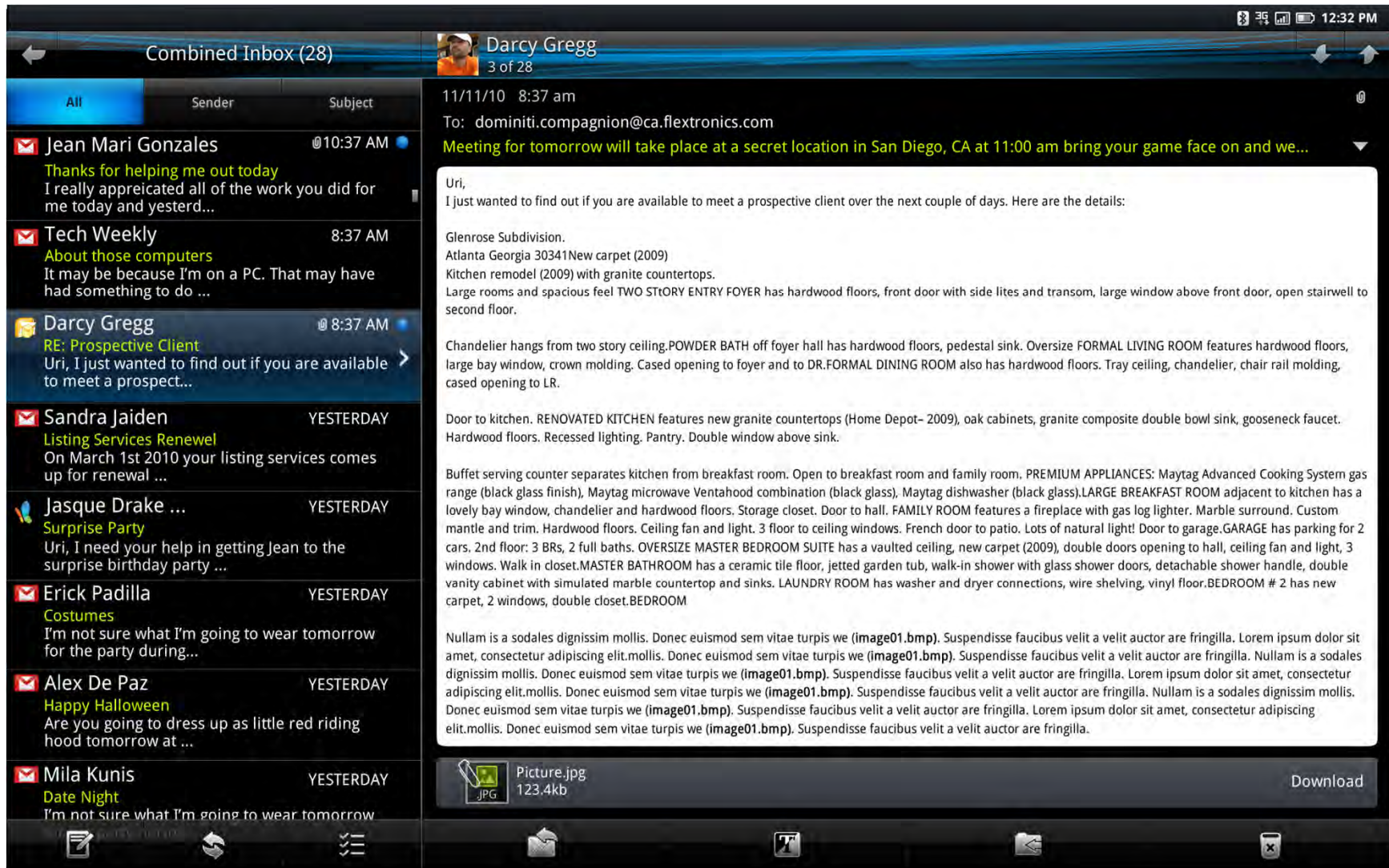
Productivity

# **SAMPLE APPLICATIONS**

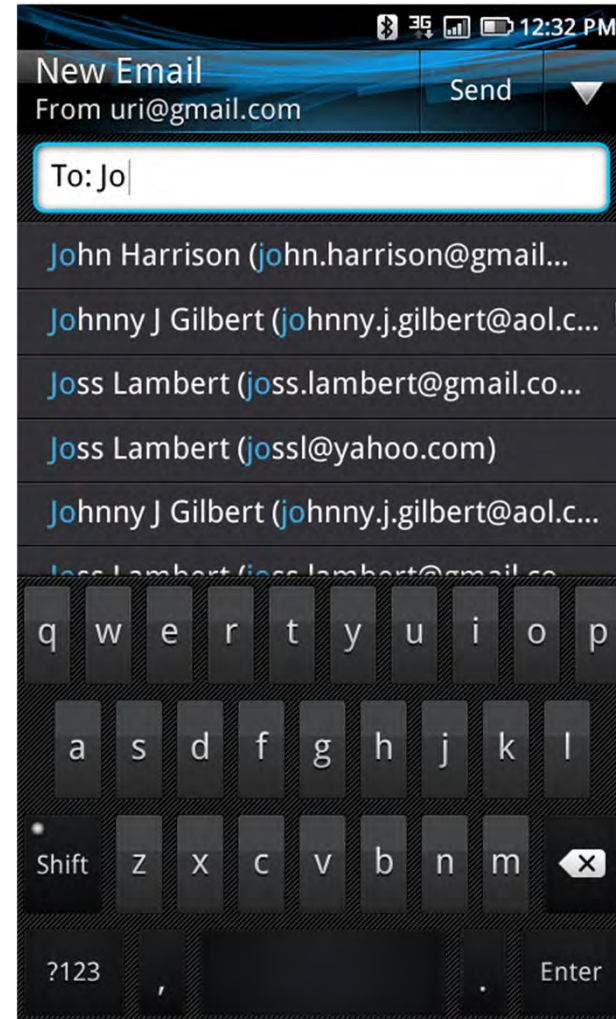
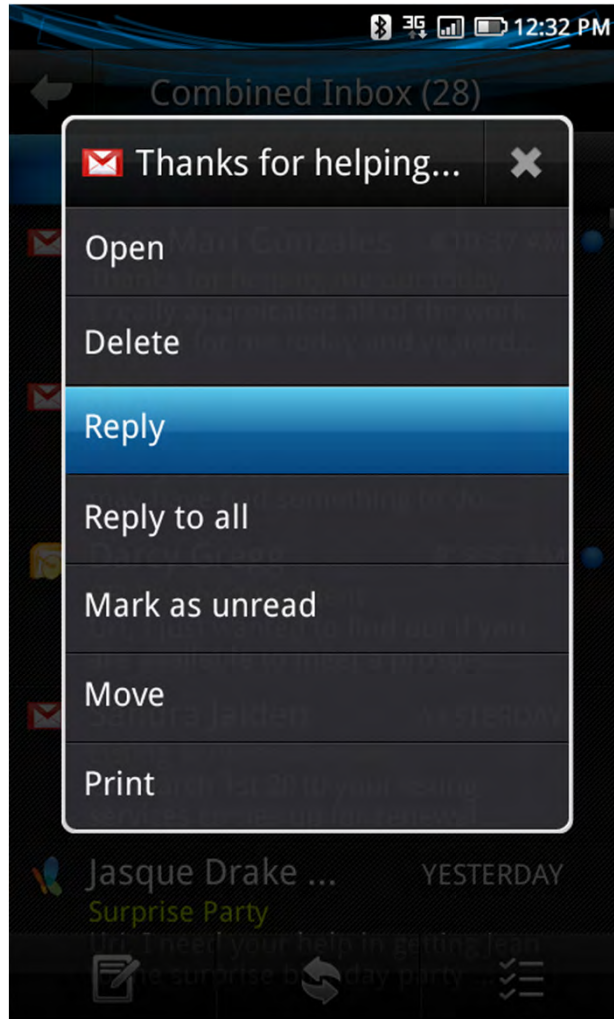
# Sample Application



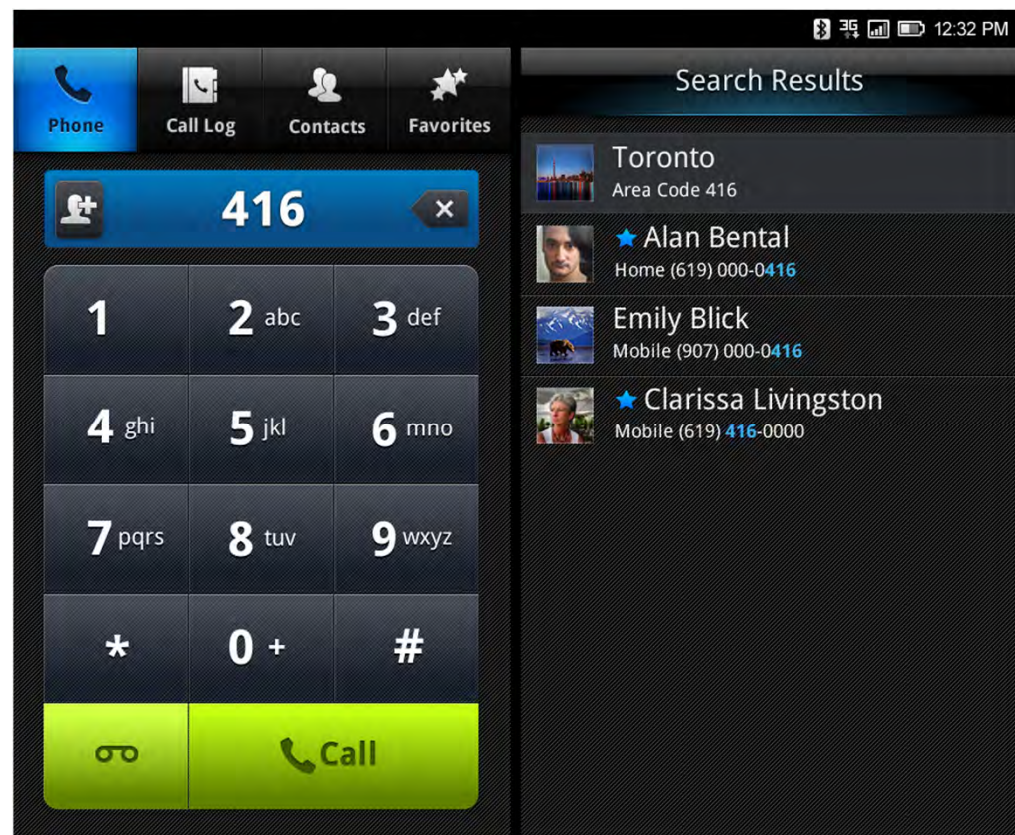
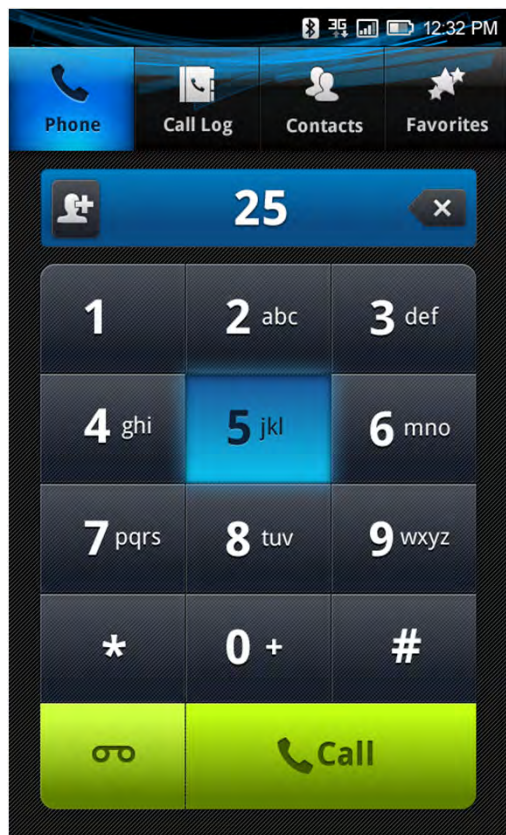
# Sample Application – SmartPad – Max Mode



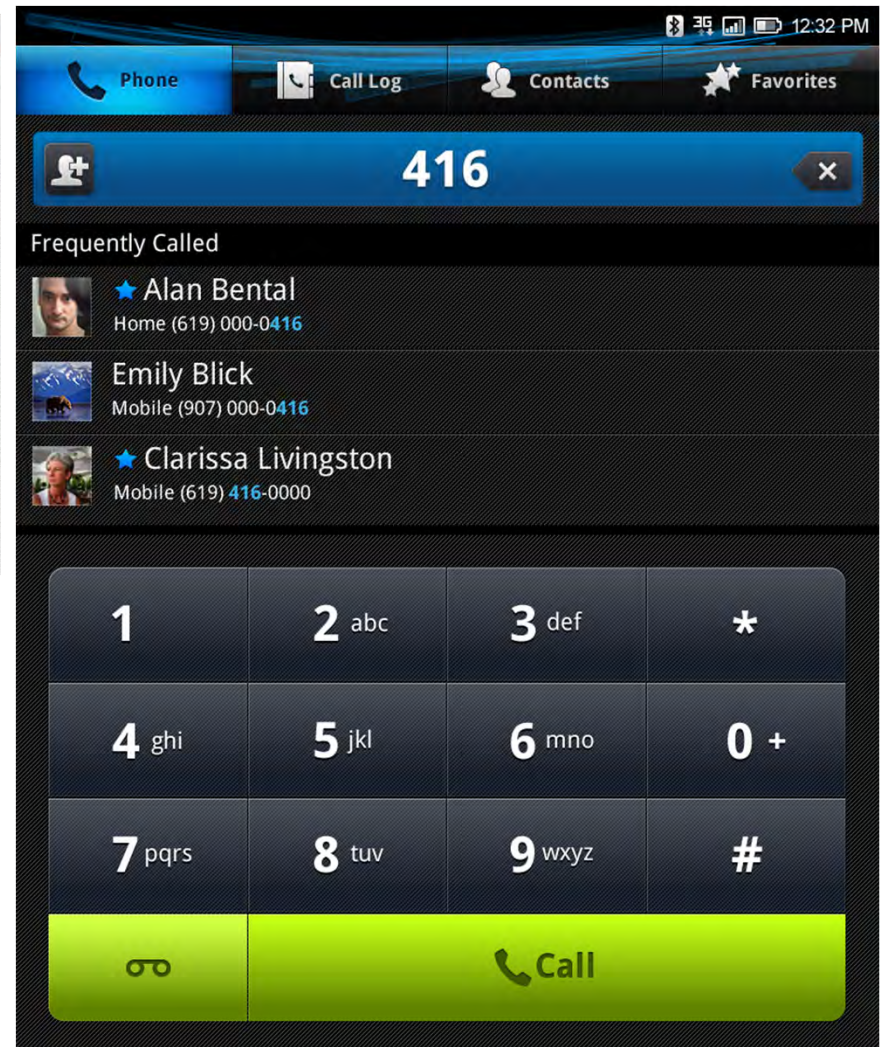
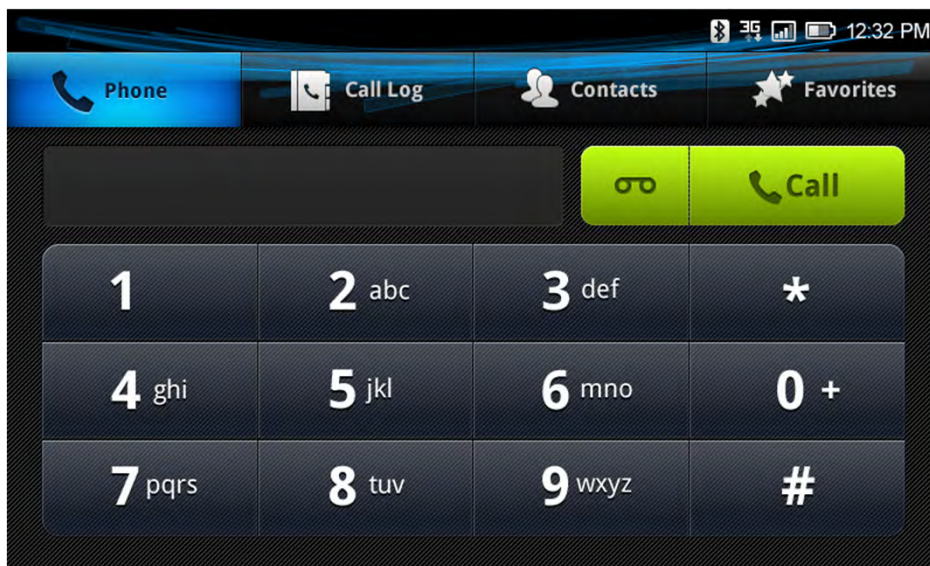
# Sample Application



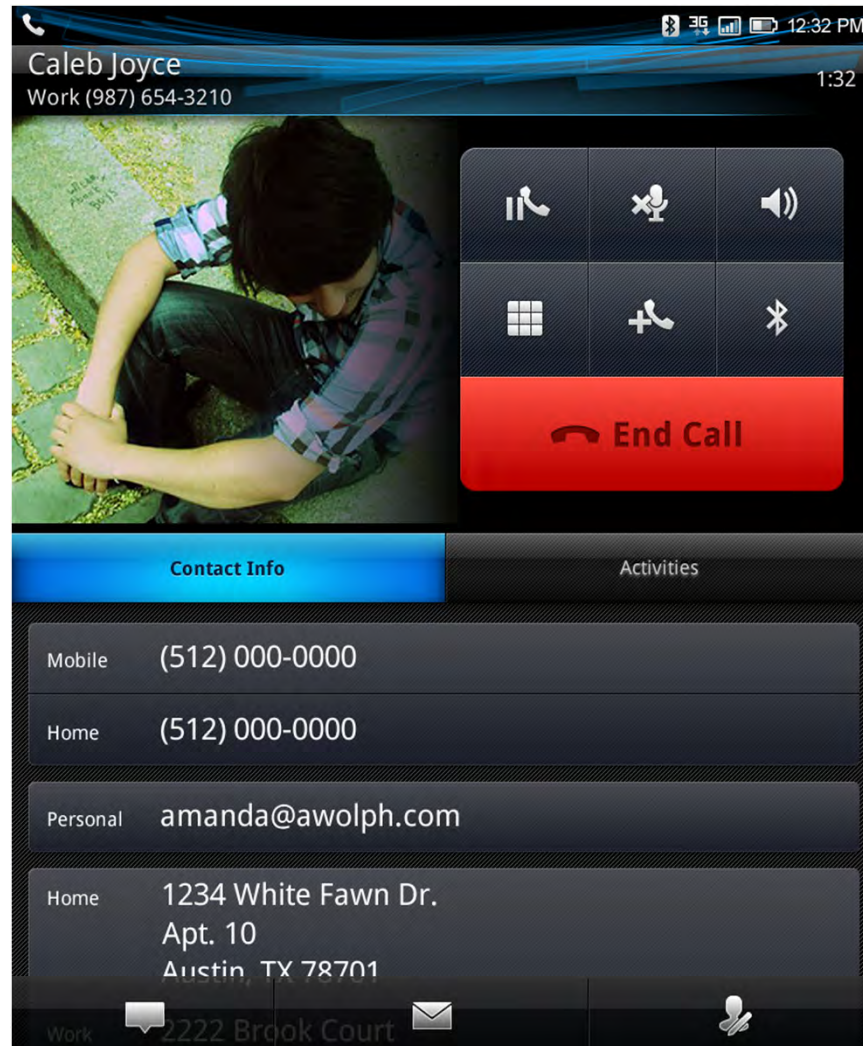
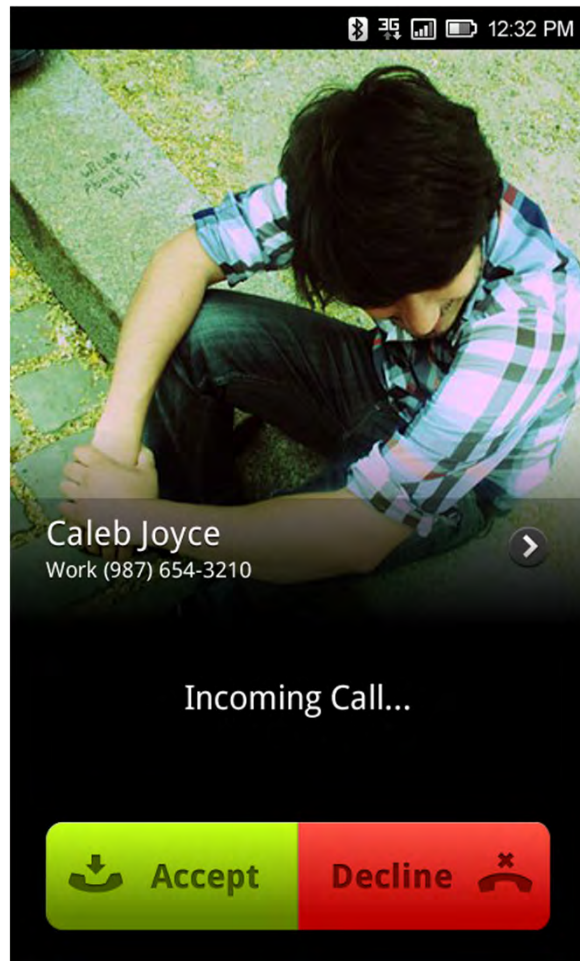
# Sample Application



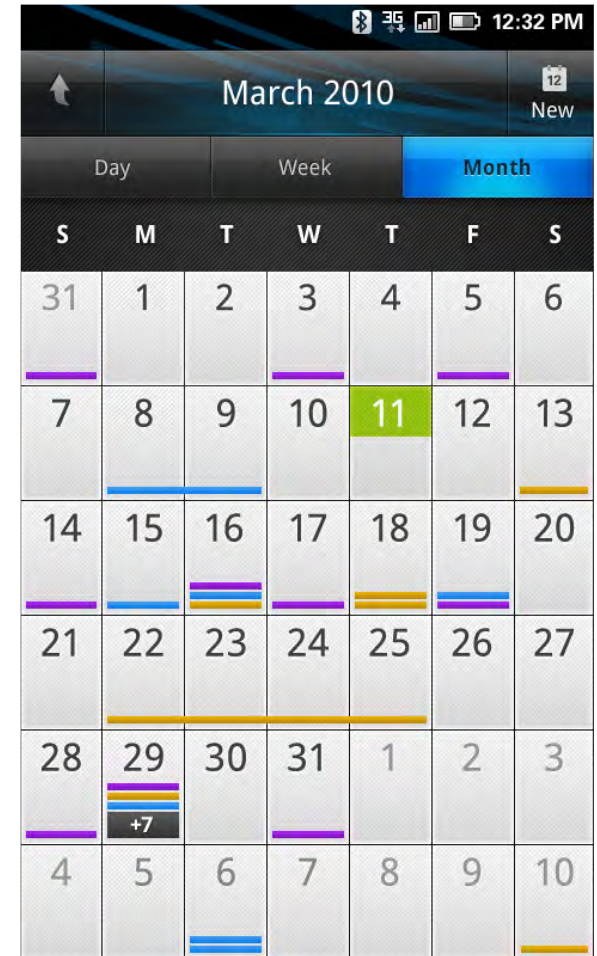
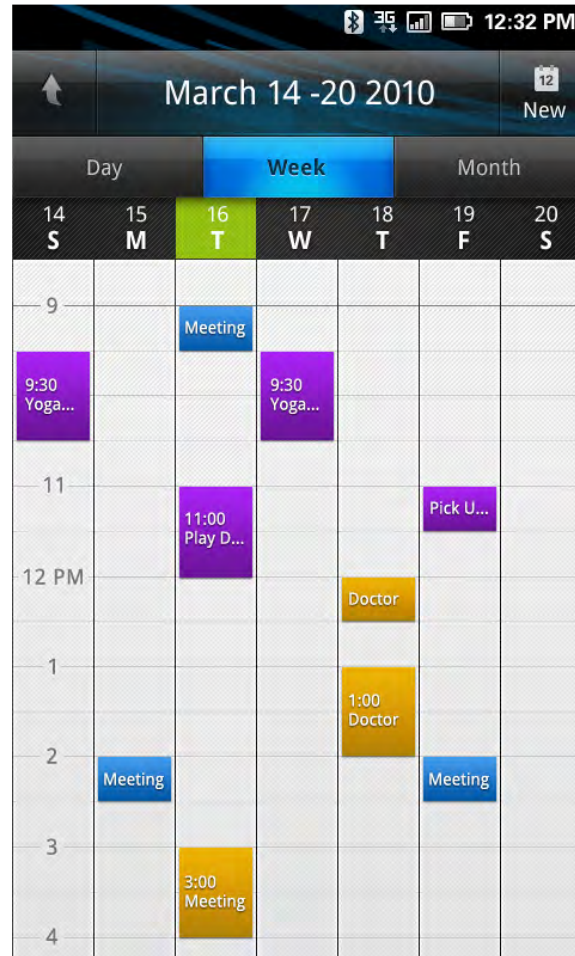
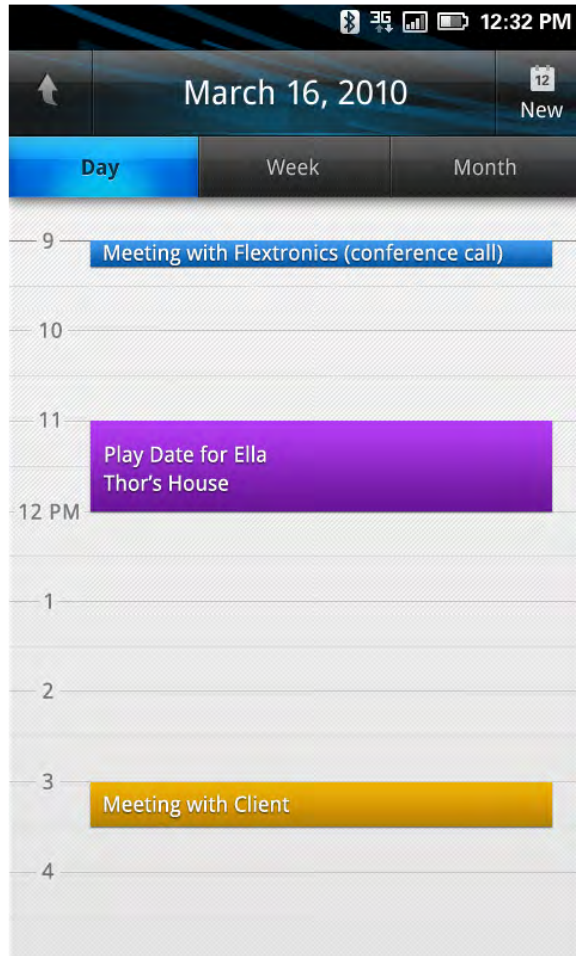
# Sample Application



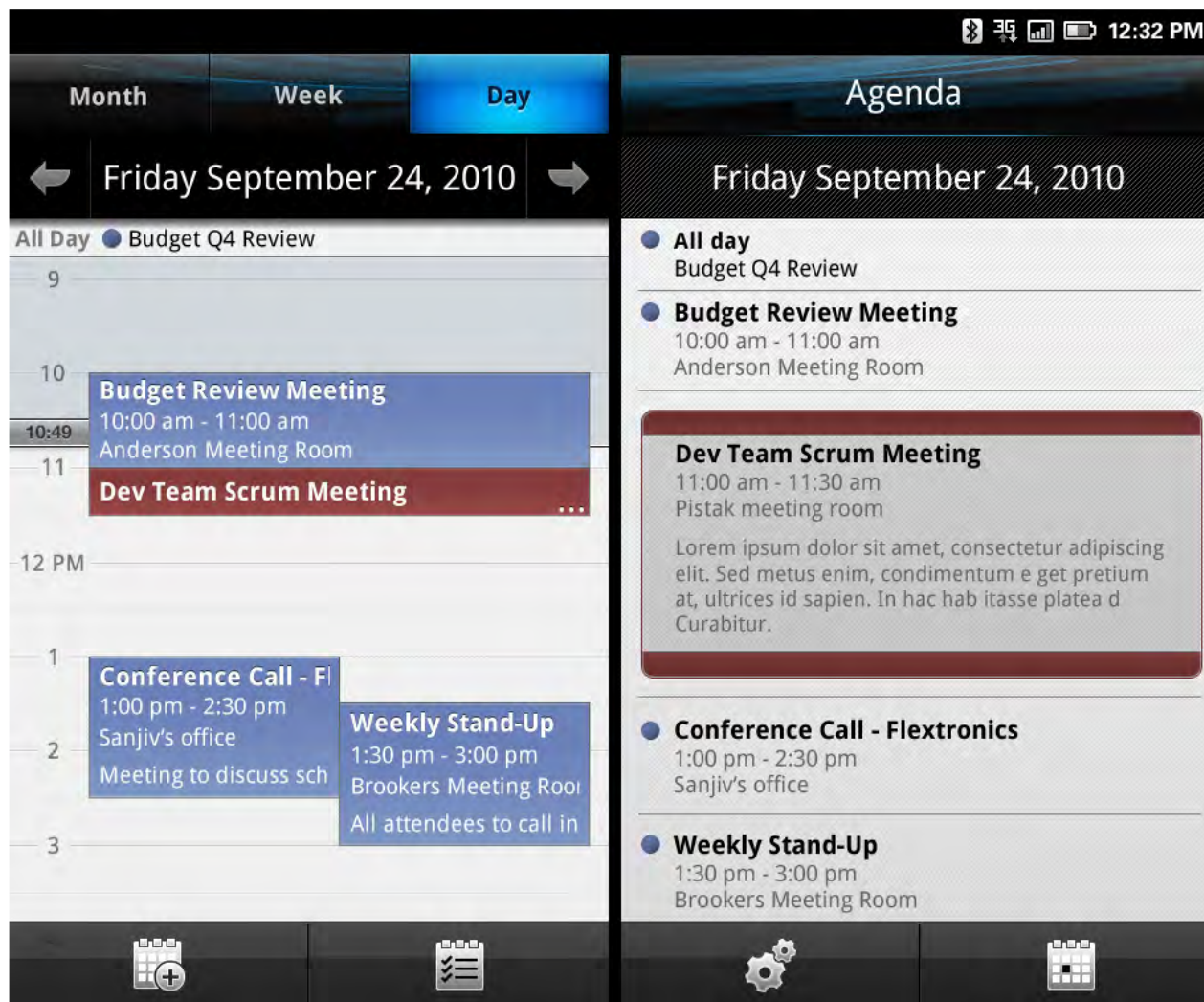
# Sample Application



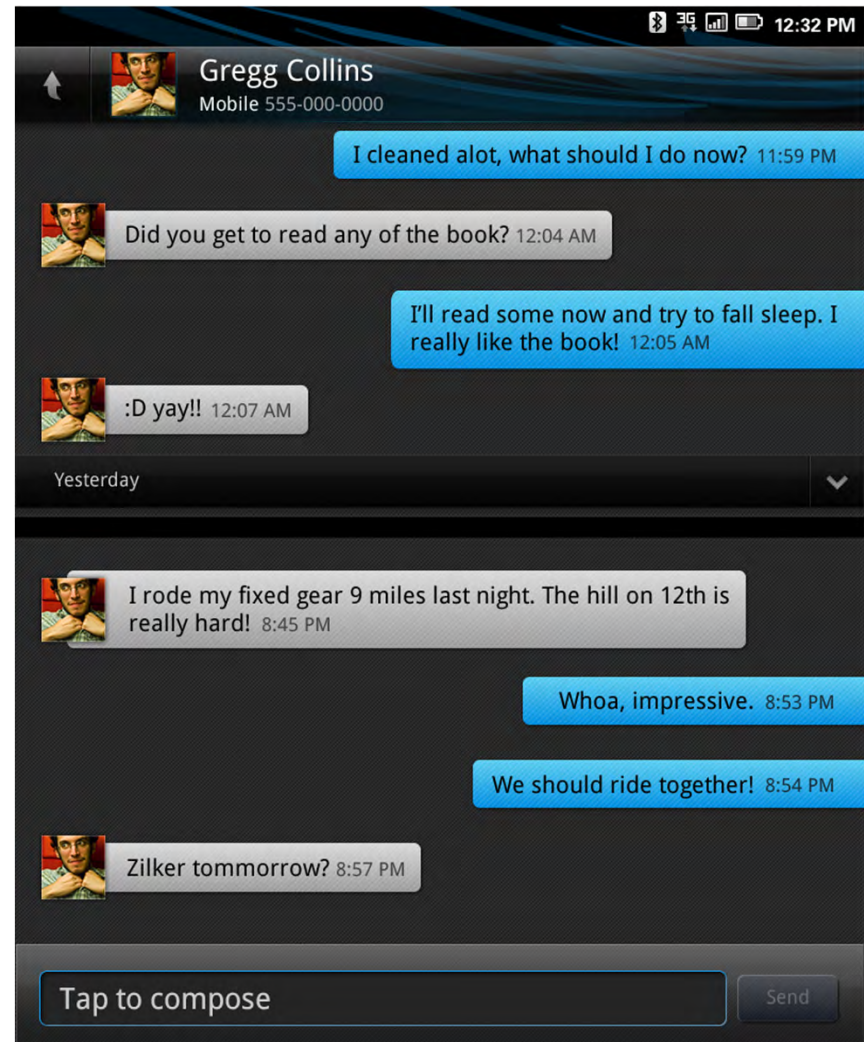
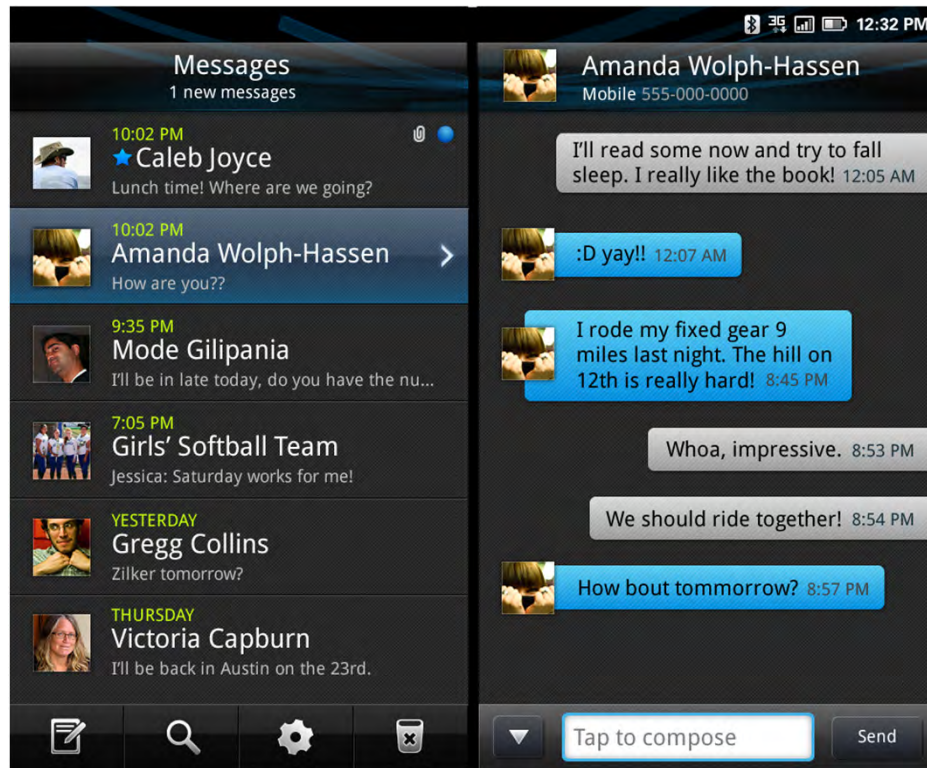
# Sample Application



# Sample Application

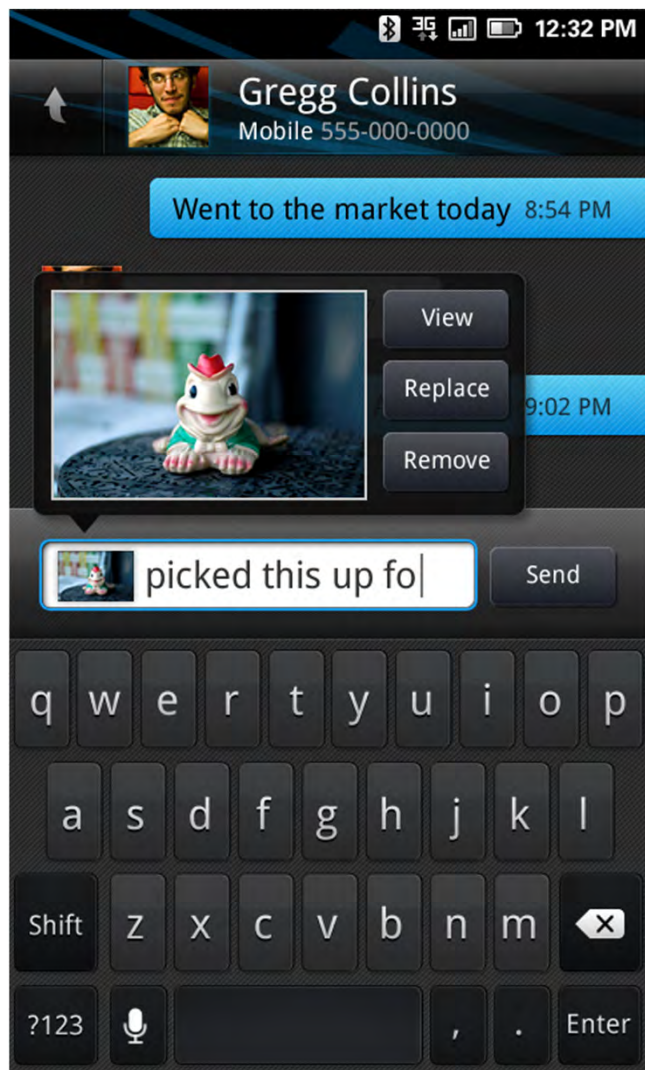


# Sample Application

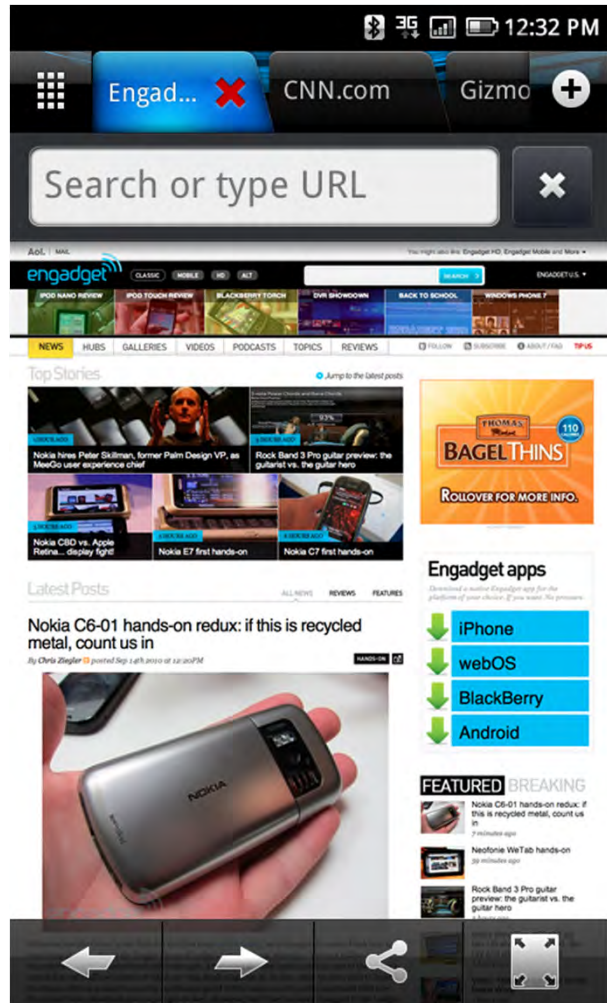


# Sample Application

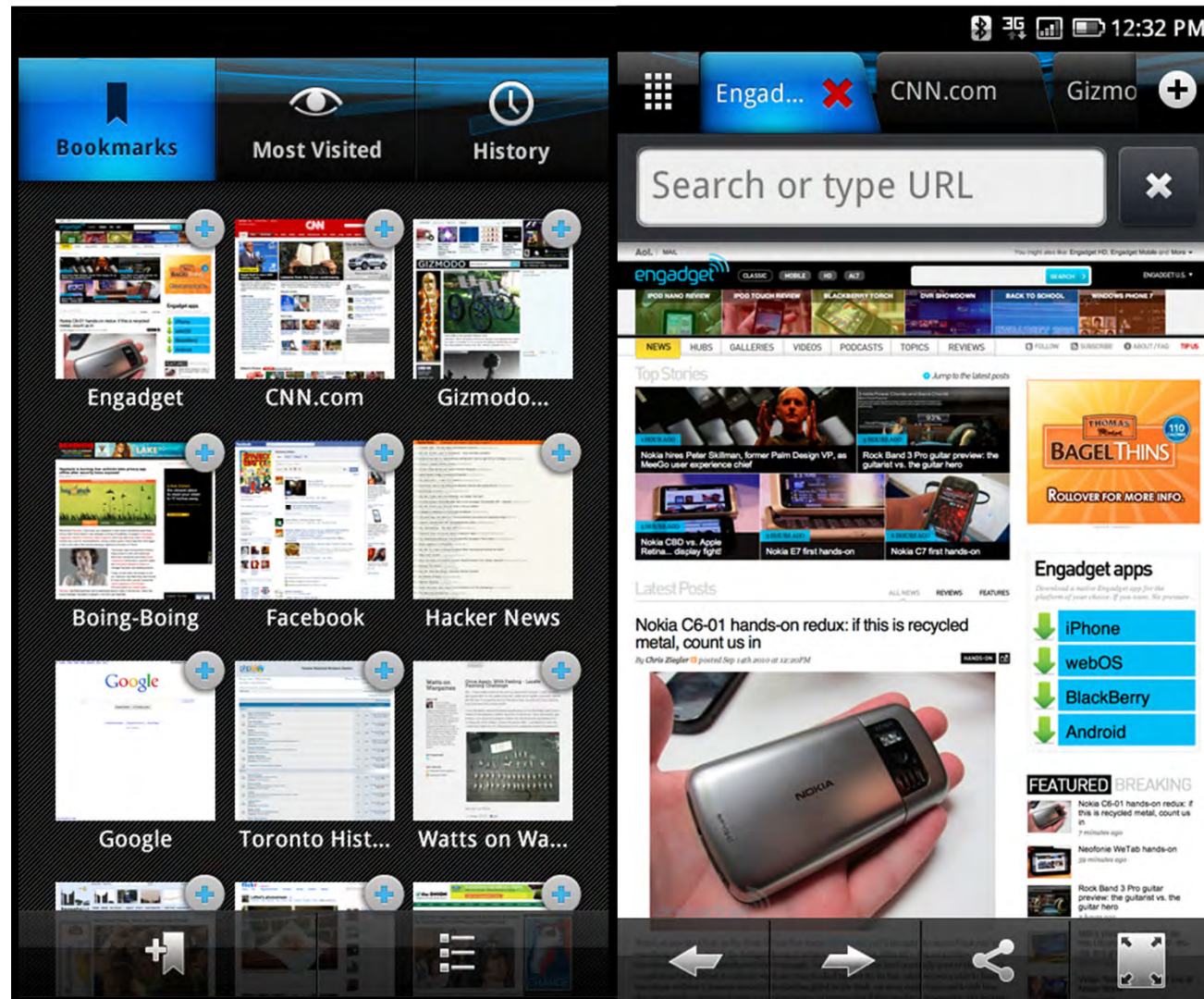
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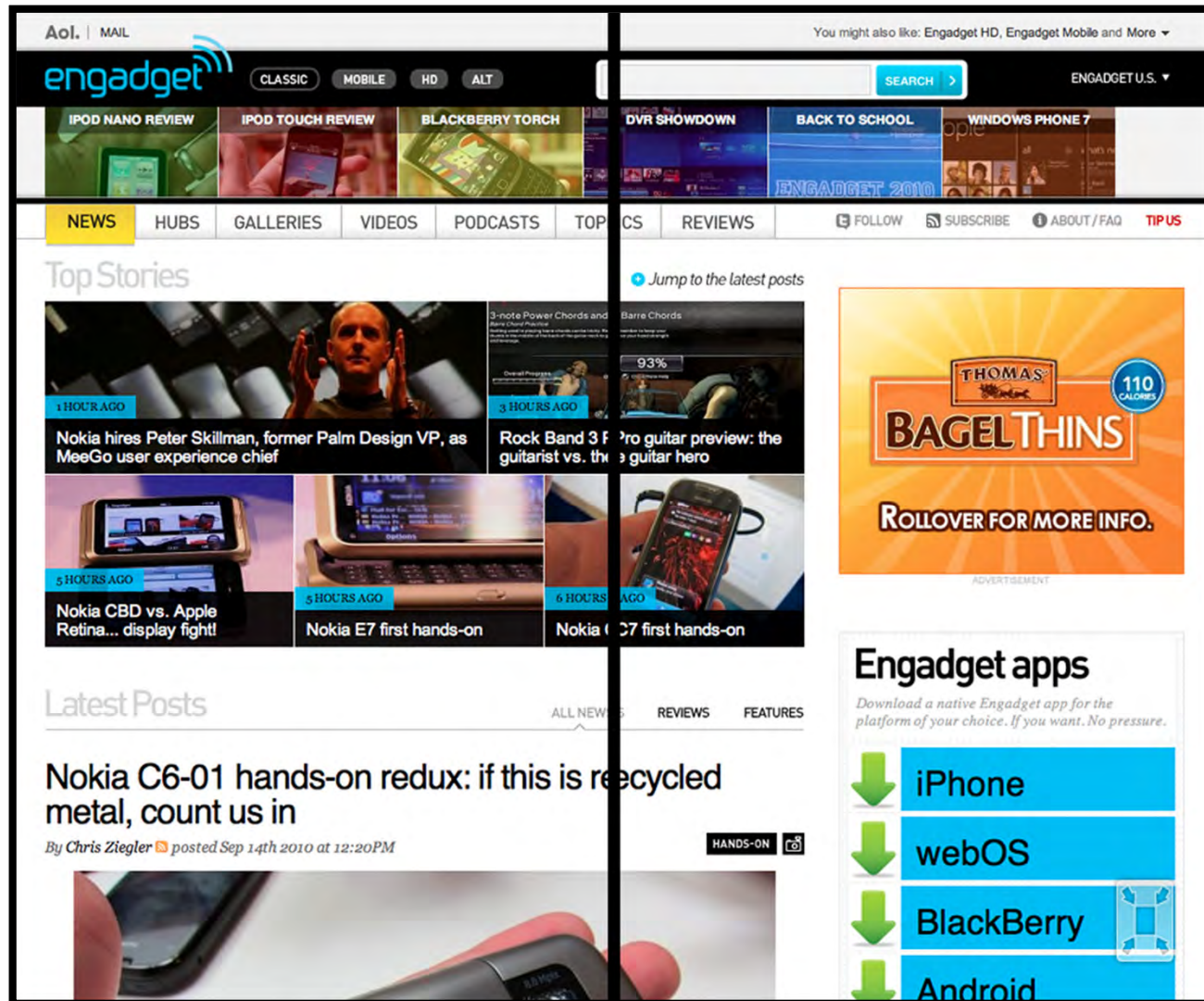
# Single Screen



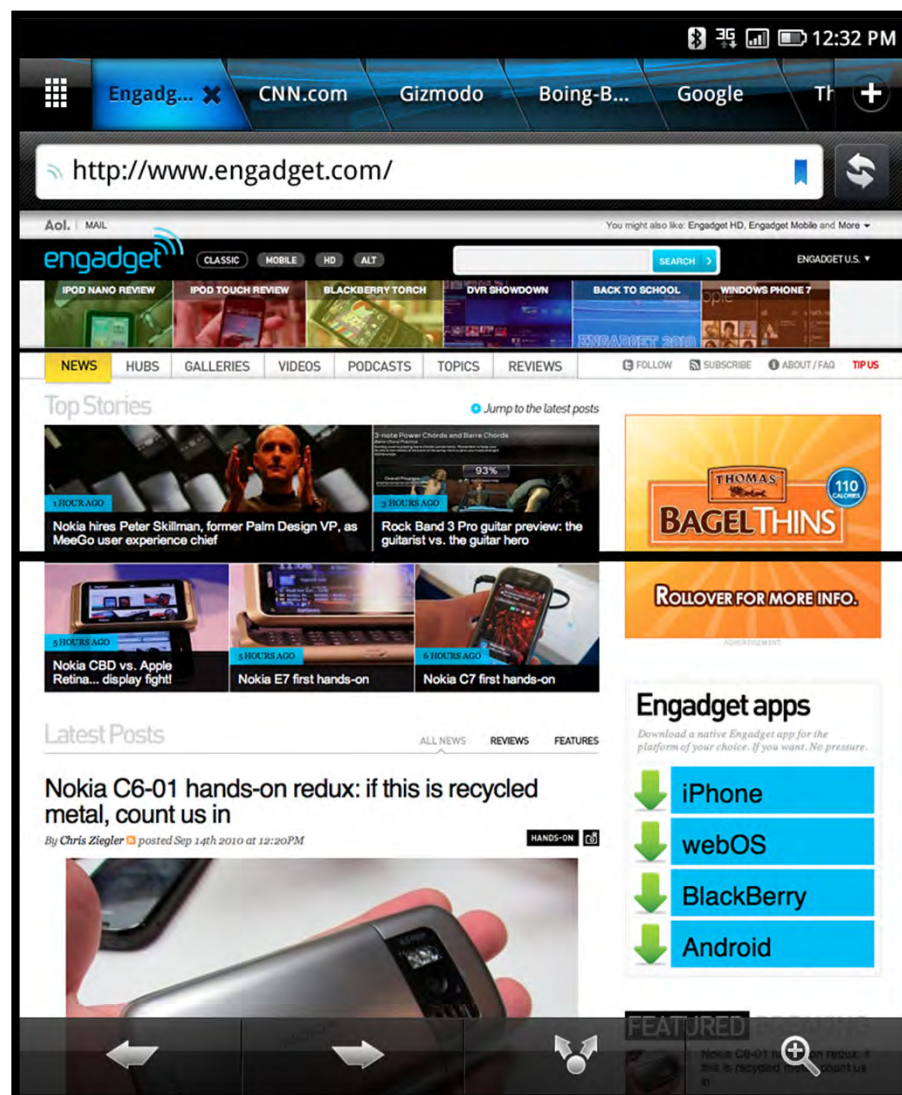
# Portrait Dual Screen



# Portrait Dual Screen



# Landscape Dual Screen



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Media

# SAMPLE APPLICATIONS

# Camera



# Camera



# Gallery



# Gallery



# Gallery



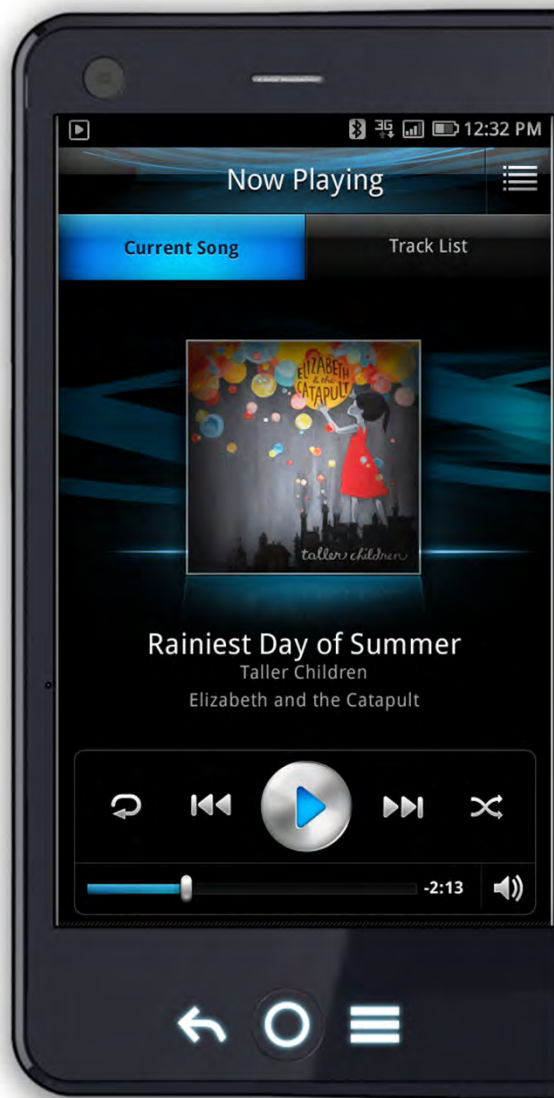
# Gallery

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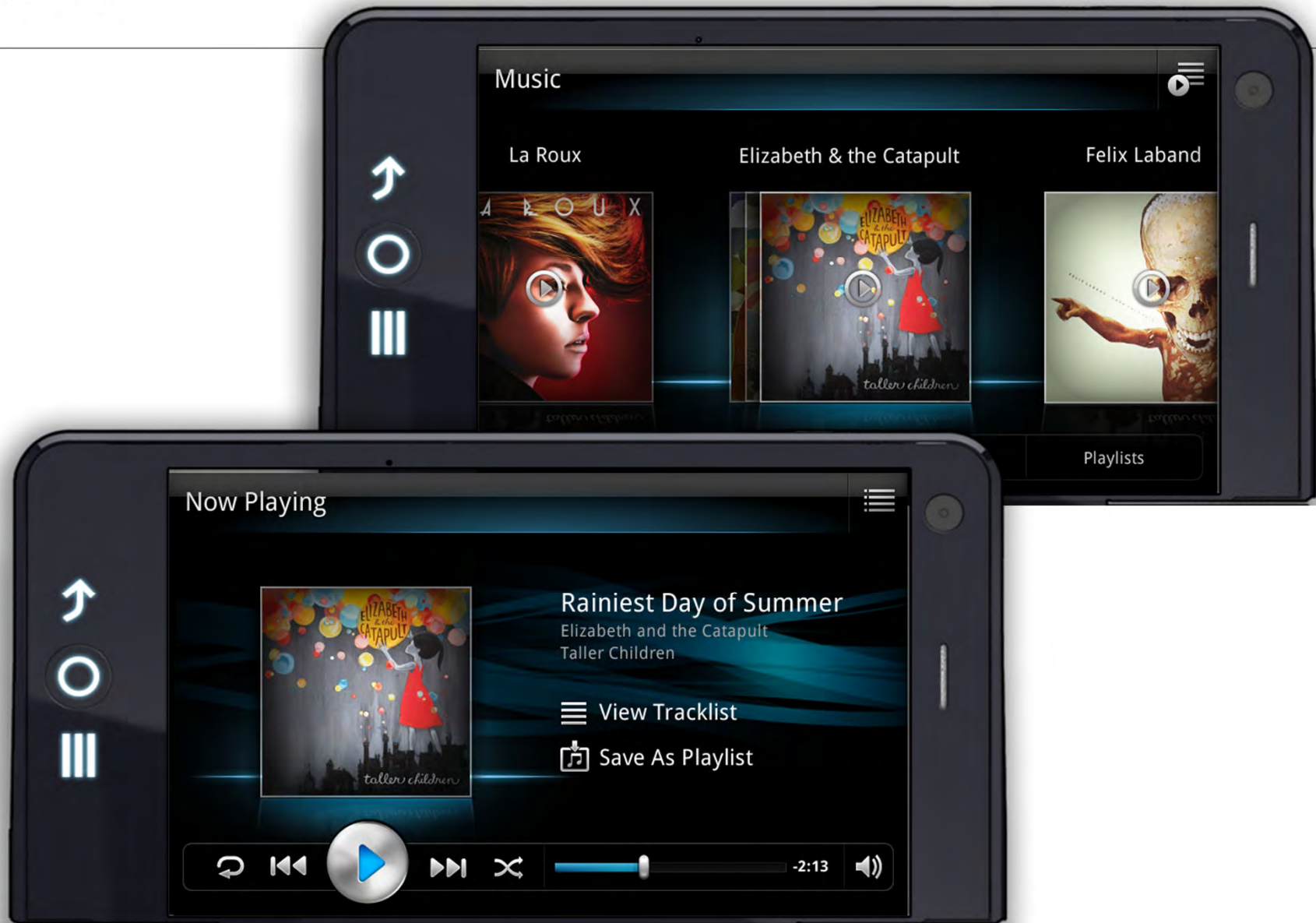


# Music

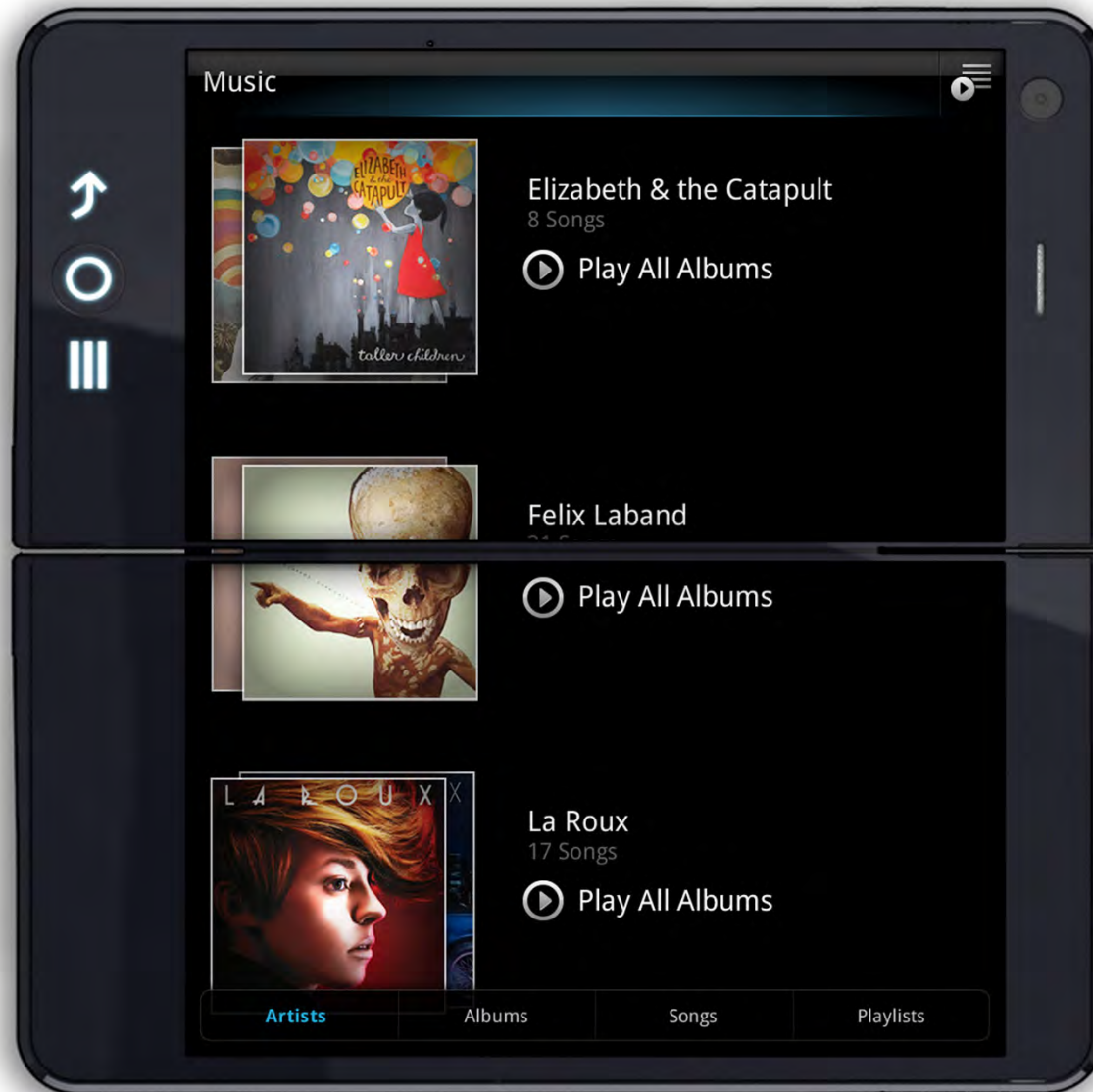
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# Music



# Music



# Music



# Media

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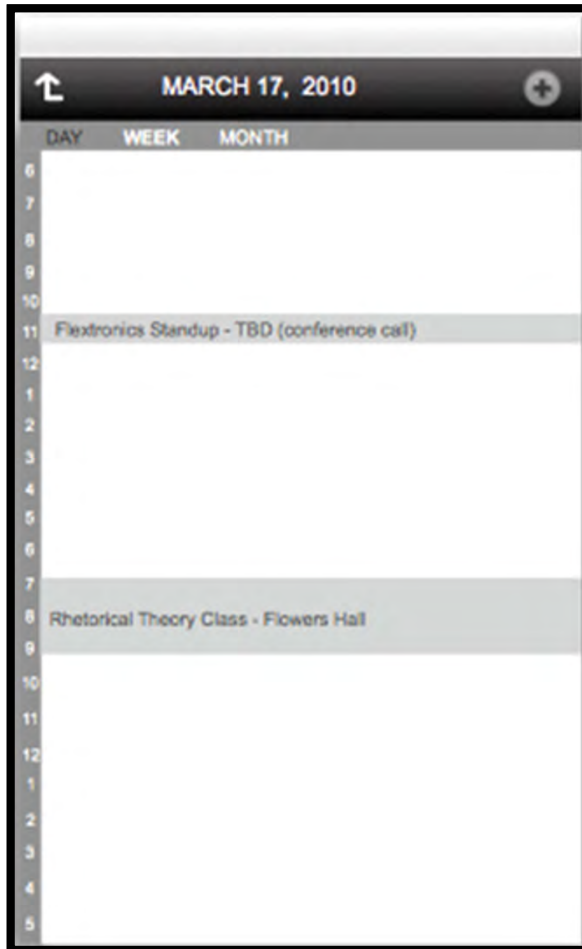


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Sample Application – Deep Dive

# CALENDAR

# Calendar

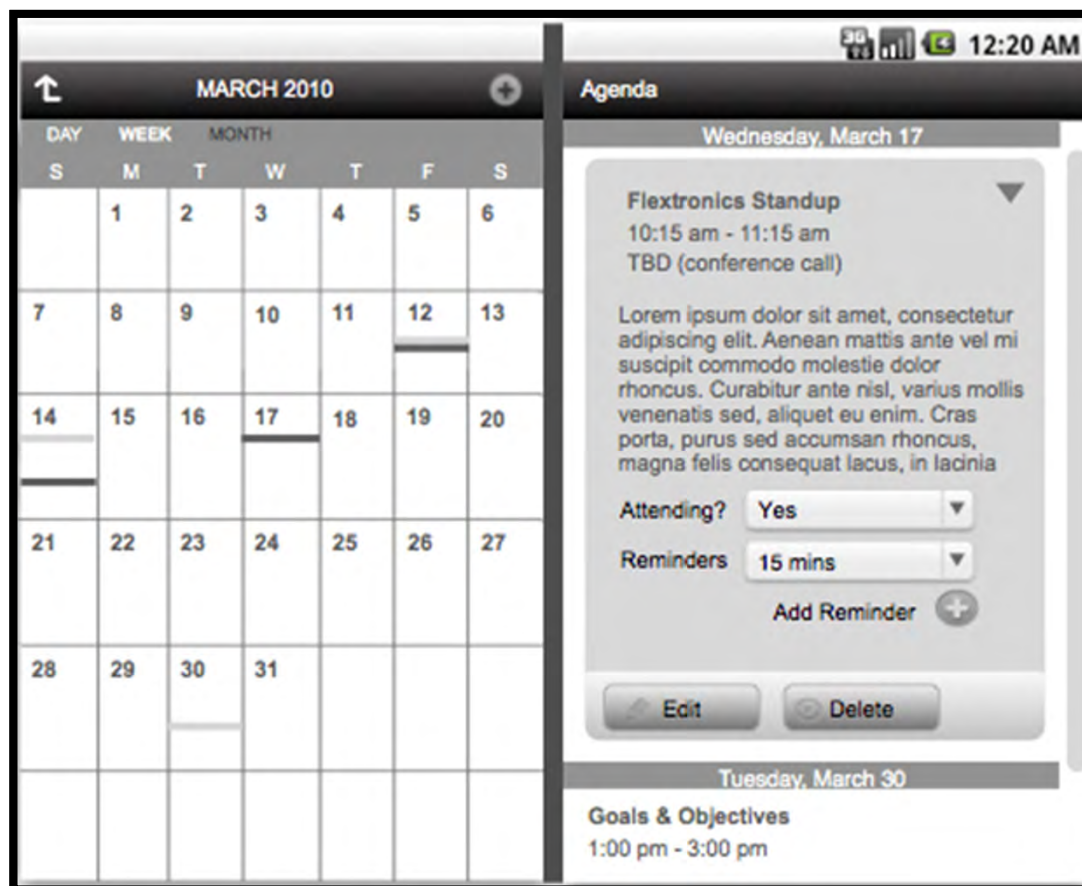


# Calendar

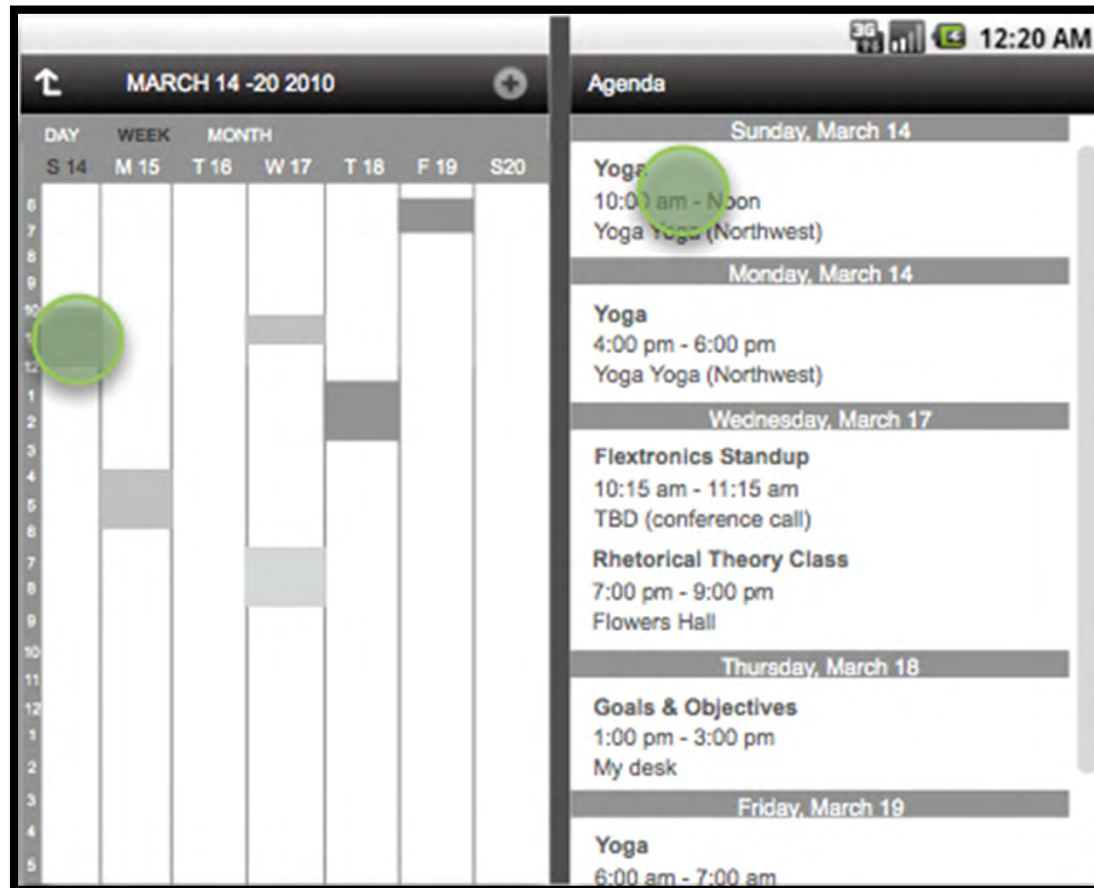
| MARCH 2010 |      |       |    |    |    |    |
|------------|------|-------|----|----|----|----|
| DAY        | WEEK | MONTH |    |    |    |    |
| S          | M    | T     | W  | T  | F  | S  |
|            | 1    | 2     | 3  | 4  | 5  | 6  |
| 7          | 8    | 9     | 10 | 11 | 12 | 13 |
| 14         | 15   | 16    | 17 | 18 | 19 | 20 |
| 21         | 22   | 23    | 24 | 25 | 26 | 27 |
| 28         | 29   | 30    | 31 |    |    |    |
|            |      |       |    |    |    |    |

| Agenda MARCH 14 -20 2010 |                                              |
|--------------------------|----------------------------------------------|
| DAY                      | WEEK MONTH                                   |
| Sunday, March 14         |                                              |
| Yoga                     | 10:00 am - Noon<br>Yoga Yoga (Northwest)     |
| Monday, March 14         |                                              |
| Yoga                     | 4:00 pm - 6:00 pm<br>Yoga Yoga (Northwest)   |
| Wednesday, March 17      |                                              |
| Flextronics Standup      | 10:15 am - 11:15 am<br>TBD (conference call) |
| Rhetorical Theory Class  | 7:00 pm - 9:00 pm<br>Flowers Hall            |
| Thursday, March 18       |                                              |
| Goals & Objectives       | 1:00 pm - 3:00 pm<br>My desk                 |
| Friday, March 19         |                                              |
| Yoga                     |                                              |

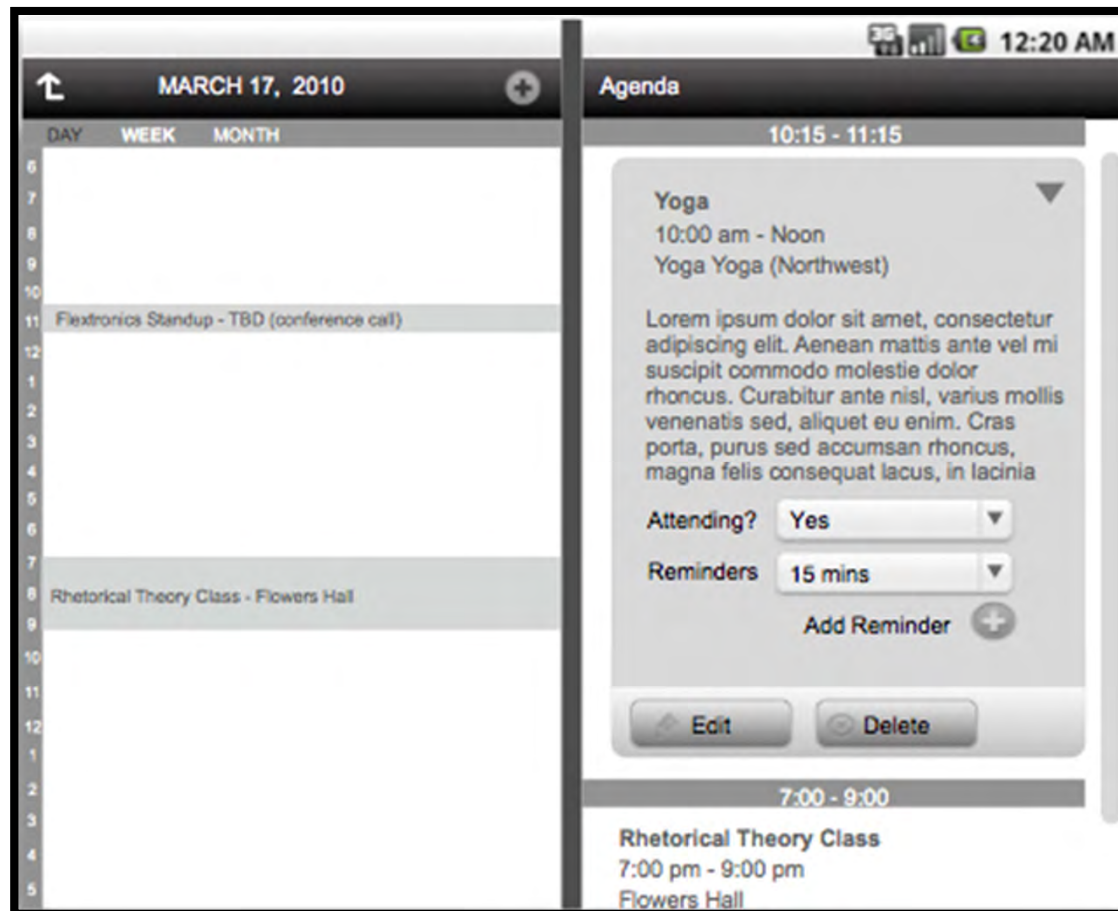
# Calendar



# Calendar



# Calendar

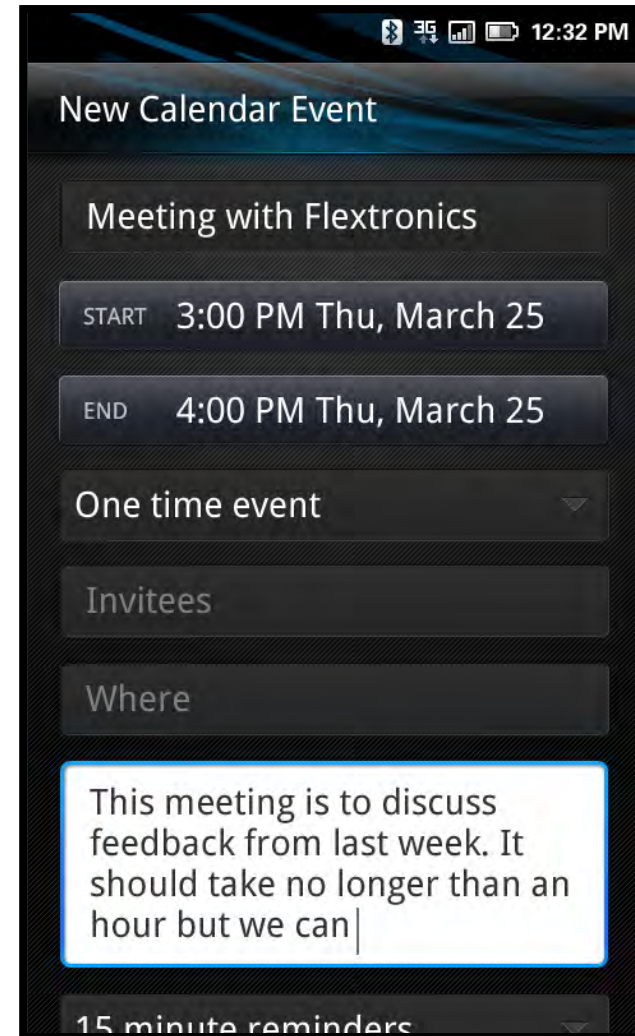
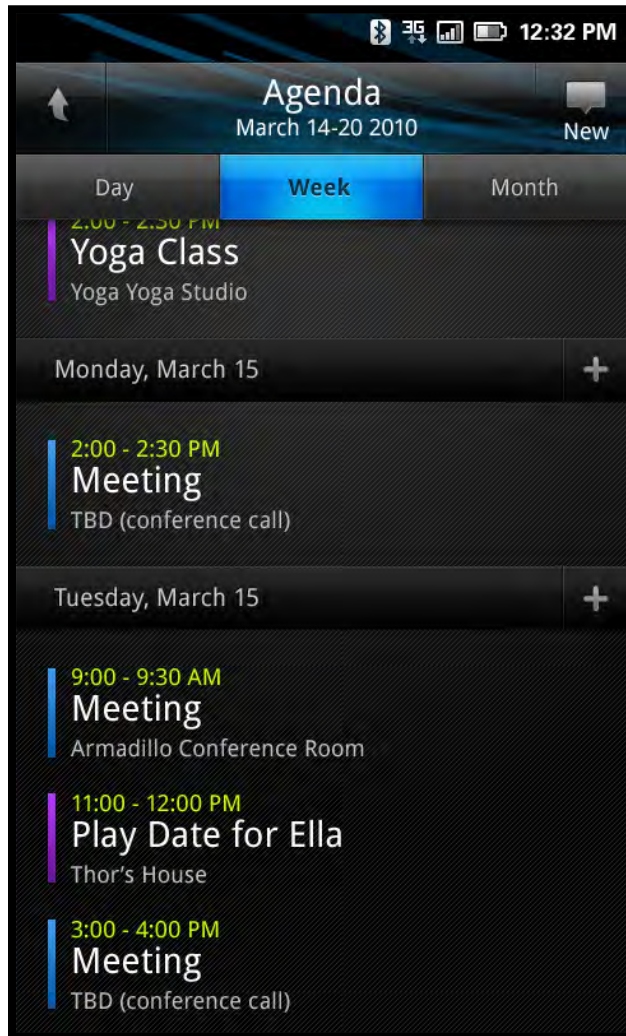


# Calendar

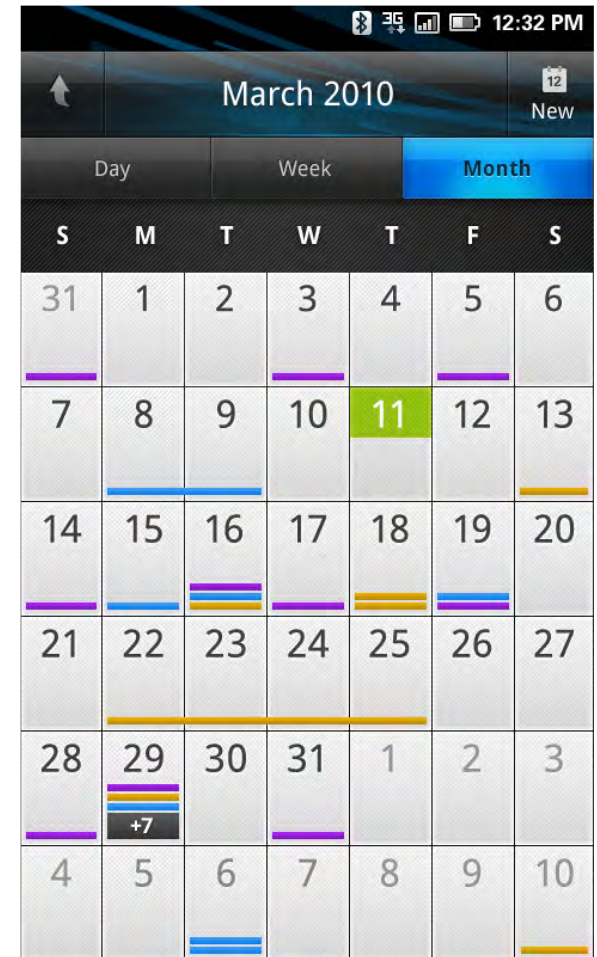
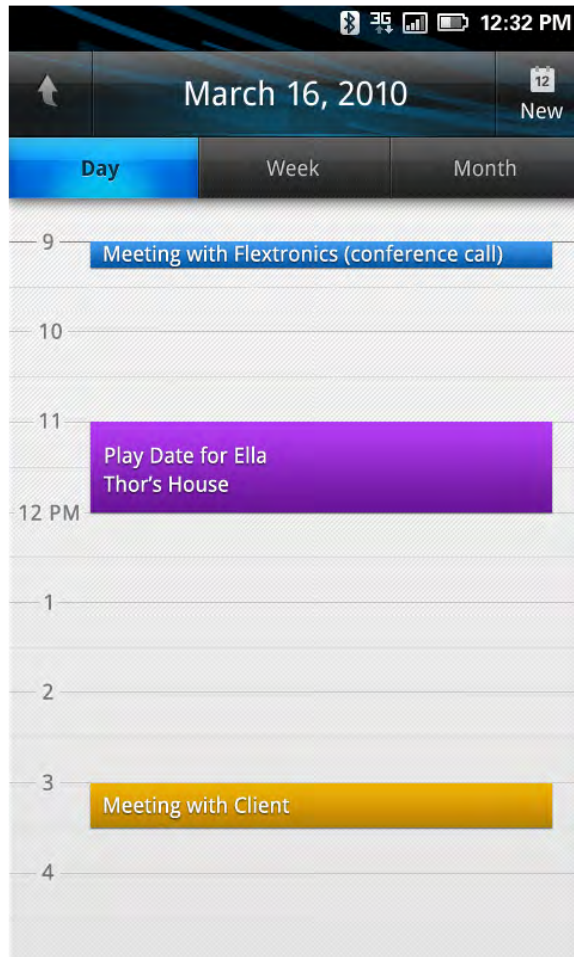
| MARCH 2010 |      |       |    |    |    |    |
|------------|------|-------|----|----|----|----|
| DAY        | WEEK | MONTH |    |    |    |    |
| S          | M    | T     | W  | T  | F  | S  |
|            | 1    | 2     | 3  | 4  | 5  | 6  |
| 7          | 8    | 9     | 10 | 11 | 12 | 13 |
| 14         | 15   | 16    | 17 | 18 | 19 | 20 |
| 21         | 22   | 23    | 24 | 25 | 26 | 27 |
| 28         | 29   | 30    | 31 |    |    |    |

| MARCH 2010 |      |       |    |    |    |    |
|------------|------|-------|----|----|----|----|
| DAY        | WEEK | MONTH |    |    |    |    |
| S          | M    | T     | W  | T  | F  | S  |
|            | 1    | 2     | 3  | 4  | 5  | 6  |
| 7          | 8    | 9     | 10 | 11 | 12 | 13 |
| 14         | 15   | 16    | 17 | 18 | 19 | 20 |
| 21         | 22   | 23    | 24 | 25 | 26 | 27 |
| 28         | 29   | 30    | 31 |    |    |    |

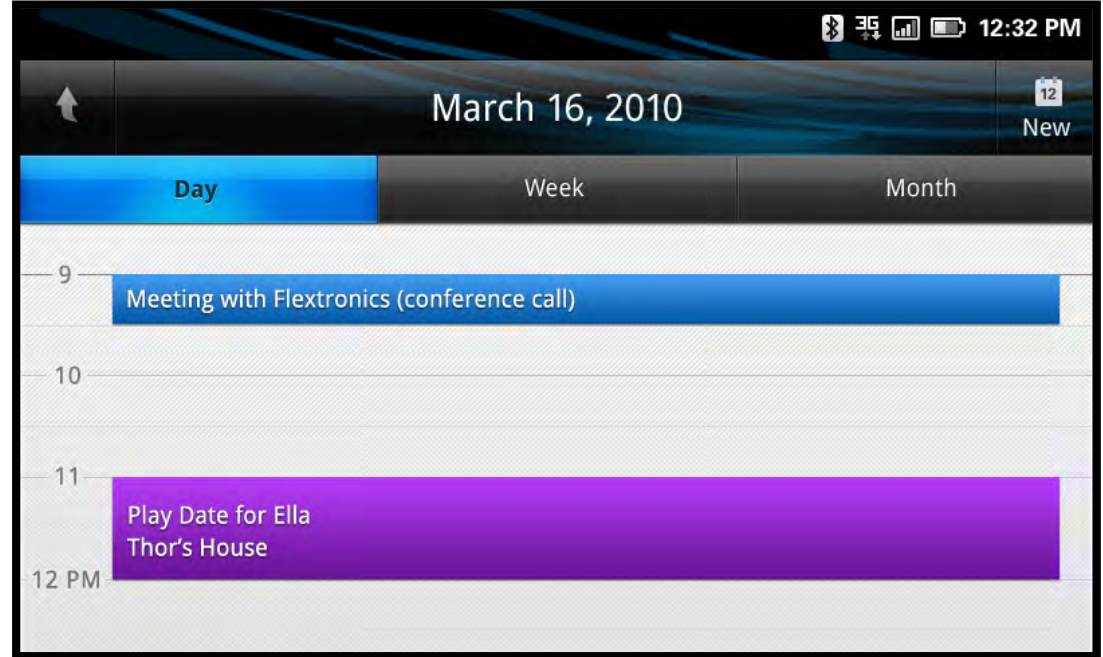
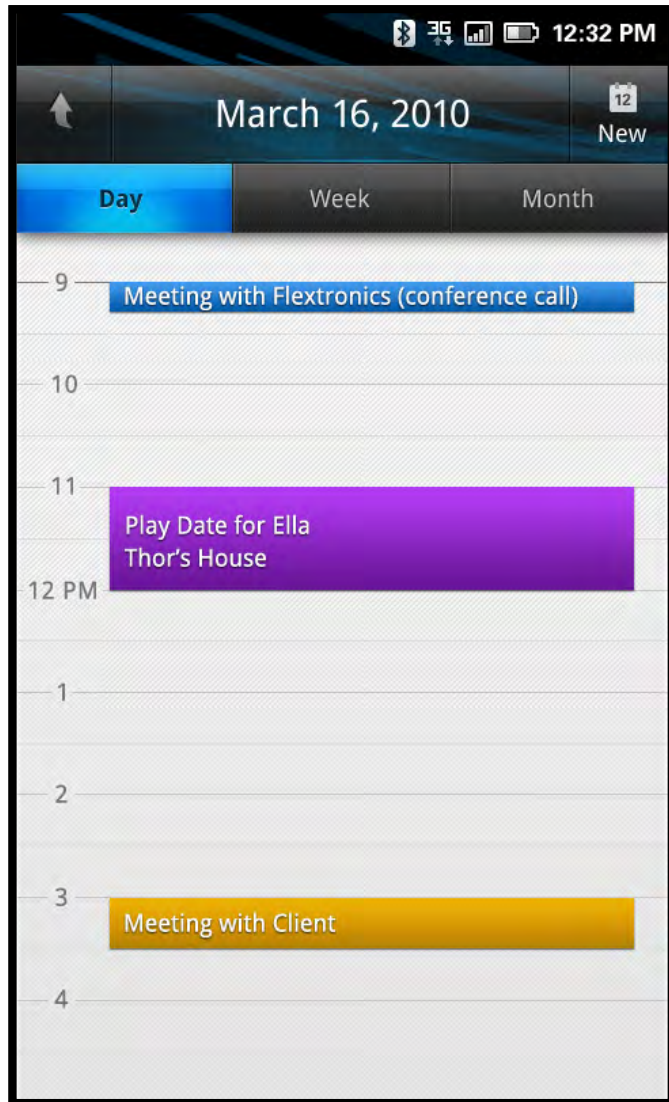
# Calendar



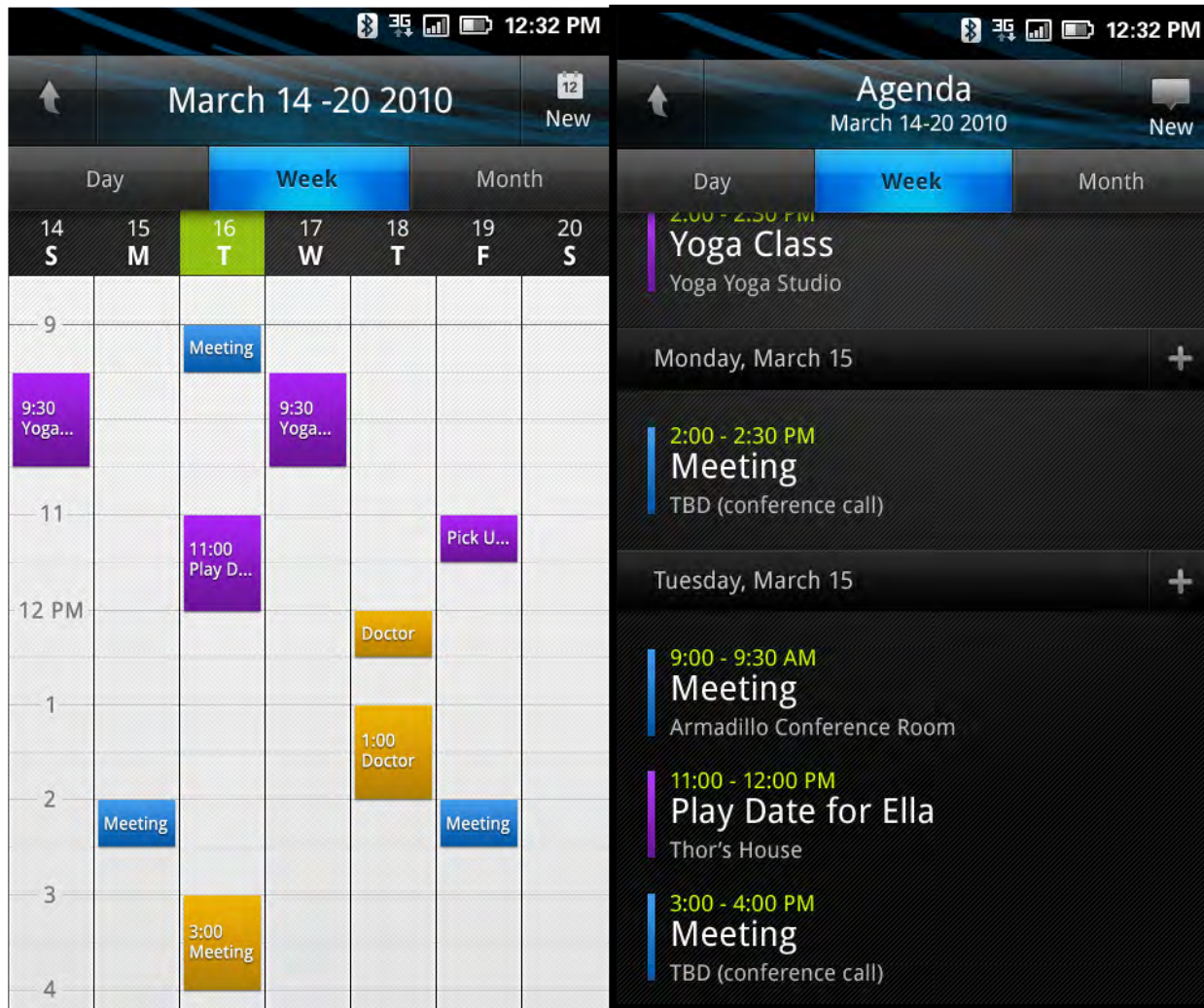
# Calendar



# Calendar



# Calendar

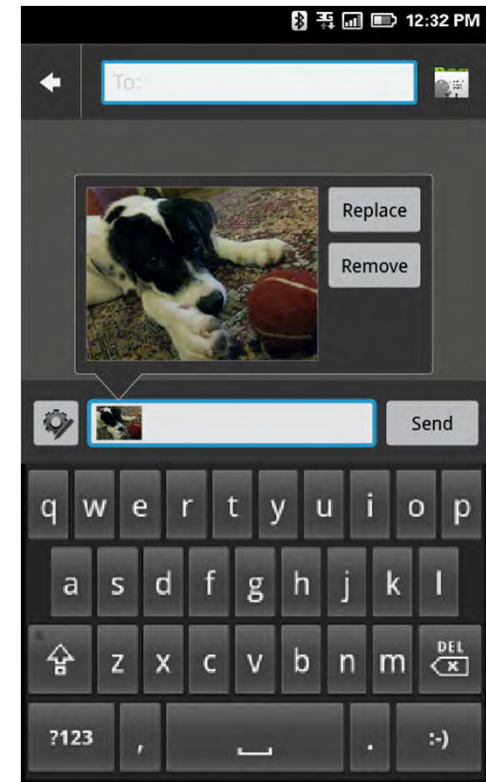
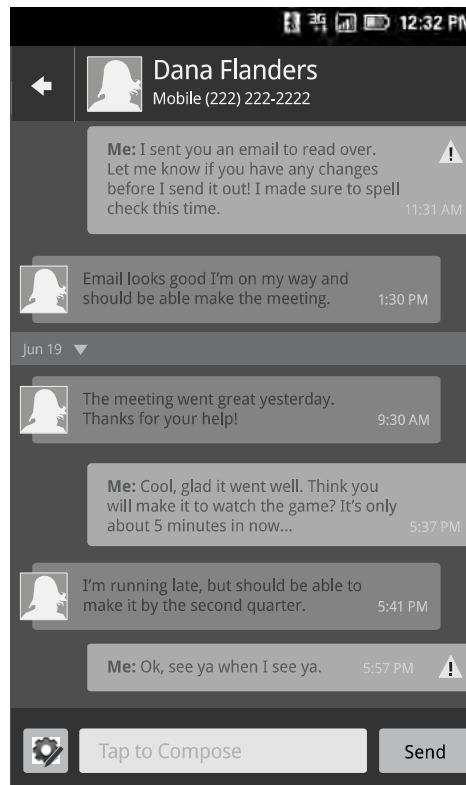
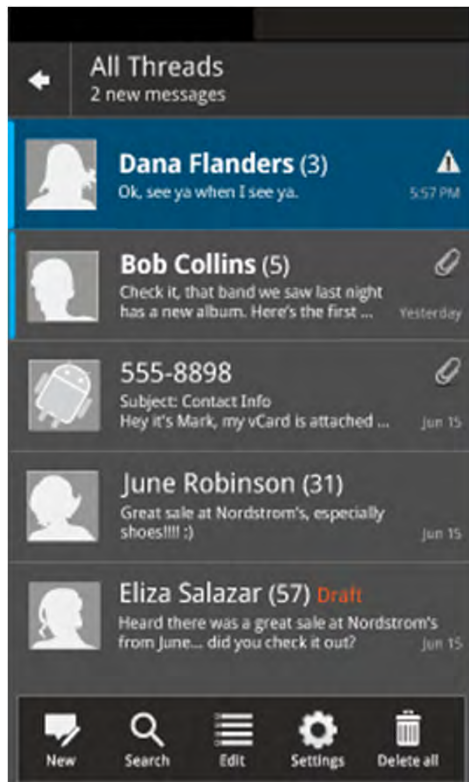


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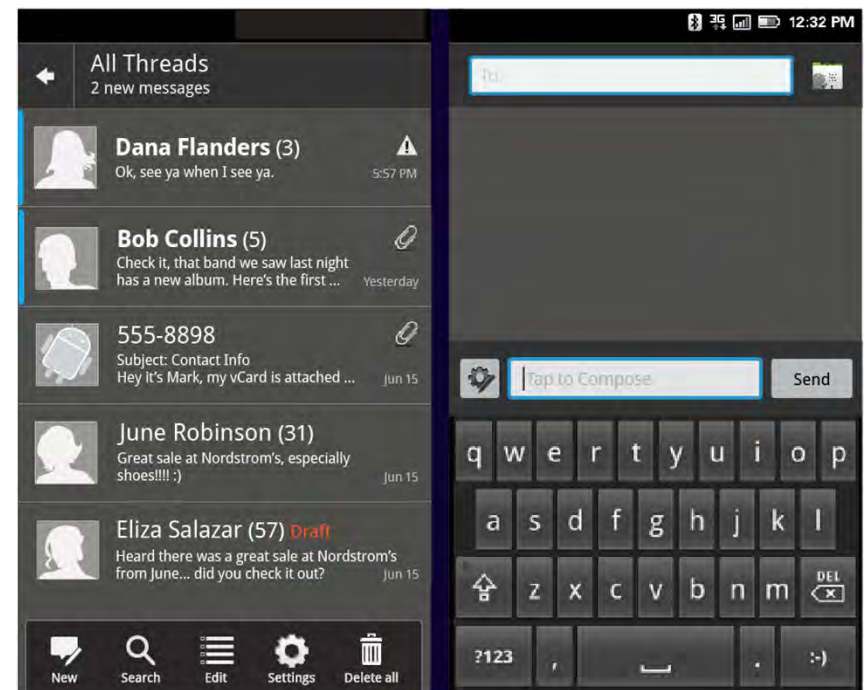
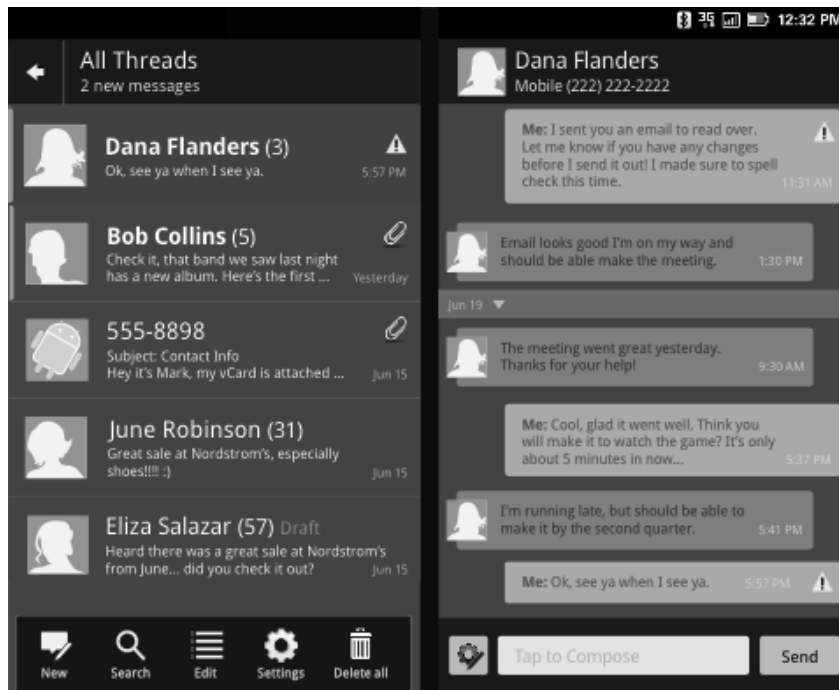
Sample Application – Deep Dive

# MESSAGING

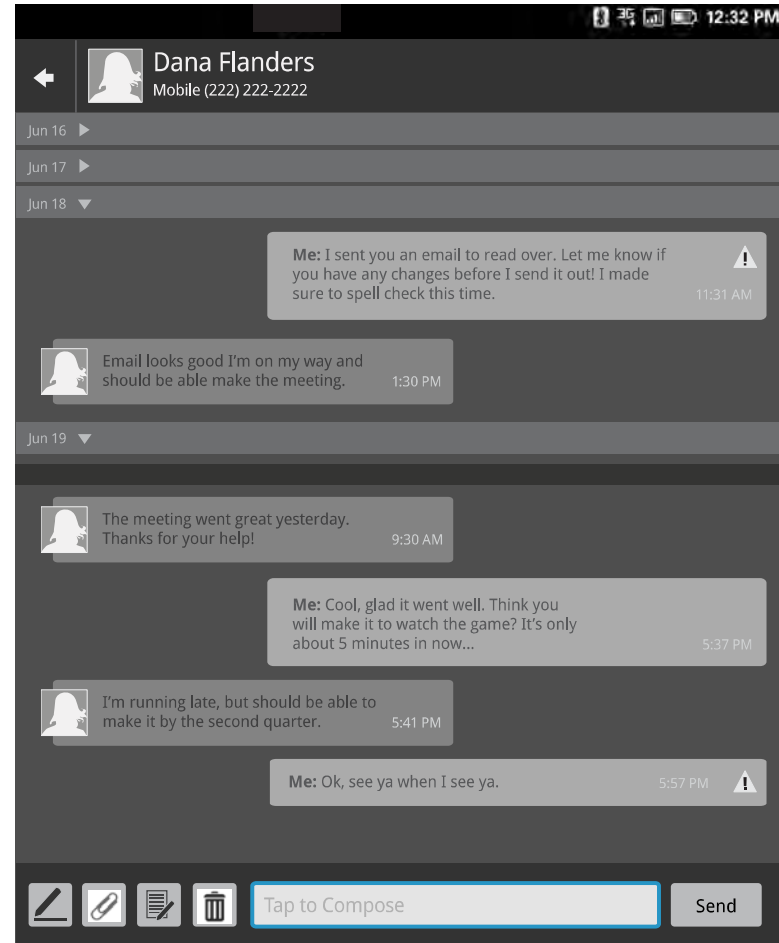
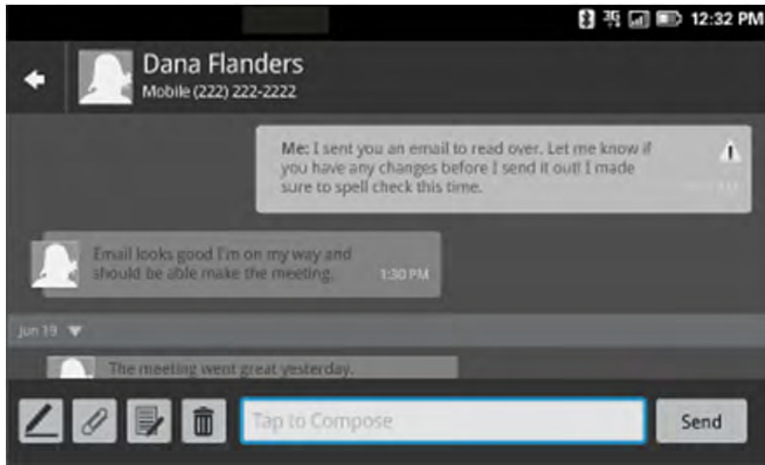
# Messaging



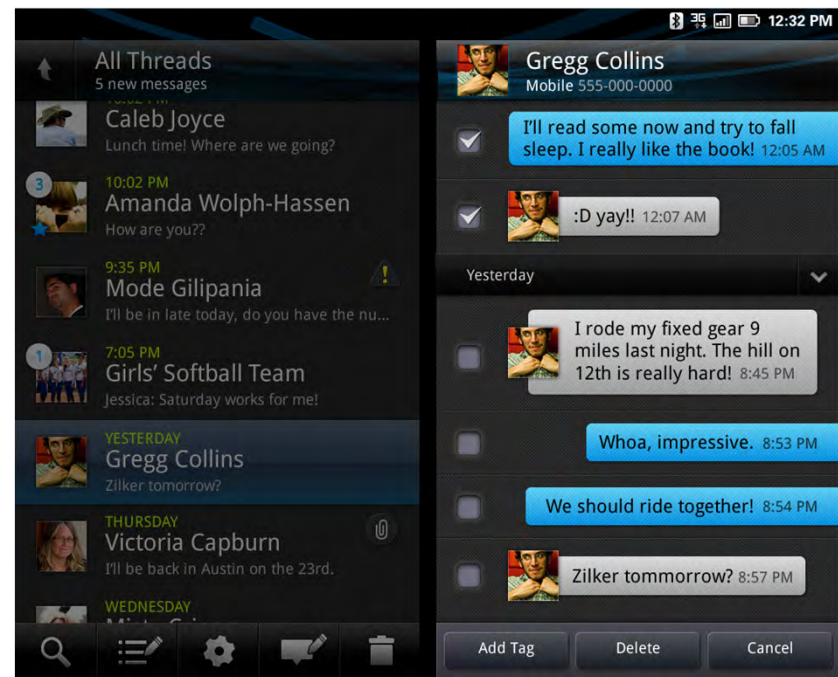
# Messaging



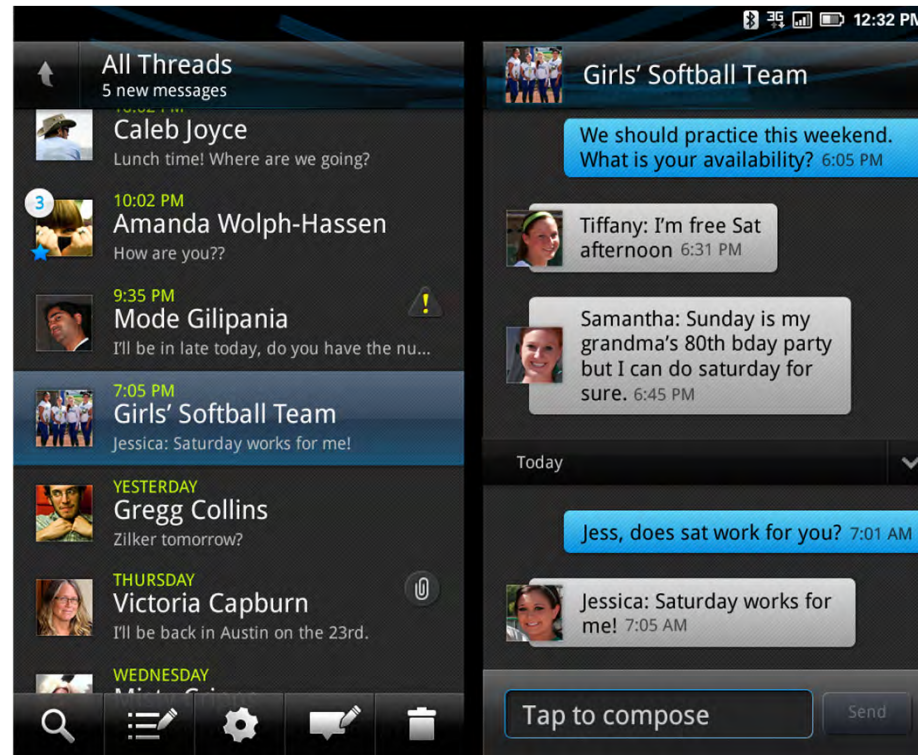
# Messaging



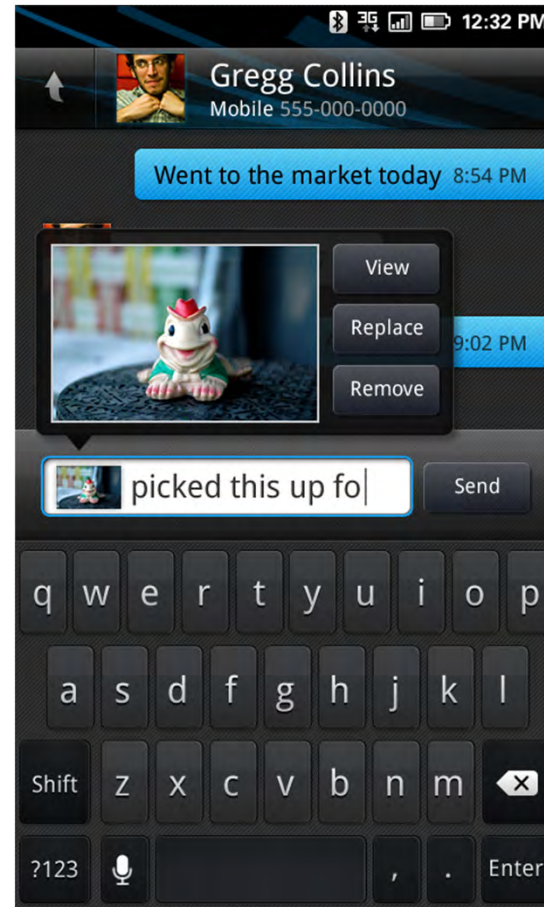
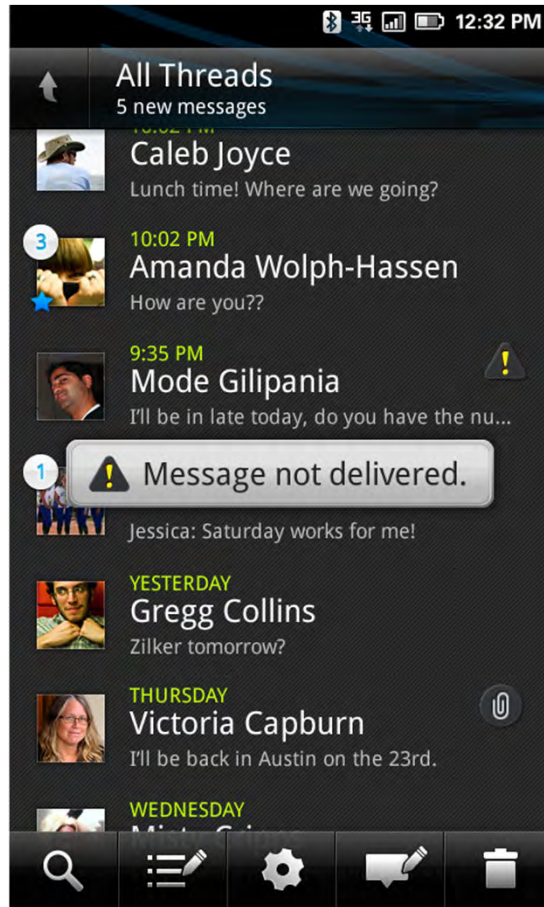
# Messaging



# Messaging

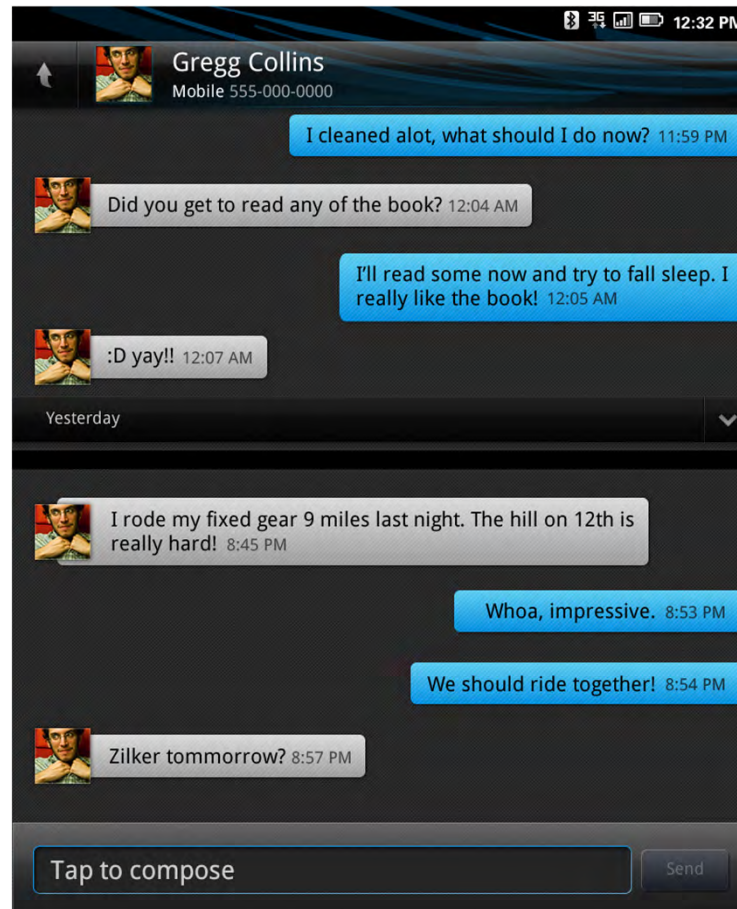


# Messaging



# Messaging

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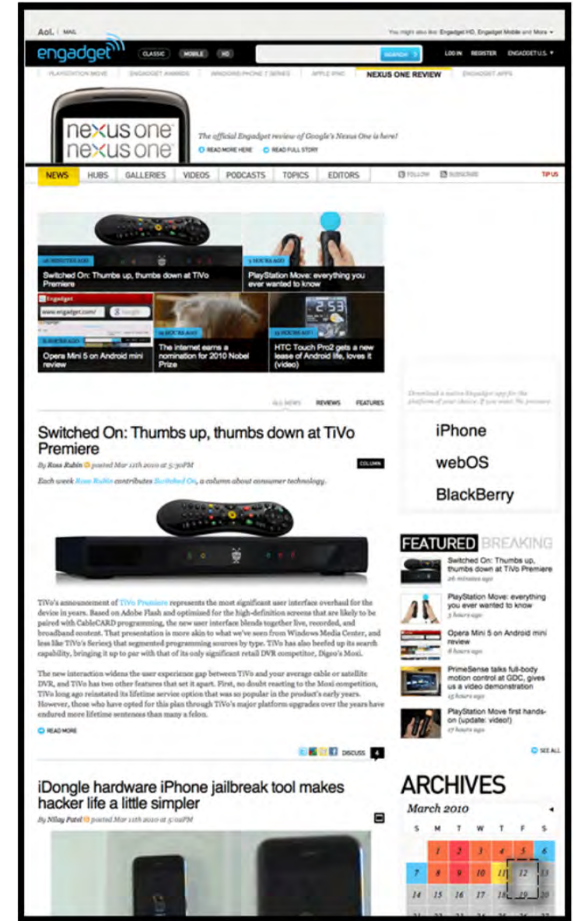
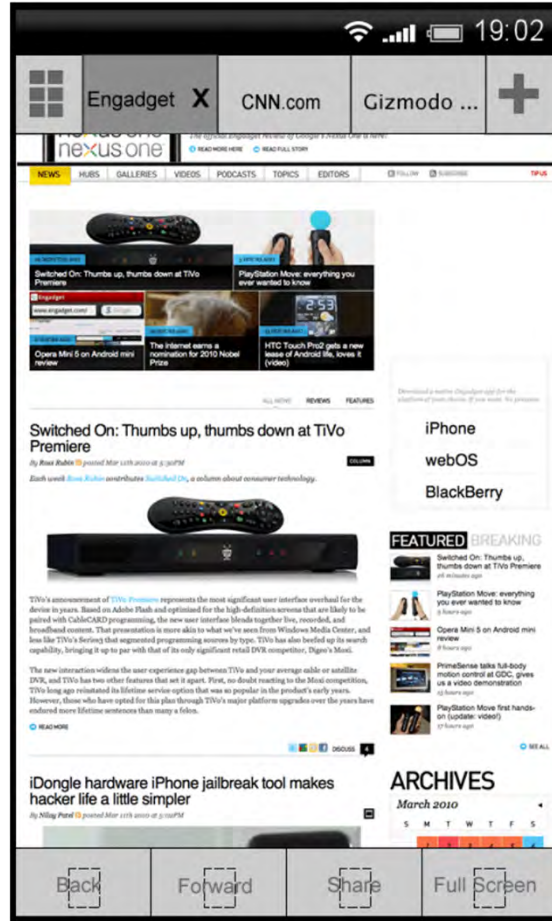
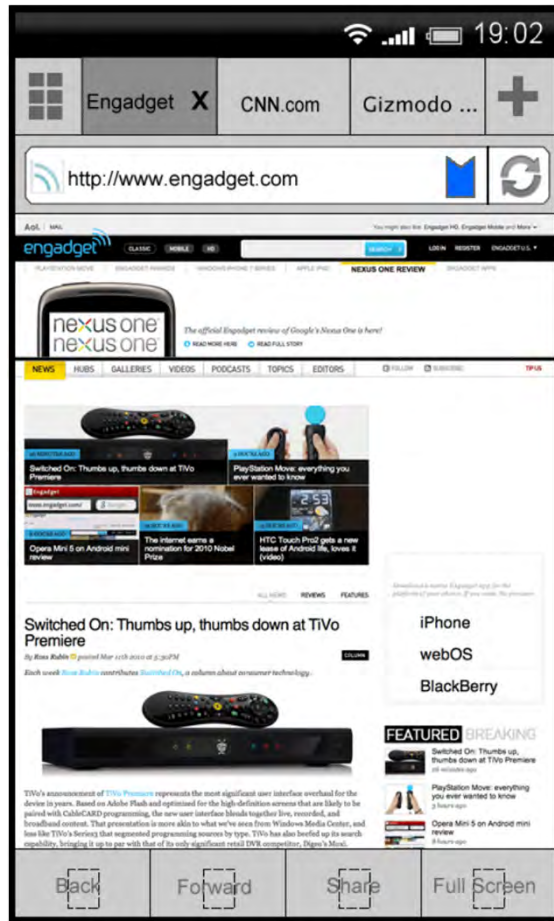


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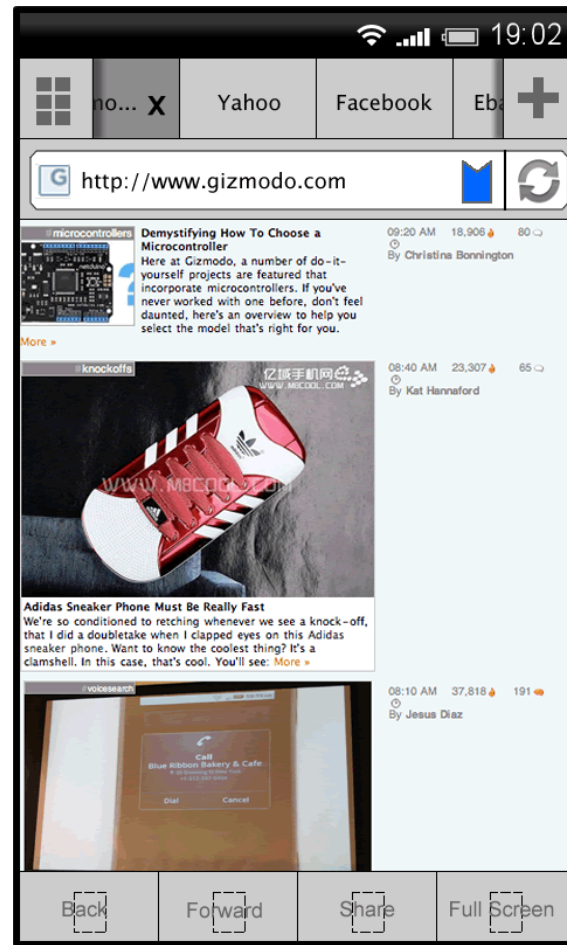
Sample Application – Deep Dive

# **BROWSING**

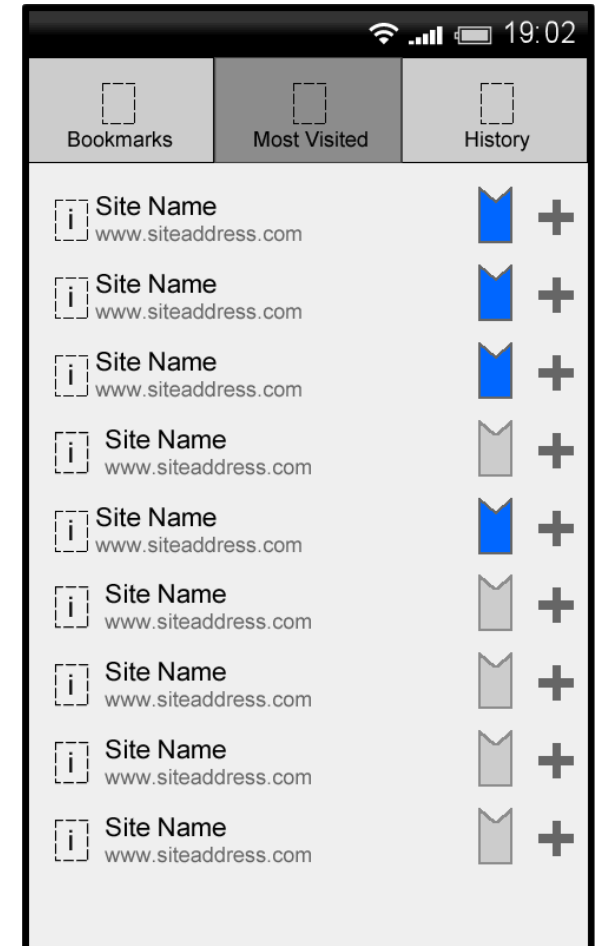
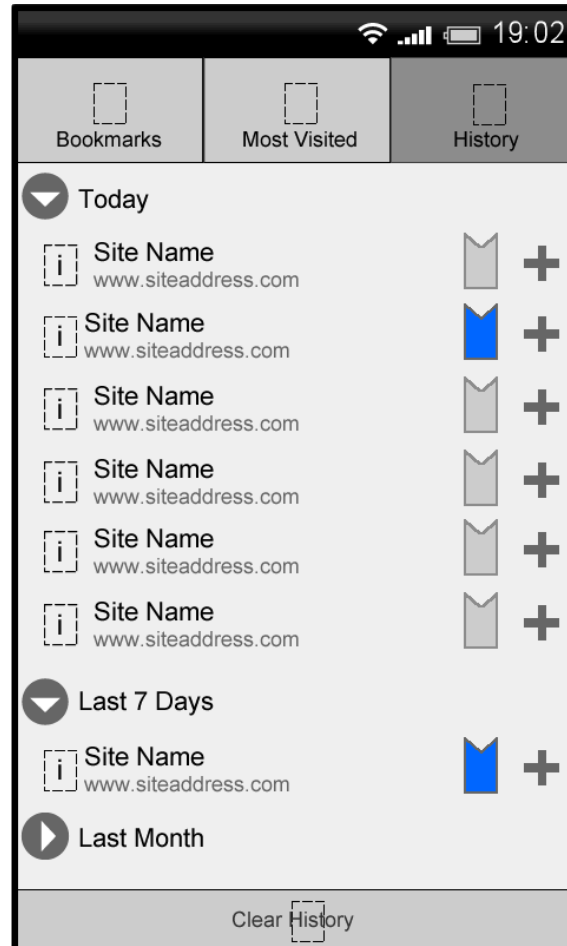
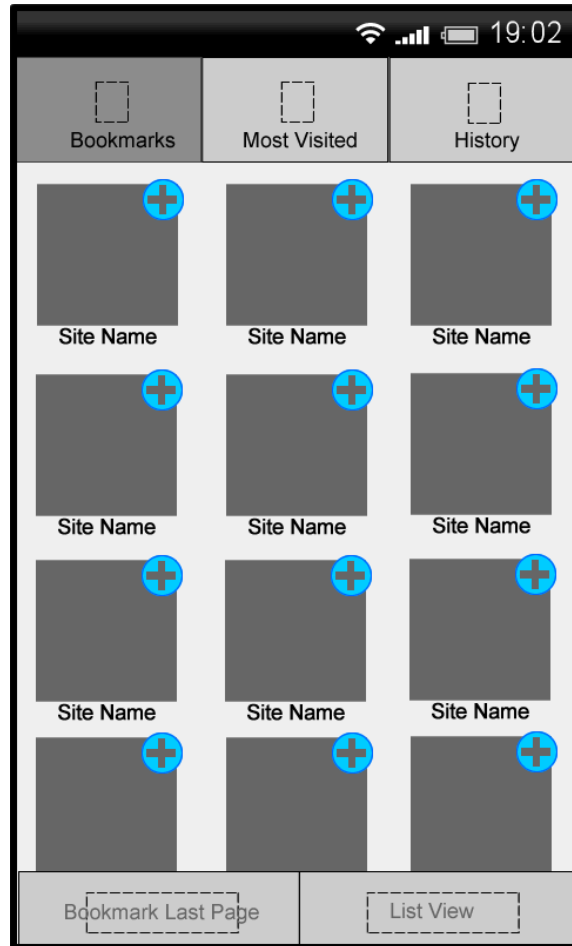
# Single Screen Browsing



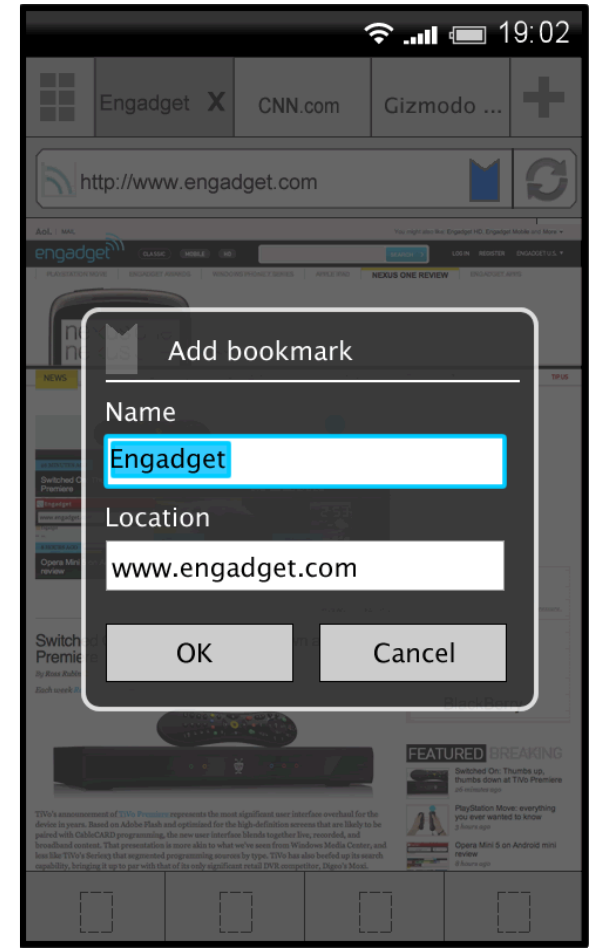
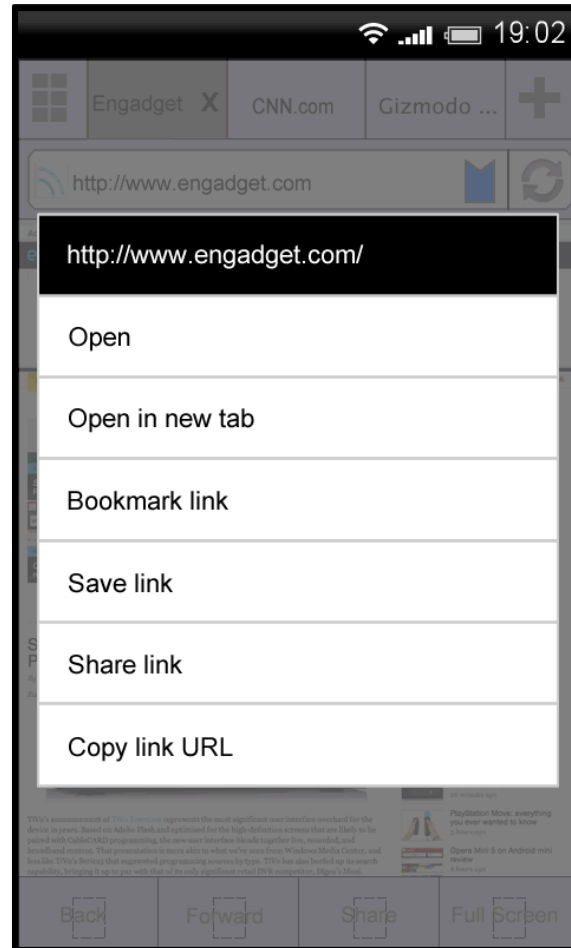
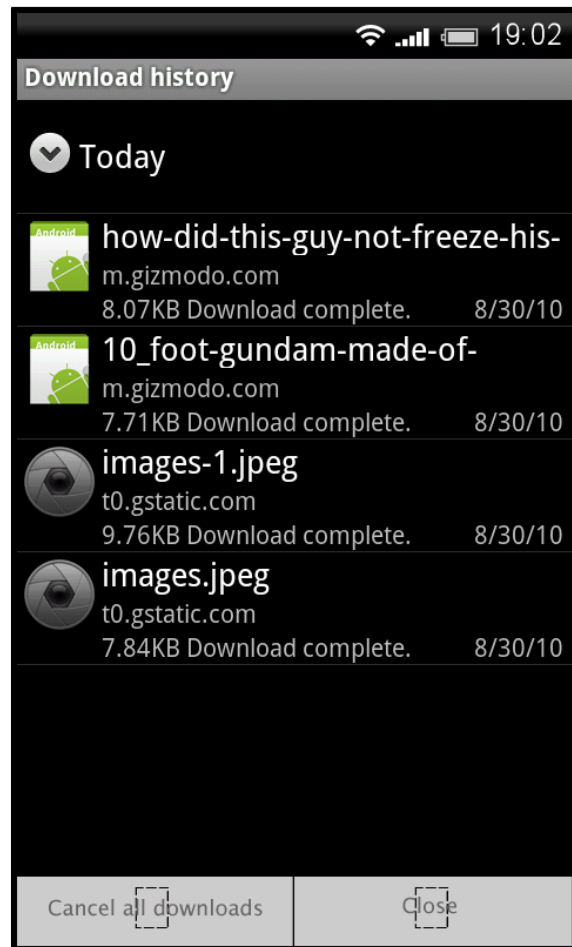
# Tab Scrolling



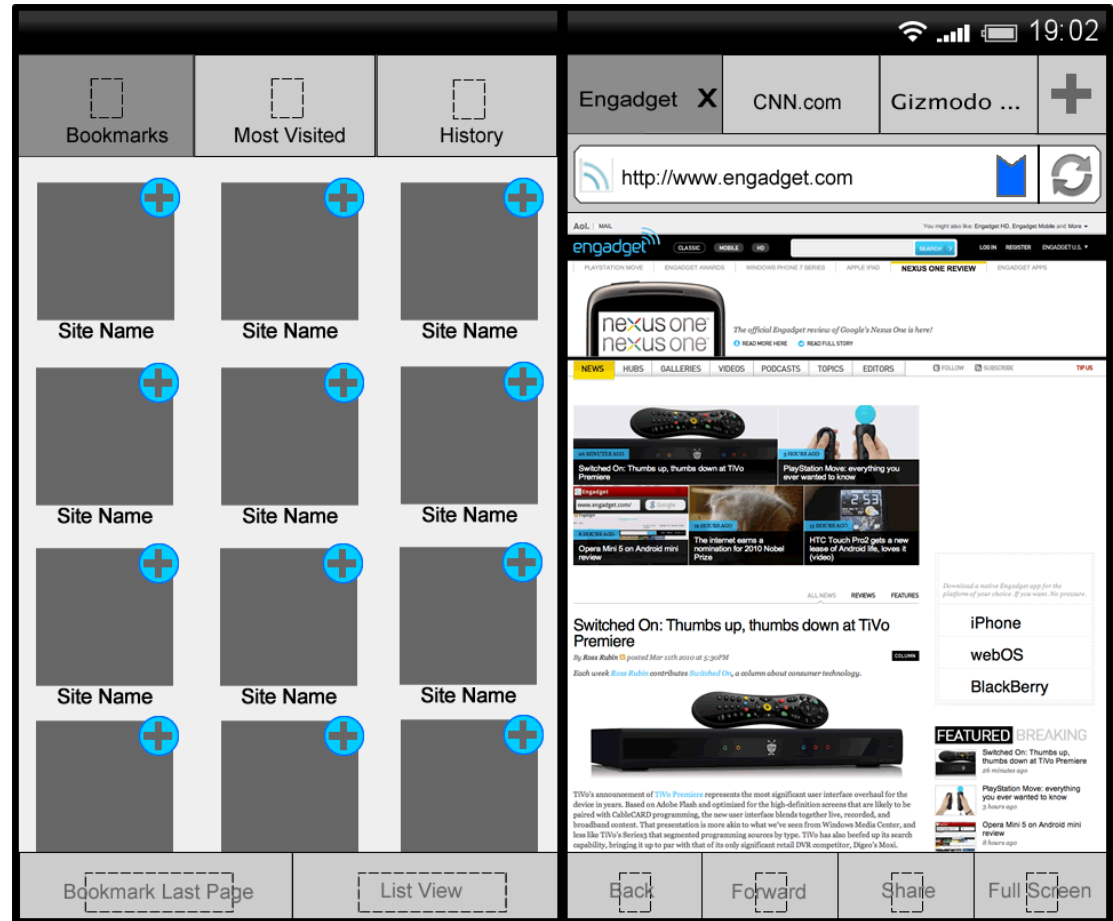
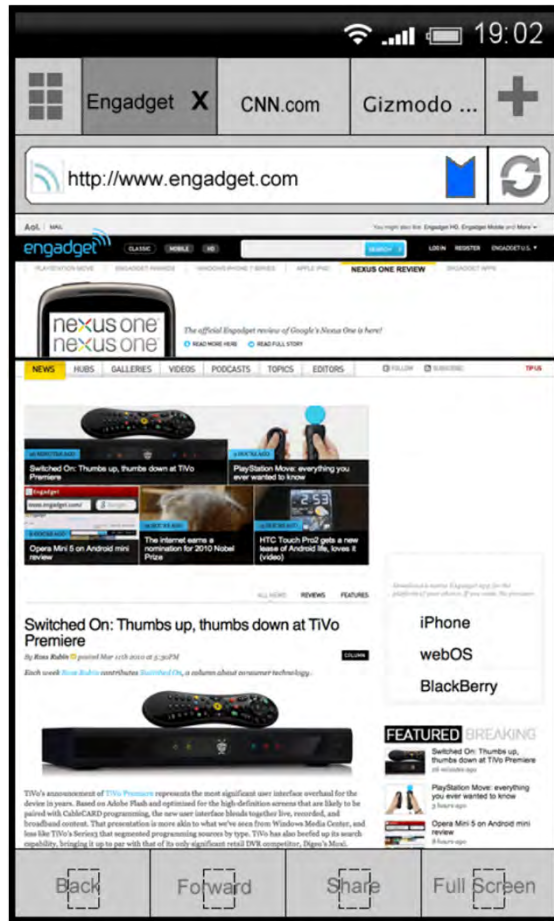
# Control Panel



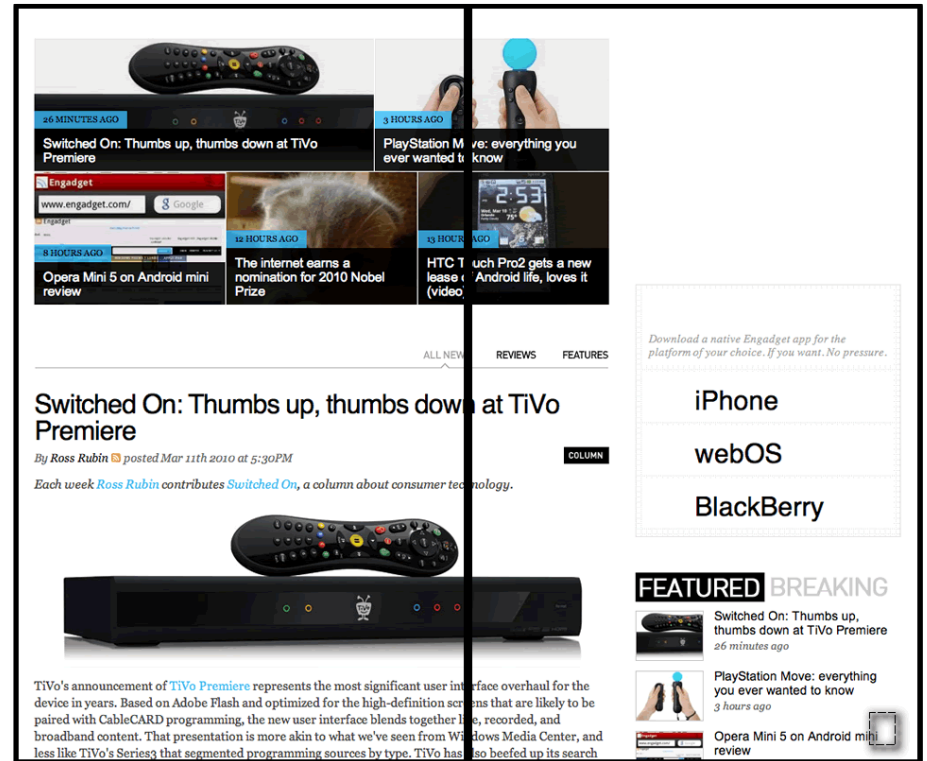
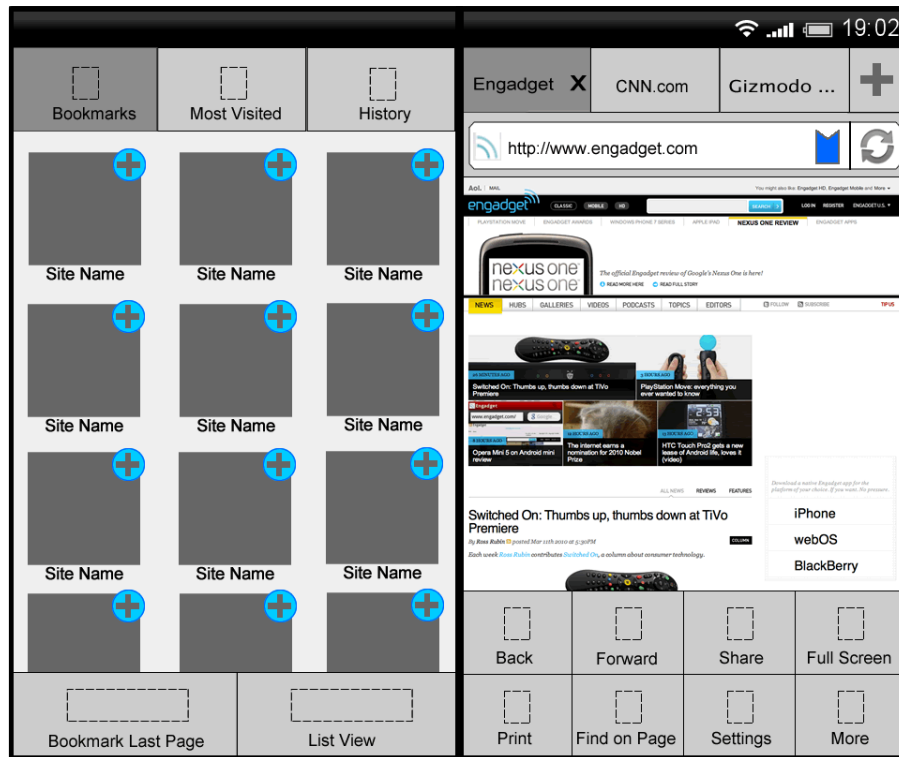
# Modals



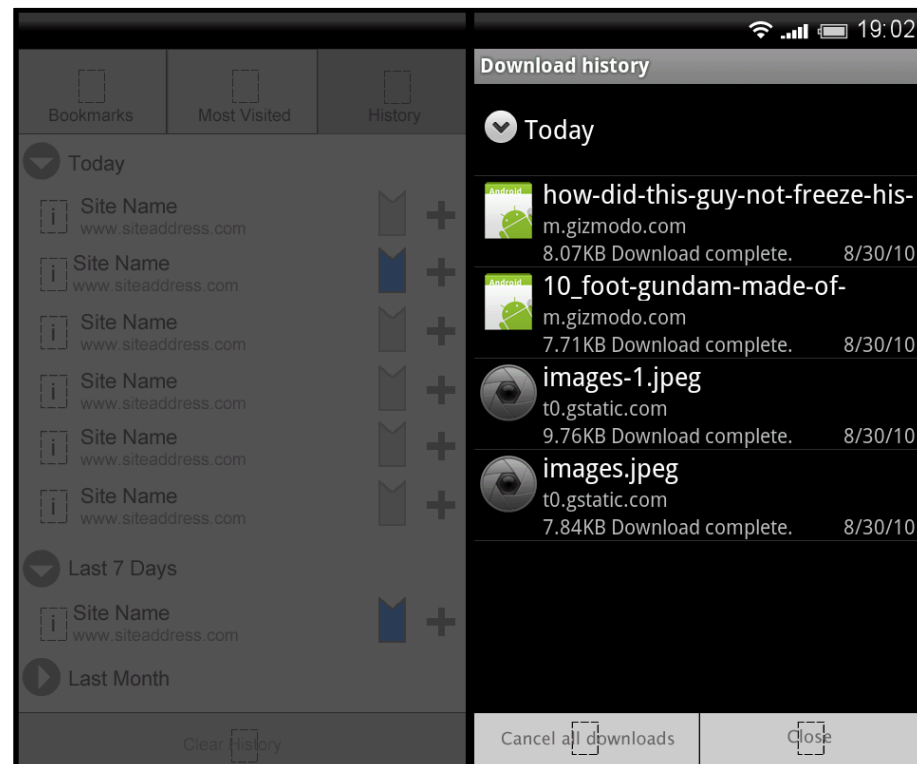
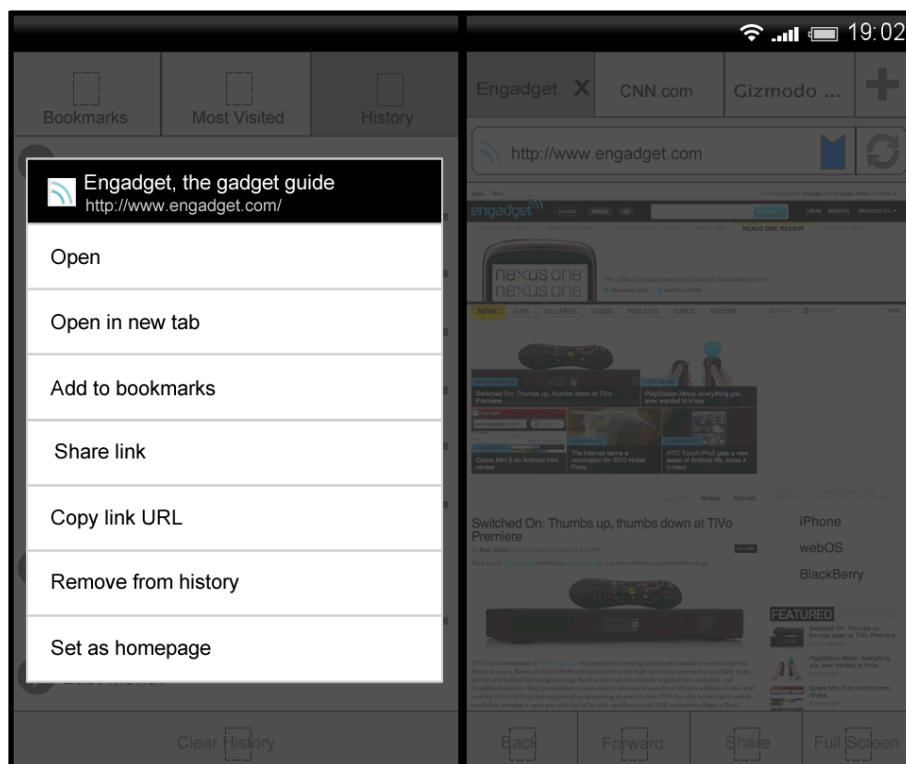
# Portrait Single to Dual



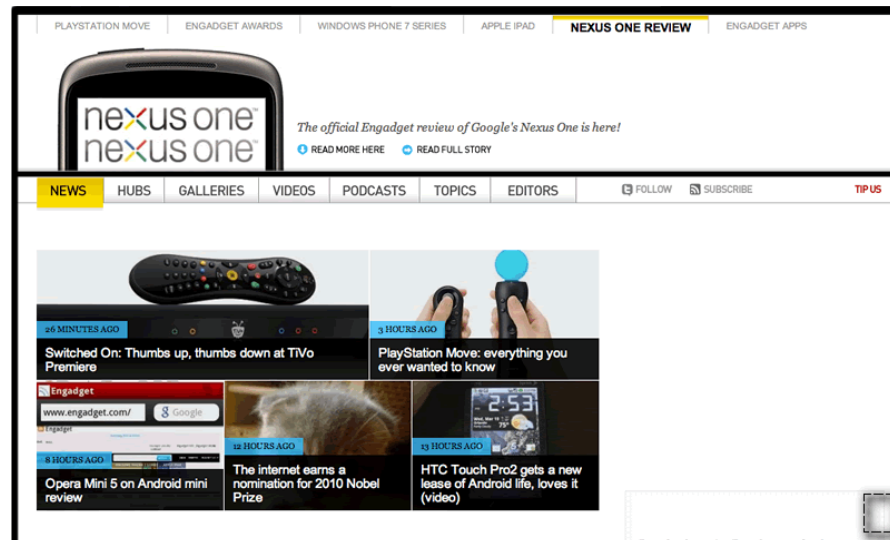
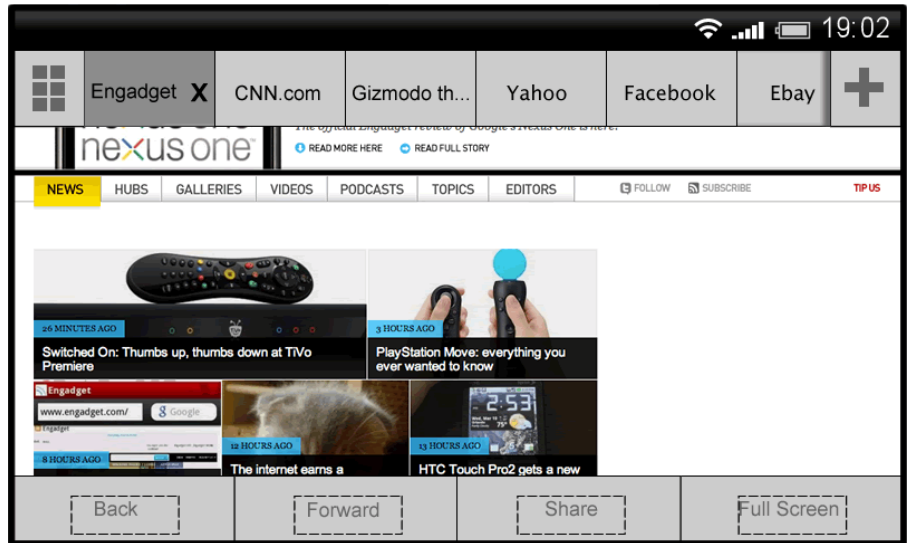
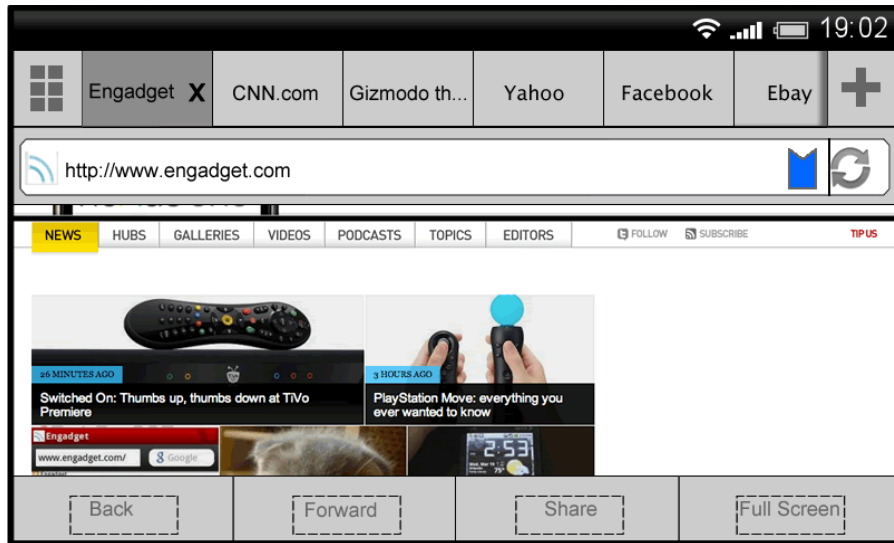
# Portrait Dual Use



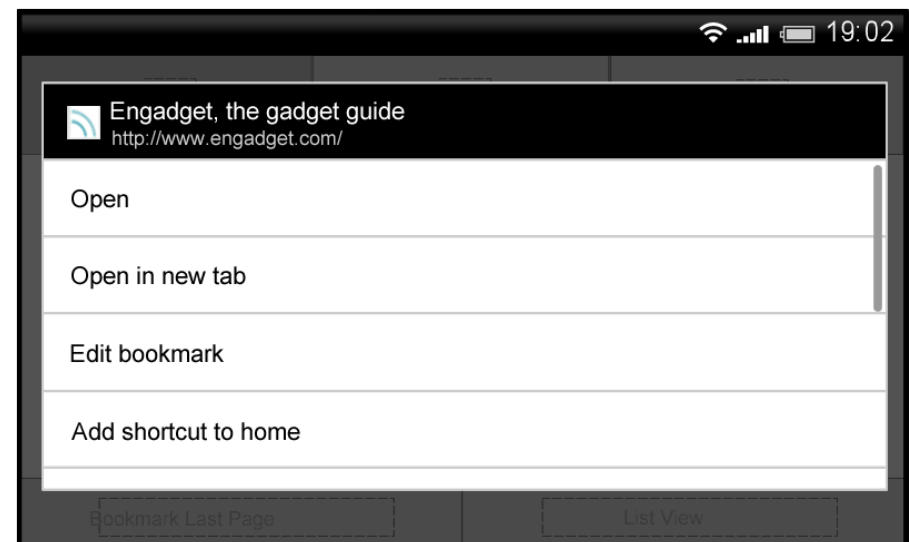
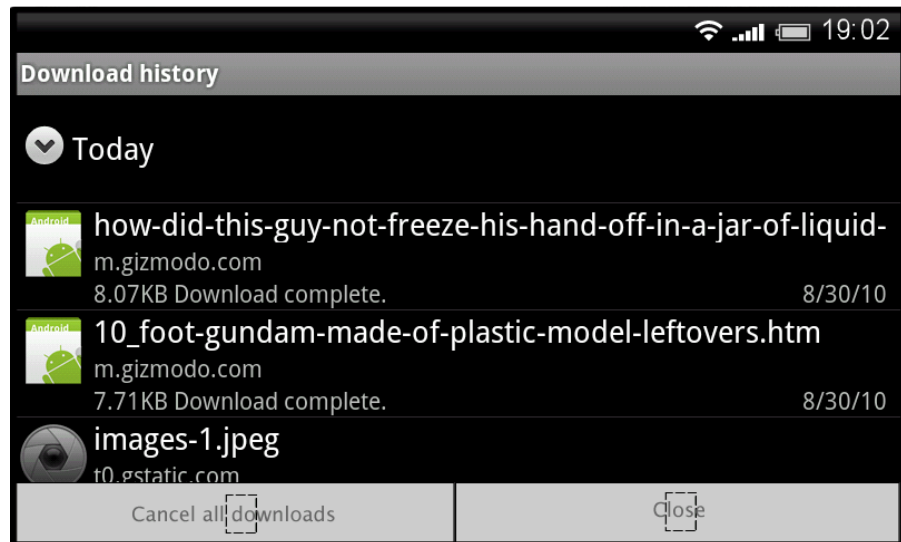
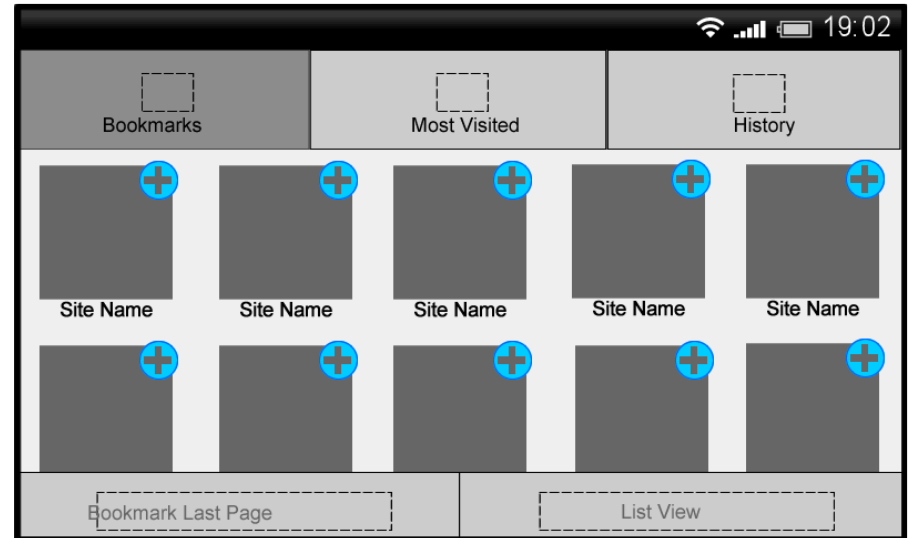
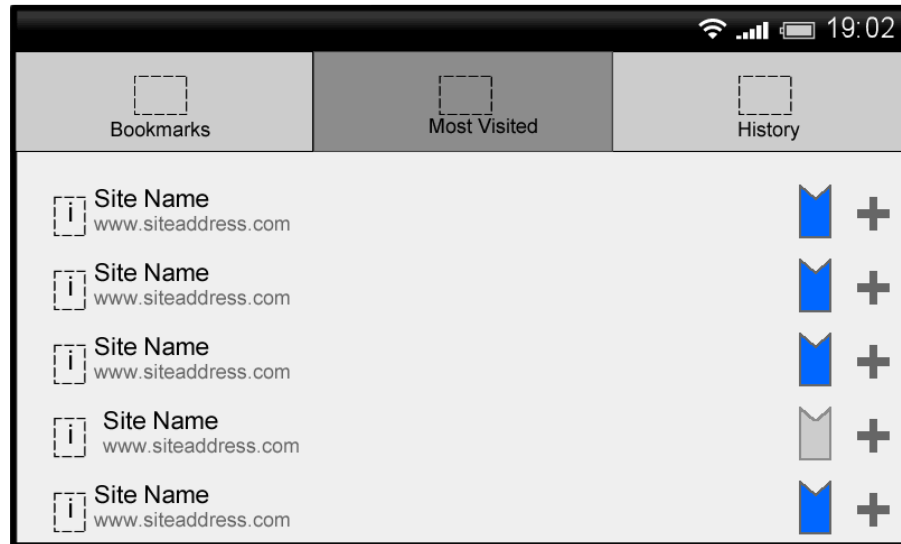
# Portrait Dual Modals



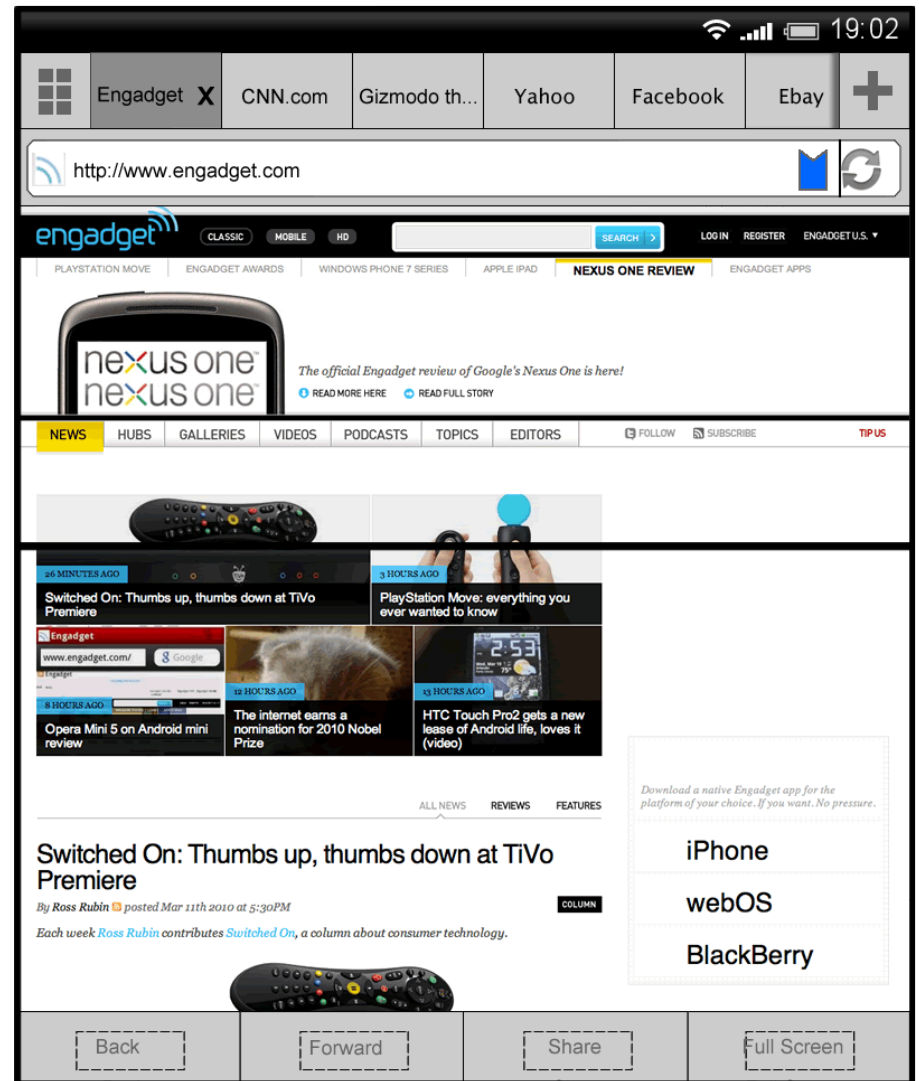
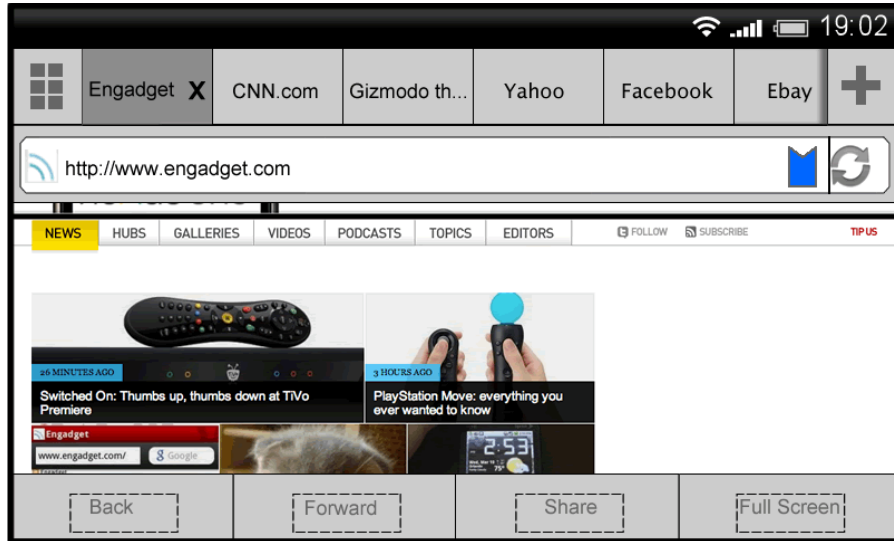
# Landscape



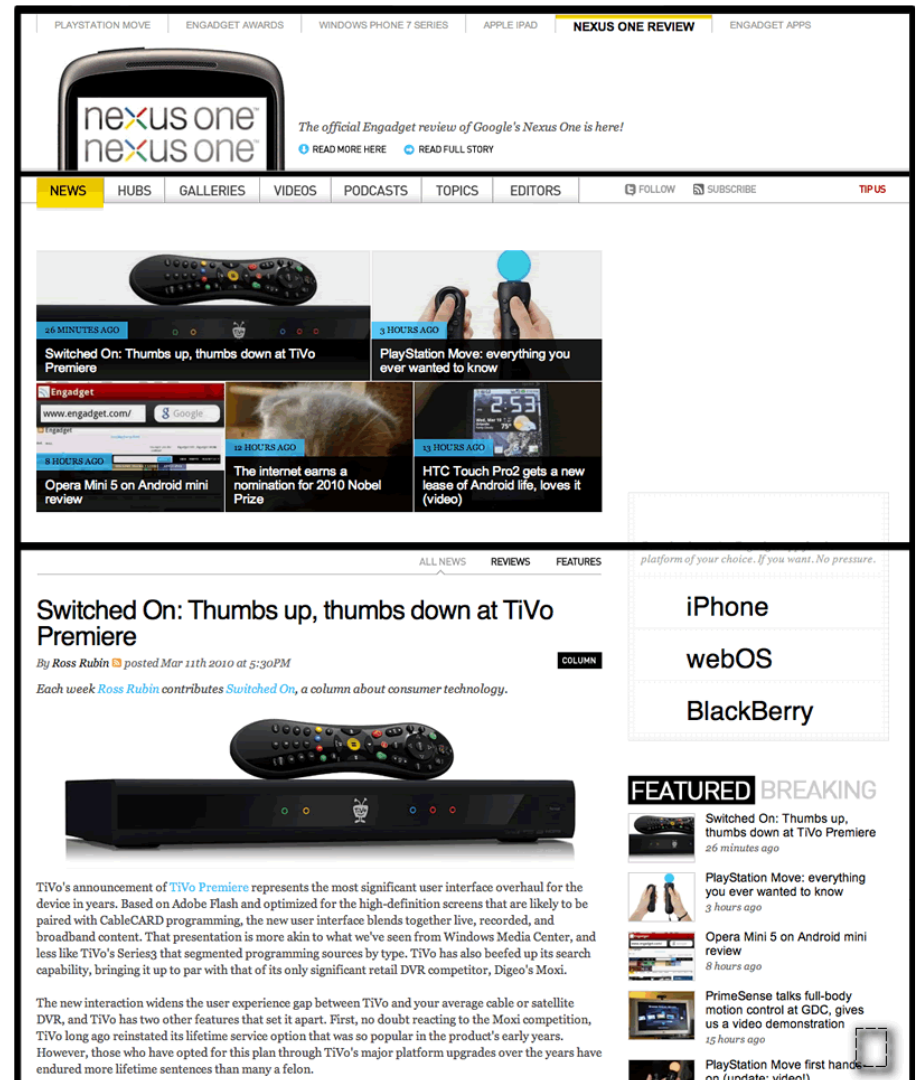
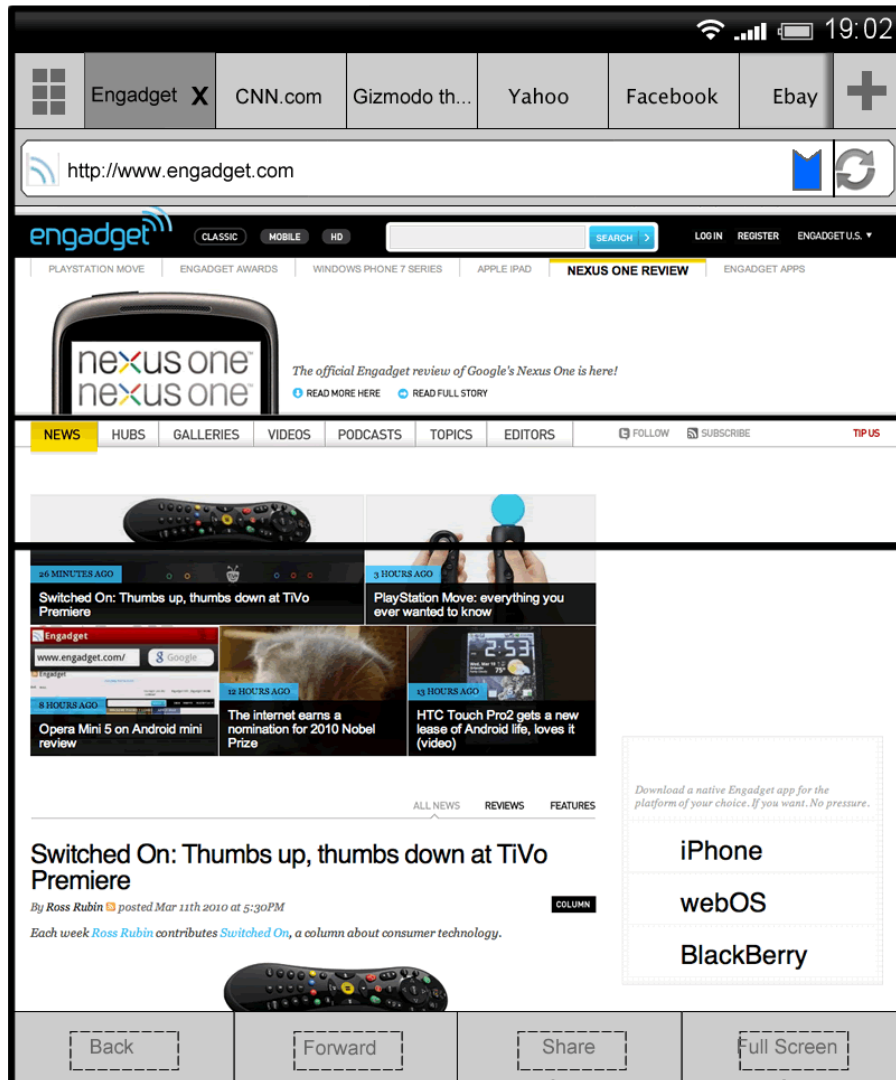
# Landscape Control Panel and Modals



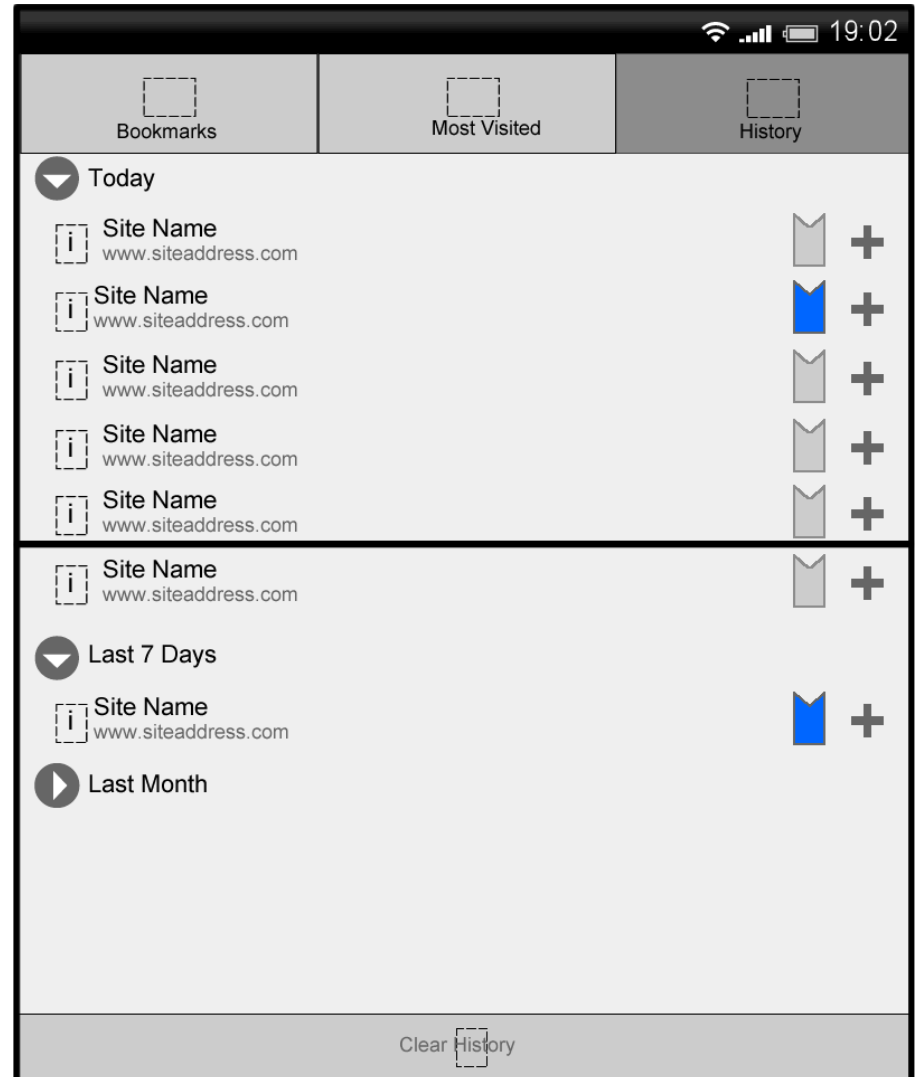
# Landscape Single to Dual



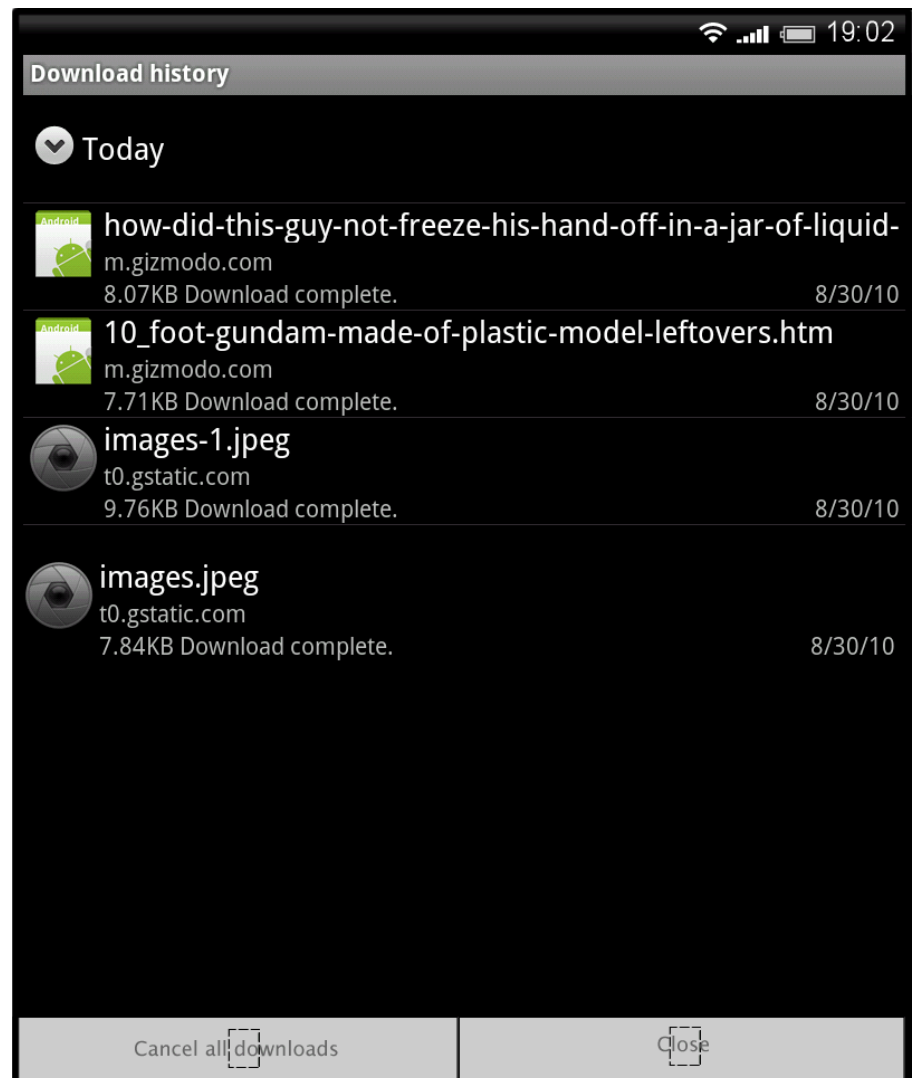
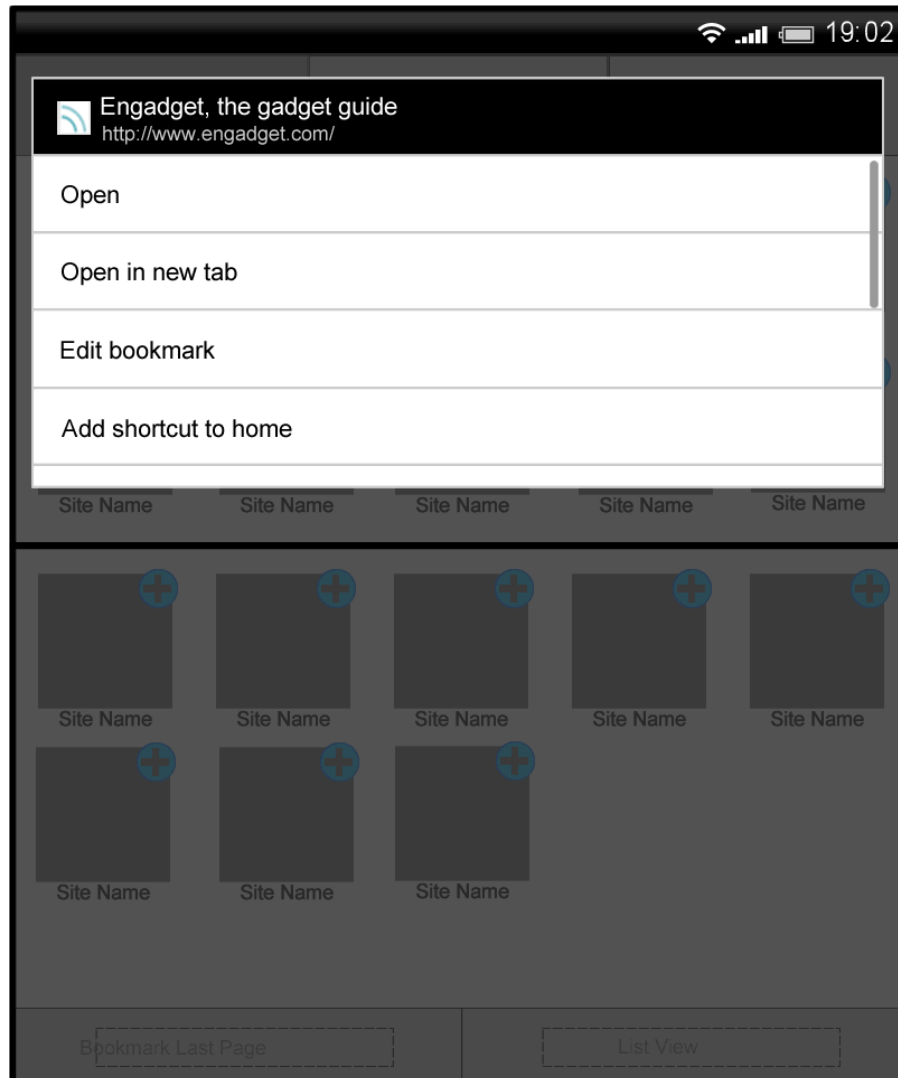
# Landscape Dual Browser



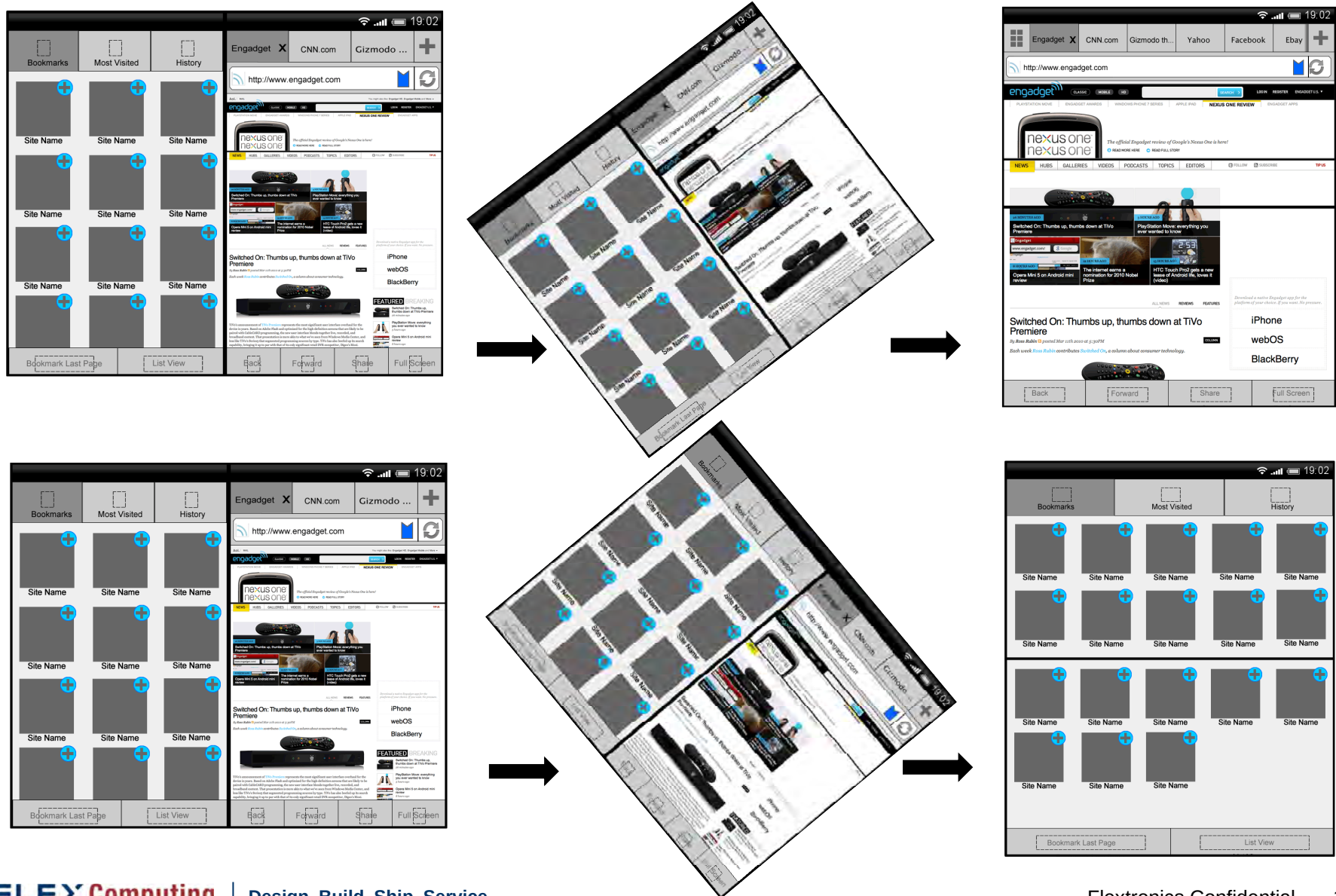
# Landscape Dual Control Panel



# Landscape Modals



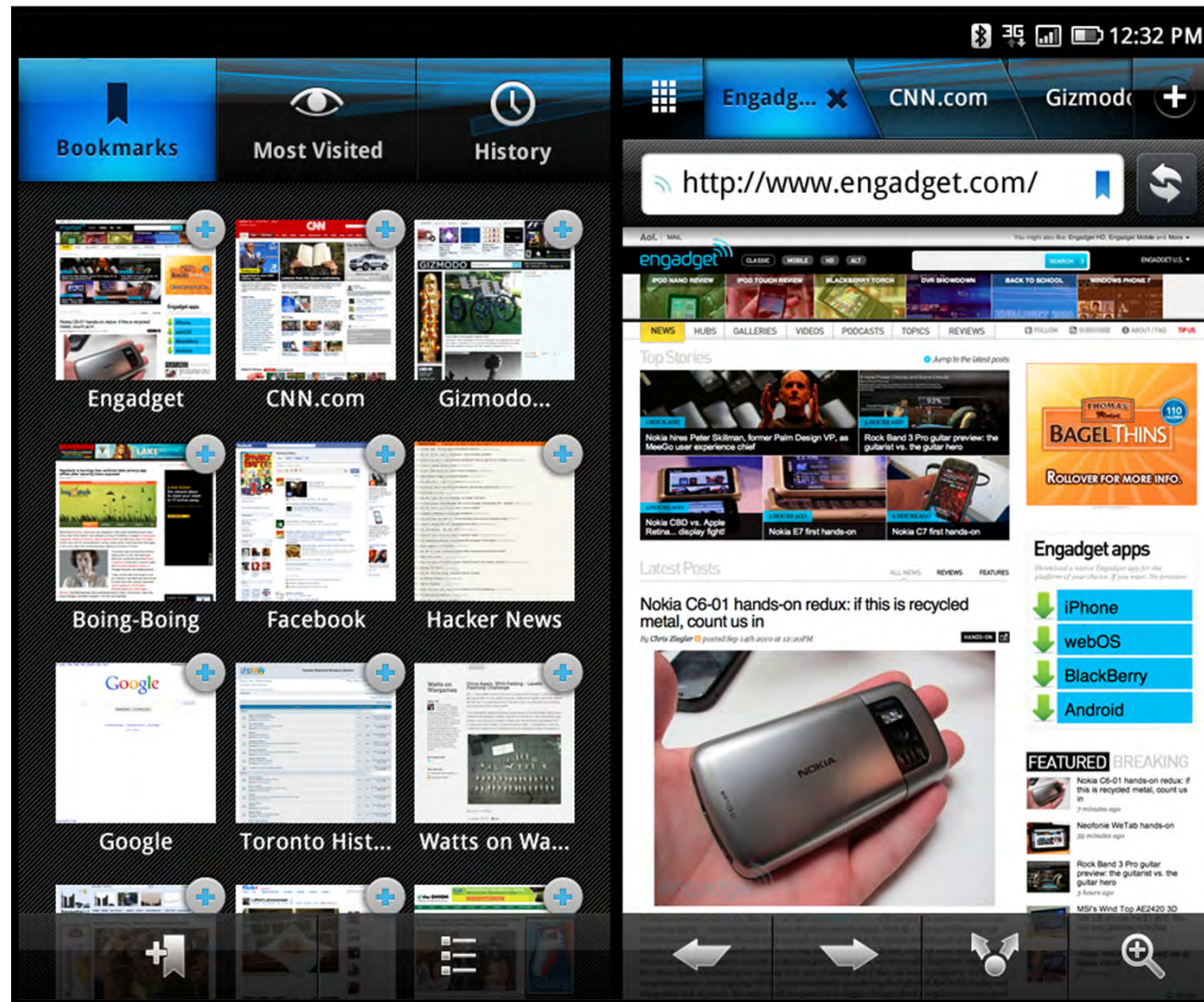
# Rotation – Gravity Drop



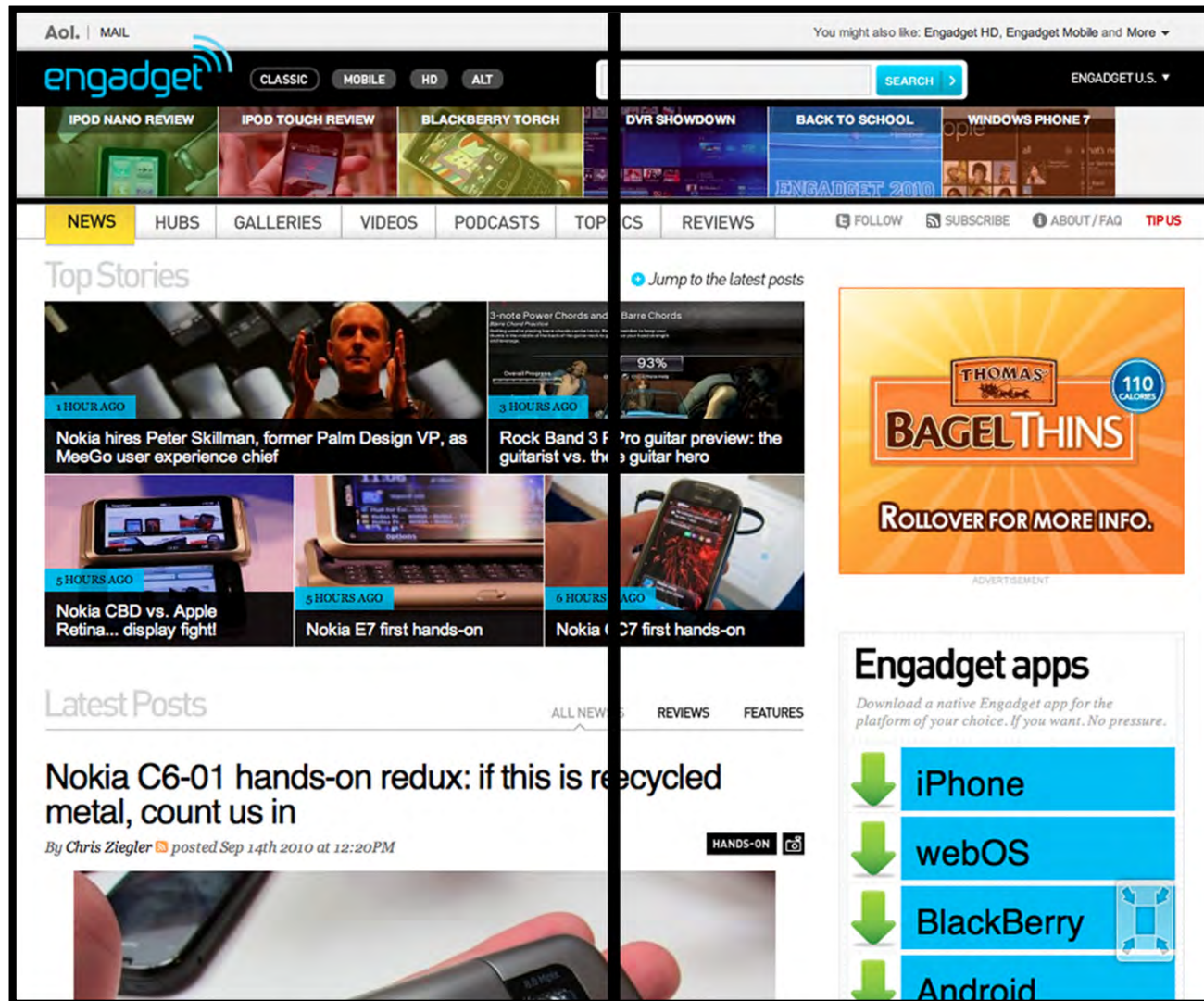
# Single Screen



# Portrait Dual Screen



# Portrait Dual Screen



# Landscape Dual Screen

