

# iOS Prototyping

## *What, Why and How*

~~Rick Evans~~ Ken Auer  
Christian Di Lorenzo

# Who are we?

## Rick

- First software prototype in 1996
- 4 years mobile experience
- User Experience designer

## Christian

- 2½ years mobile experience
- Developer and experimenter

# Who are we?

## Ken

- Building custom software & prototypes since mid-80s (starting in Smalltalk)
- 4 years iOS experience
- Founder & CTO of RoleModel Software

# What is a prototype?

## pro•to•type

- an original or first model of something from which other forms are copied or developed
- first or early example that is used as a model for what comes later



[http://web.mit.edu/invent/www/ima/maccready\\_video.html](http://web.mit.edu/invent/www/ima/maccready_video.html)

# Prototypes

“You are iterating your solution as well as  
your understanding of the problem”

**Aza Raskin**

“The value of an idea is zero unless it can  
be communicated”

**Aza Raskin**

# What to Prototype?

- Just enough to be convincing
  - Validate mutual understanding
  - Find real requirements
- Basic design before building
- Enough to gather user feedback

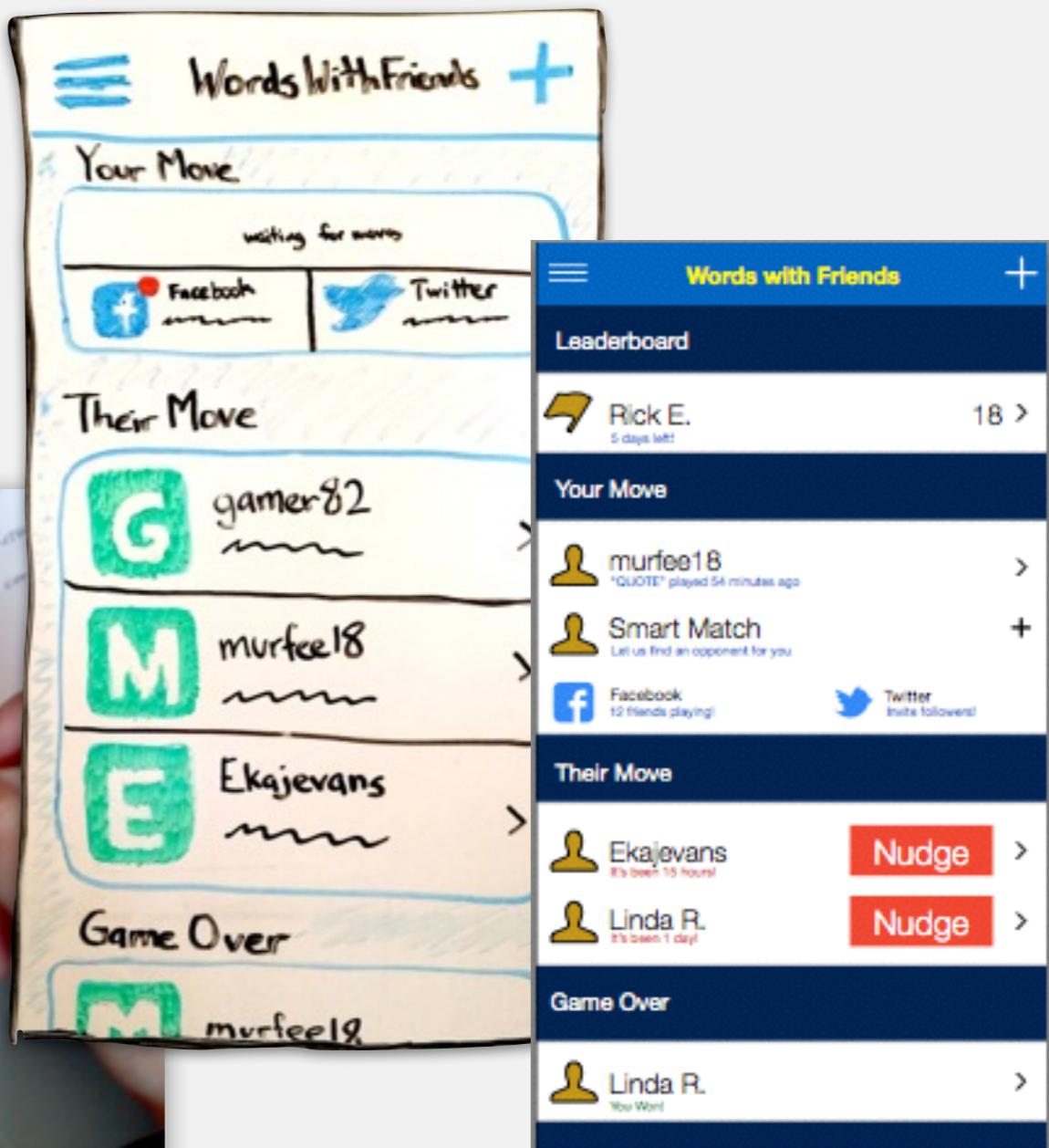
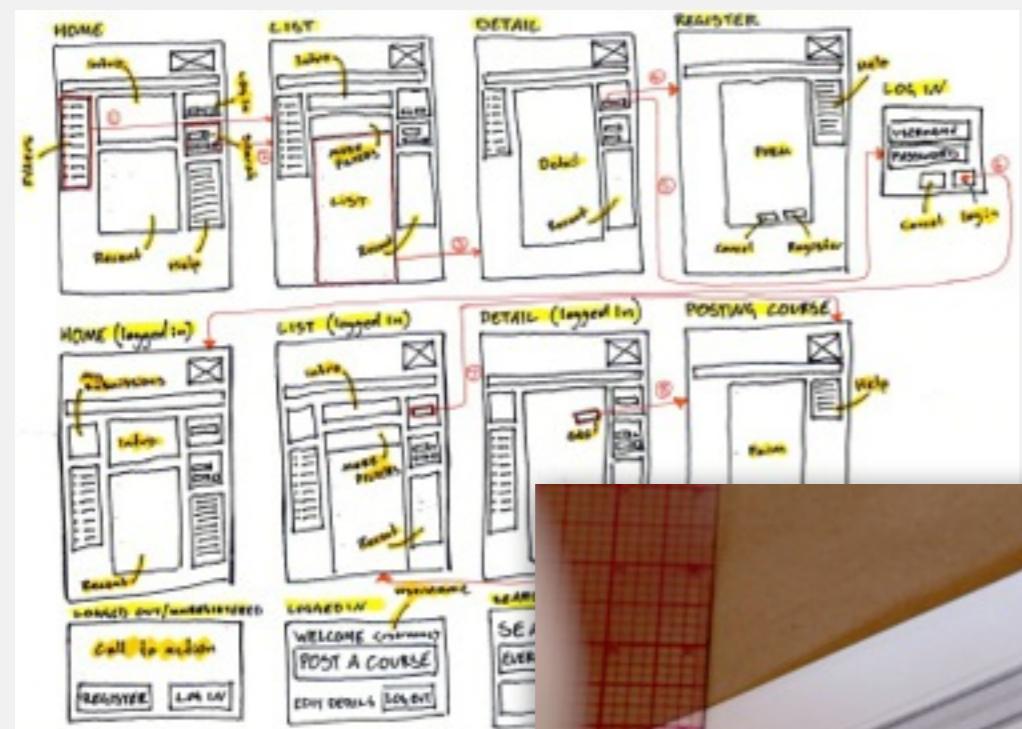
# Why Prototype?

- Focus on satisfying needs of customers
- Understand personal goals of customers
- Discover workflows and scenarios
- Identify customer mental models
- Find affordances relevant to customers
- Conveys positive & avoids negative

# How to Prototype?

- Always time box every task
- Find best tool for the job
- Be ready to throw prototype away
- Visualize ideas quickly
- Focus on tight feedback loop

# Kinds of Prototypes



# Low Fidelity

*Quickly iterate thru ideas*

- Validates your understanding of problem
- Mockup specific screen
- Uses sketches or whiteboard drawings
- Allows quick & cheap failures

**PROBLEM:** Lack of visuals

# Medium Fidelity

*Communicates design*

- Encourages participation
- Drives changes thru time boxing
- Gathers feedback from user testing

**PROBLEM:** Don't know when to stop

# High Fidelity

*Public demonstrations*

- Looks like real app but only happy path
- Demonstrates concepts to upper mgmt.
- Generates excitement among sales staff

**PROBLEM:** People think it's the real product.

# Low-fi Challenges

- Legibility
- Availability of useful tools
- Transporting



<http://uxforlife.blogspot.com/2014/02/techniki-ux-design-studio.html>

# High-fi Challenges

- When to stop
- When to craft
- What to throw out

# Medium Fidelity

Cheap, Yet Testable

# Tool Evaluation

- Enough interaction
- Quick layout
- Way to create custom components
- Easily copy styles

# Prototyping Tools



Balsamiq \$79



Keynotopia \$97

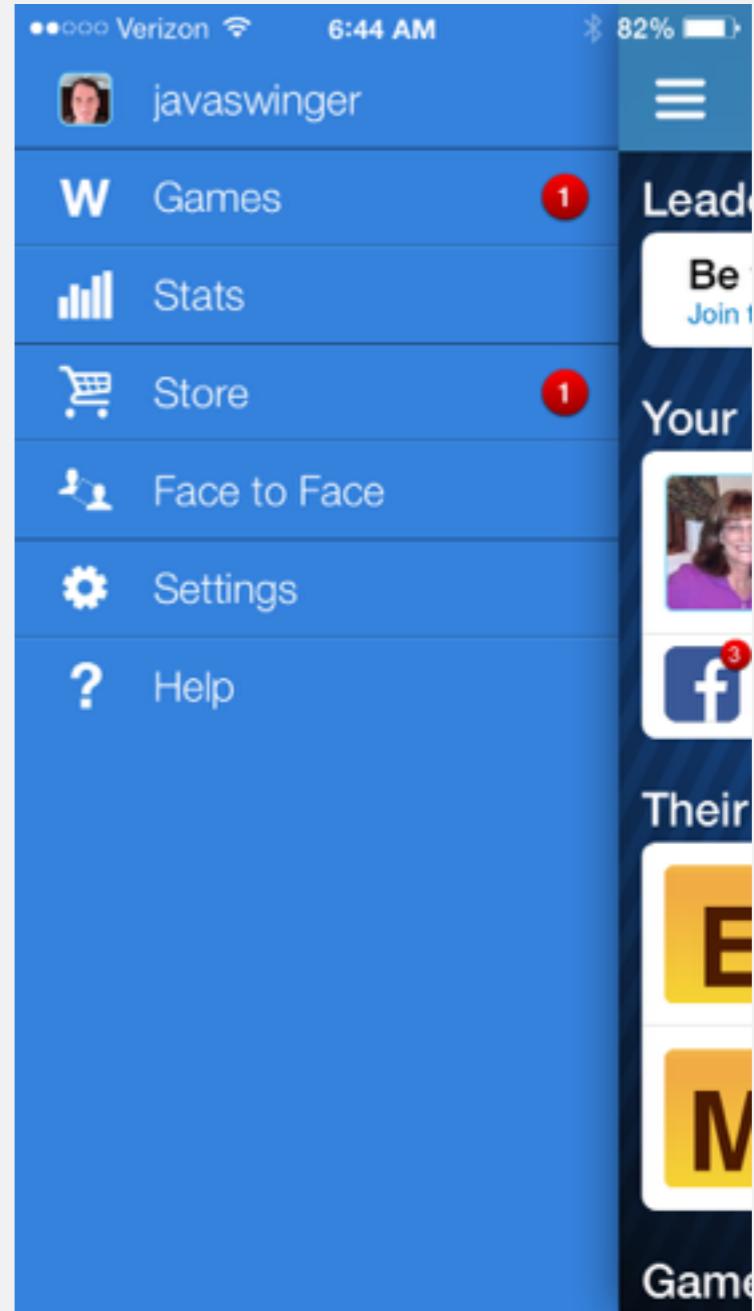
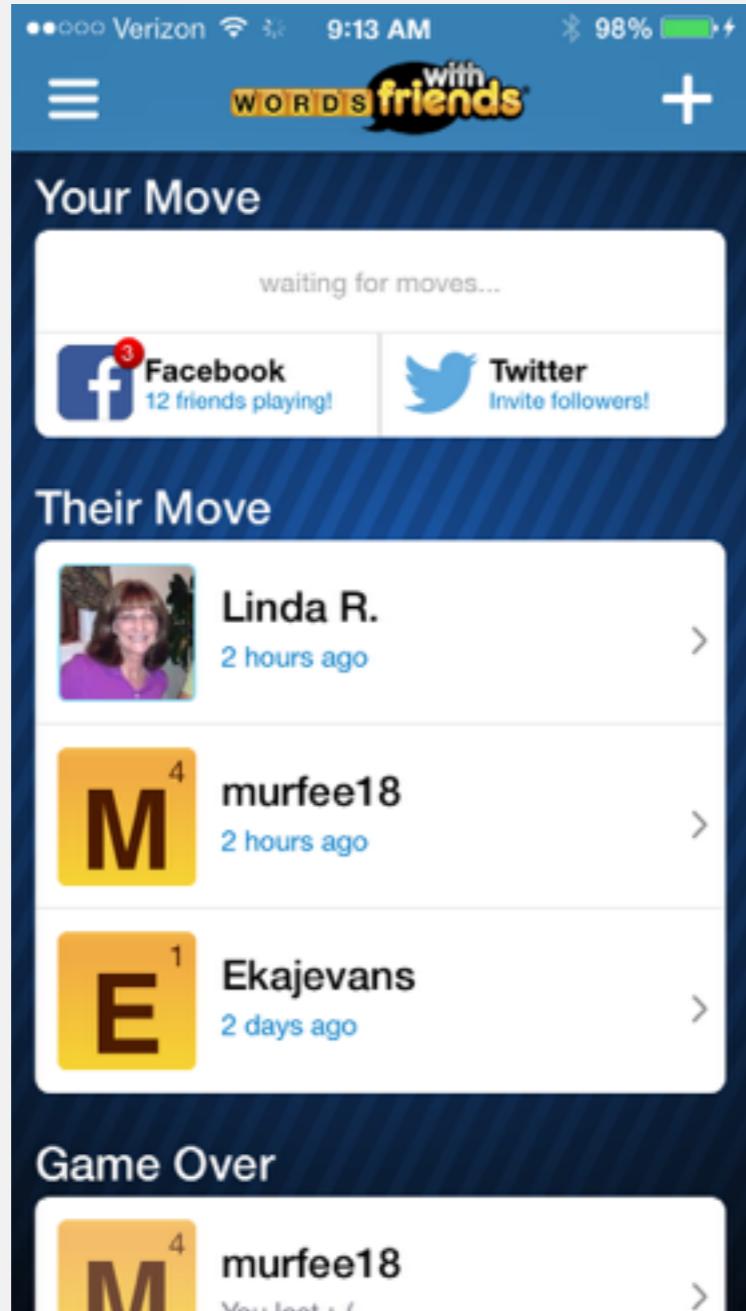


Xcode free



Framework7 free

# Let's build an app...



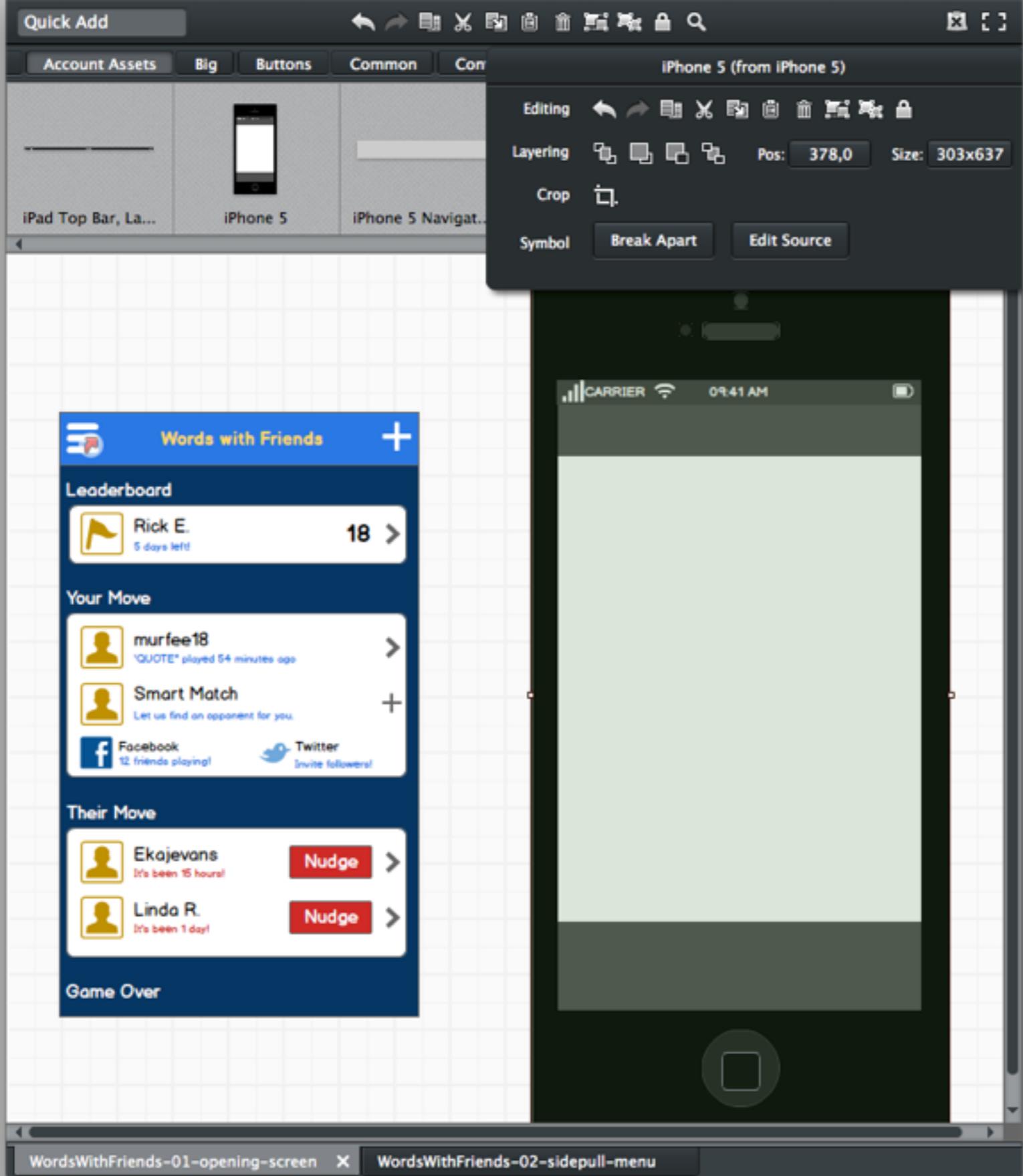


# Balsamiq

- iPhone template
  - iOS controls
  - Rectangles
  - Text
  - Icons
  - Links

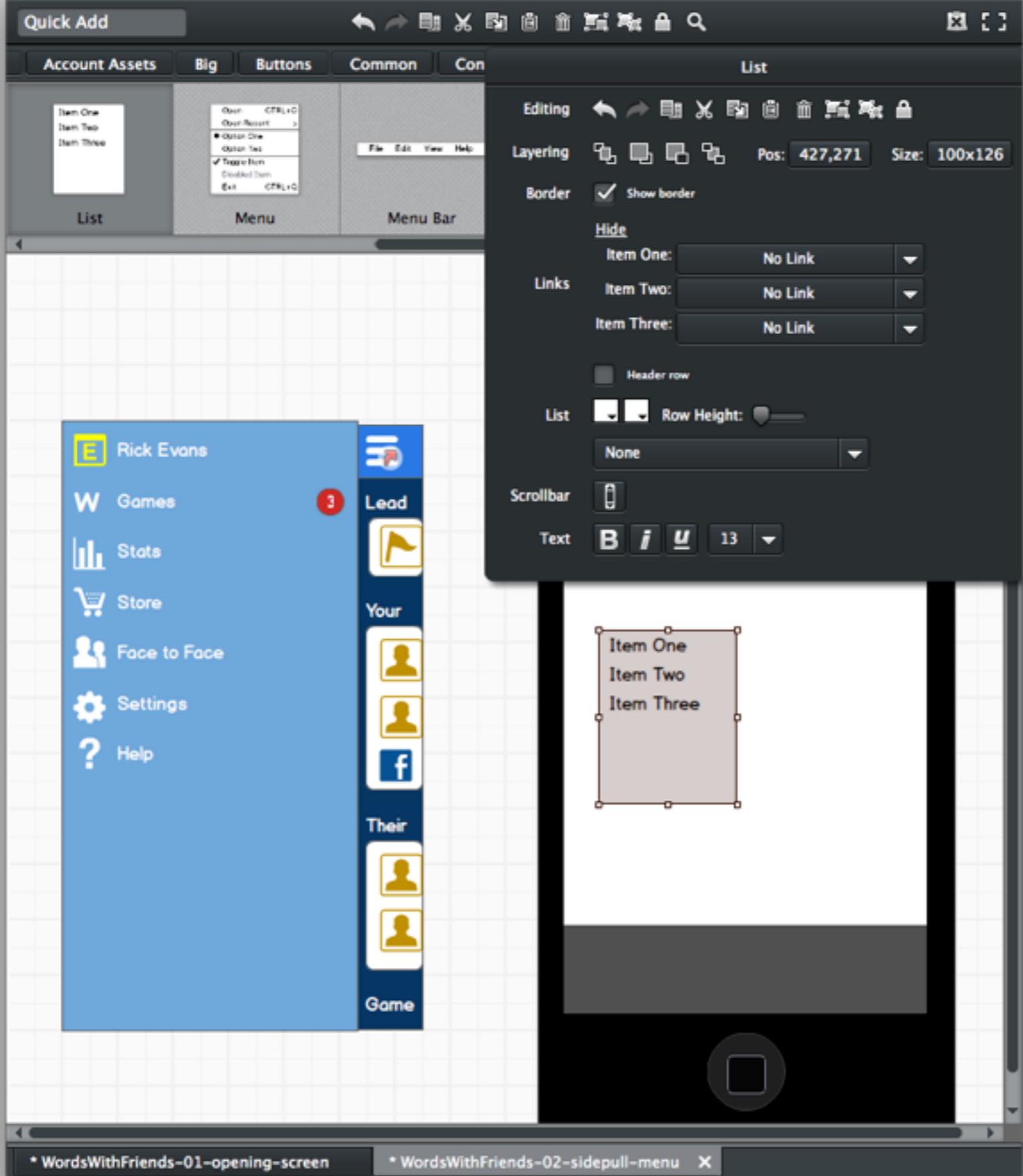
<https://mockupstogo.mybalsamiq.com/projects/ios/grid>

# RoleModel



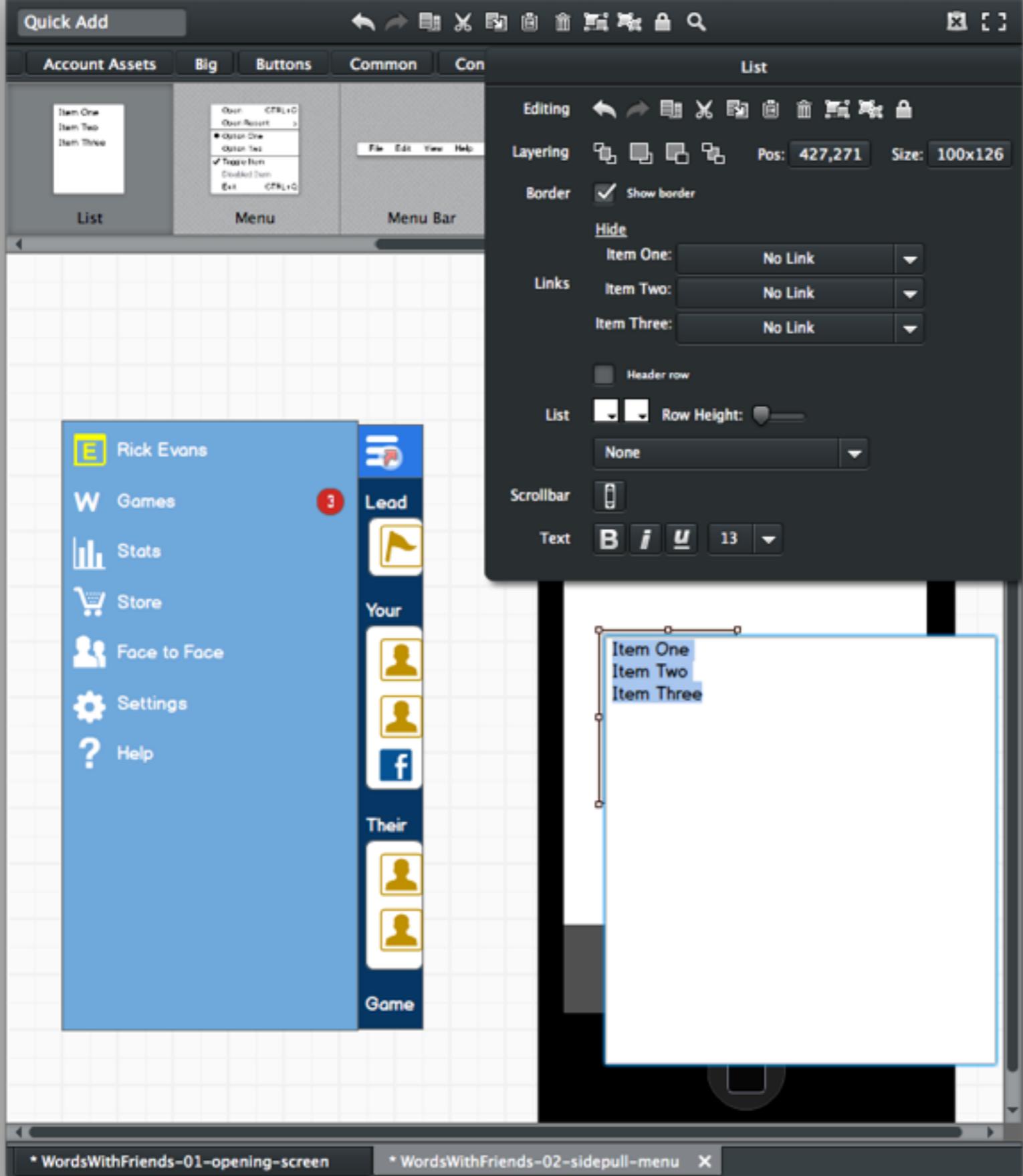
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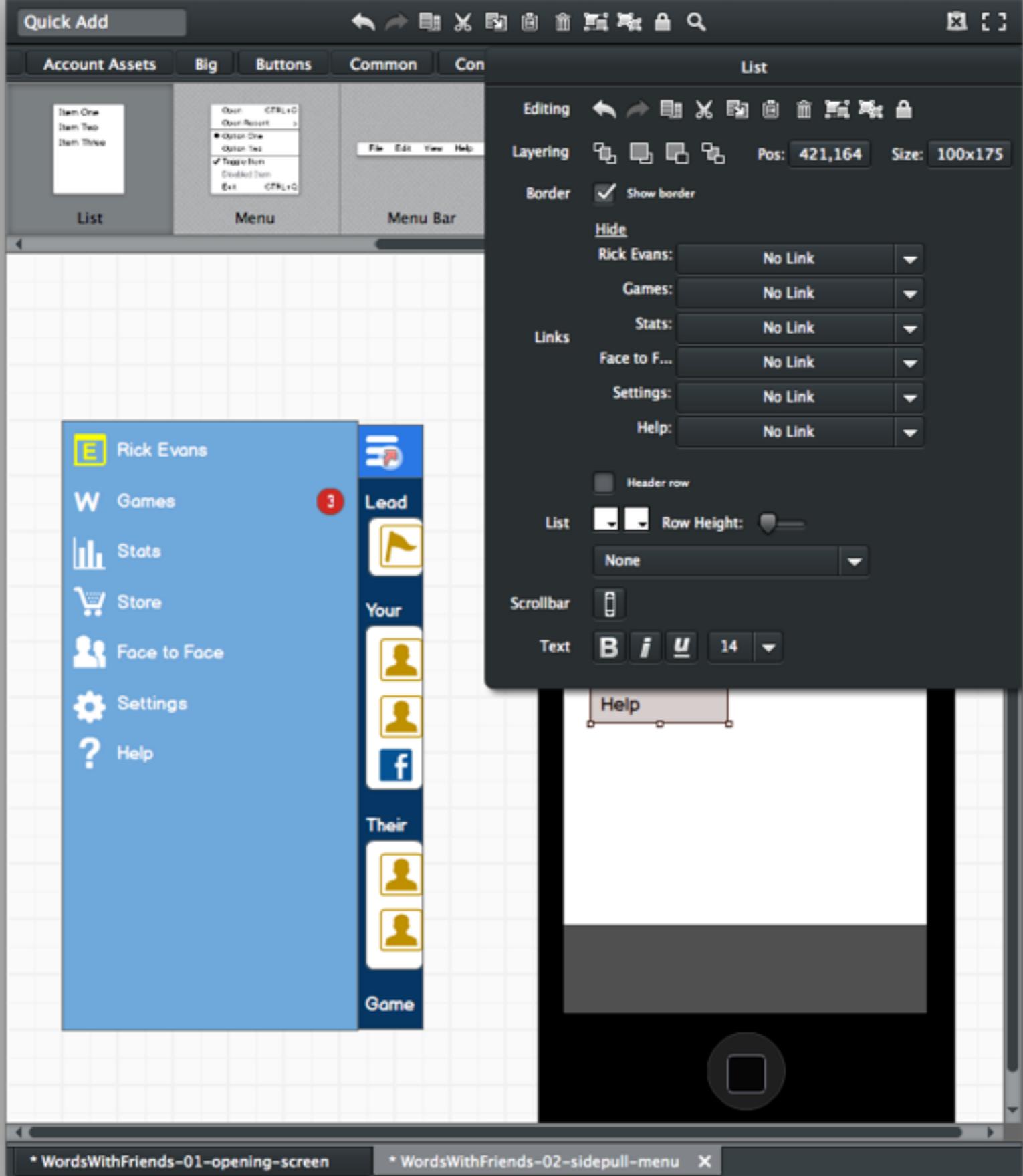
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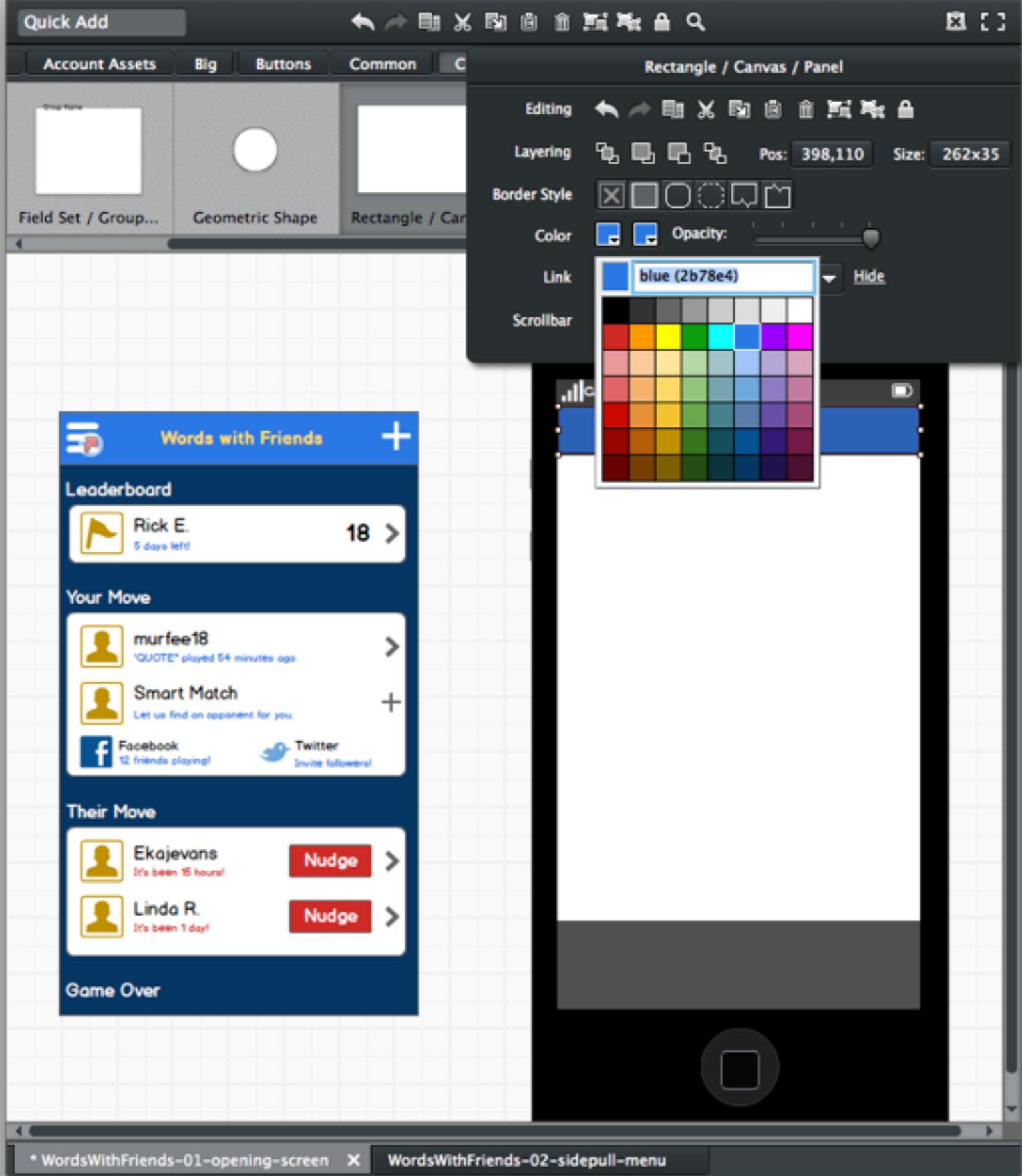
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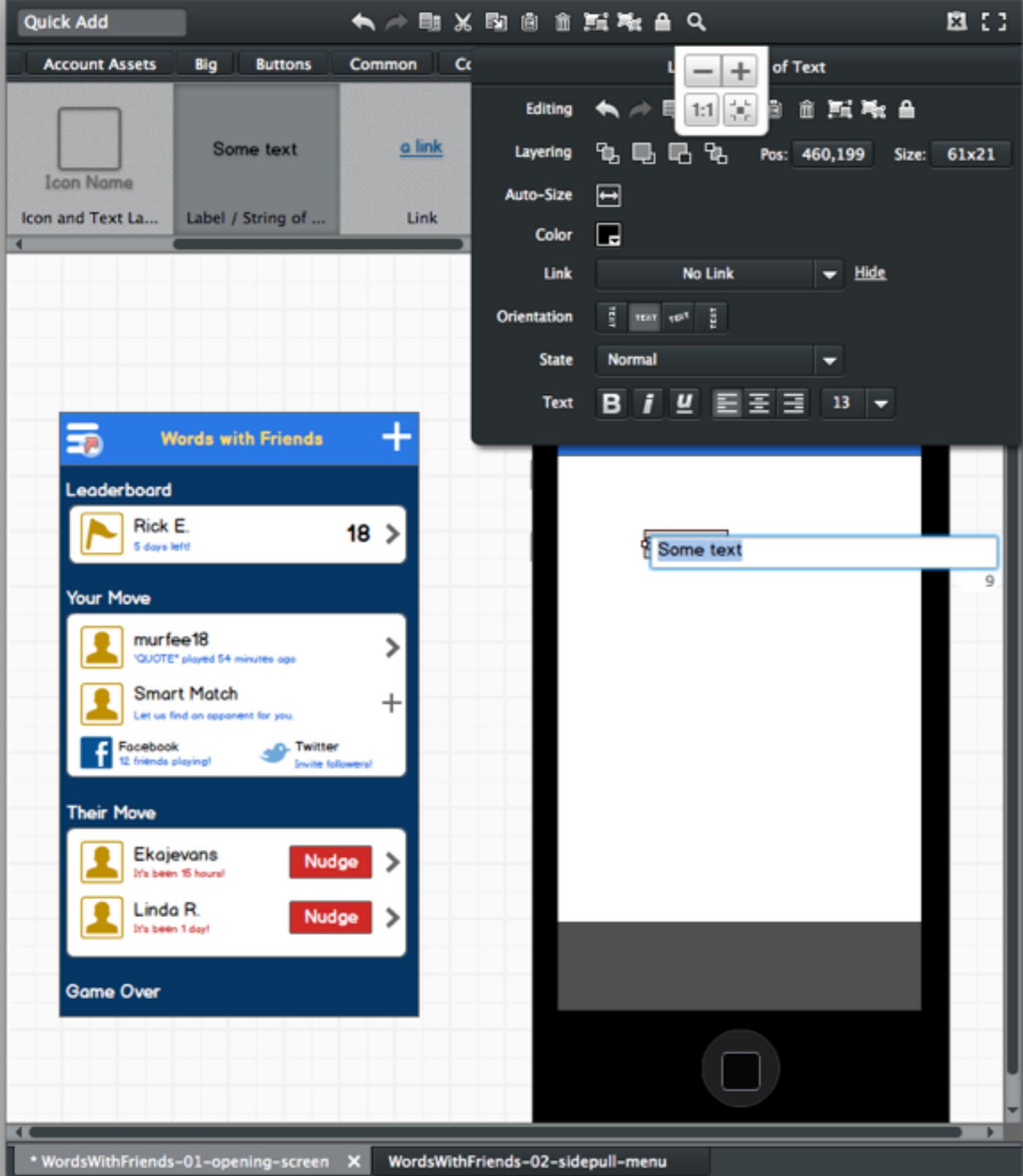
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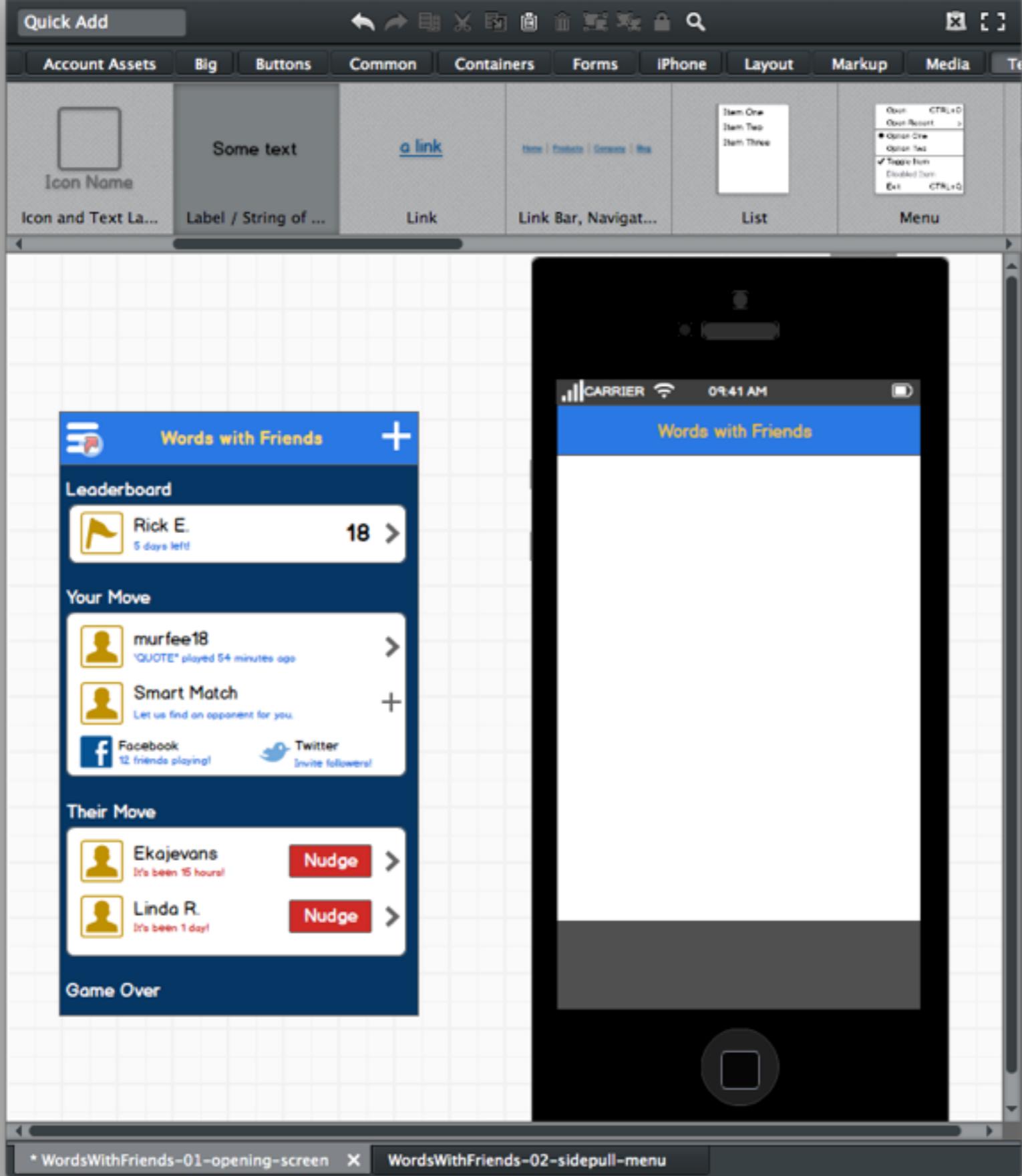
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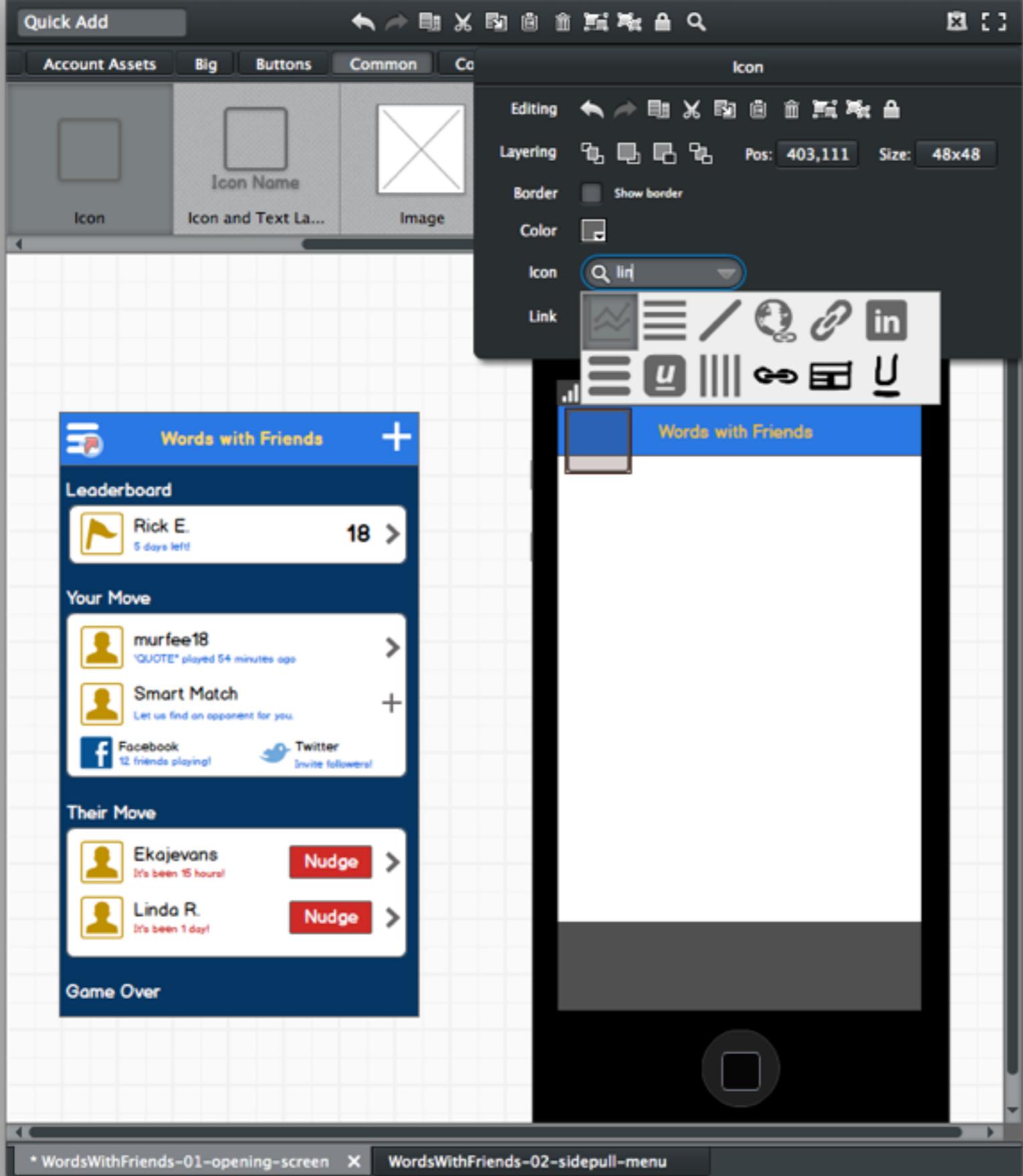
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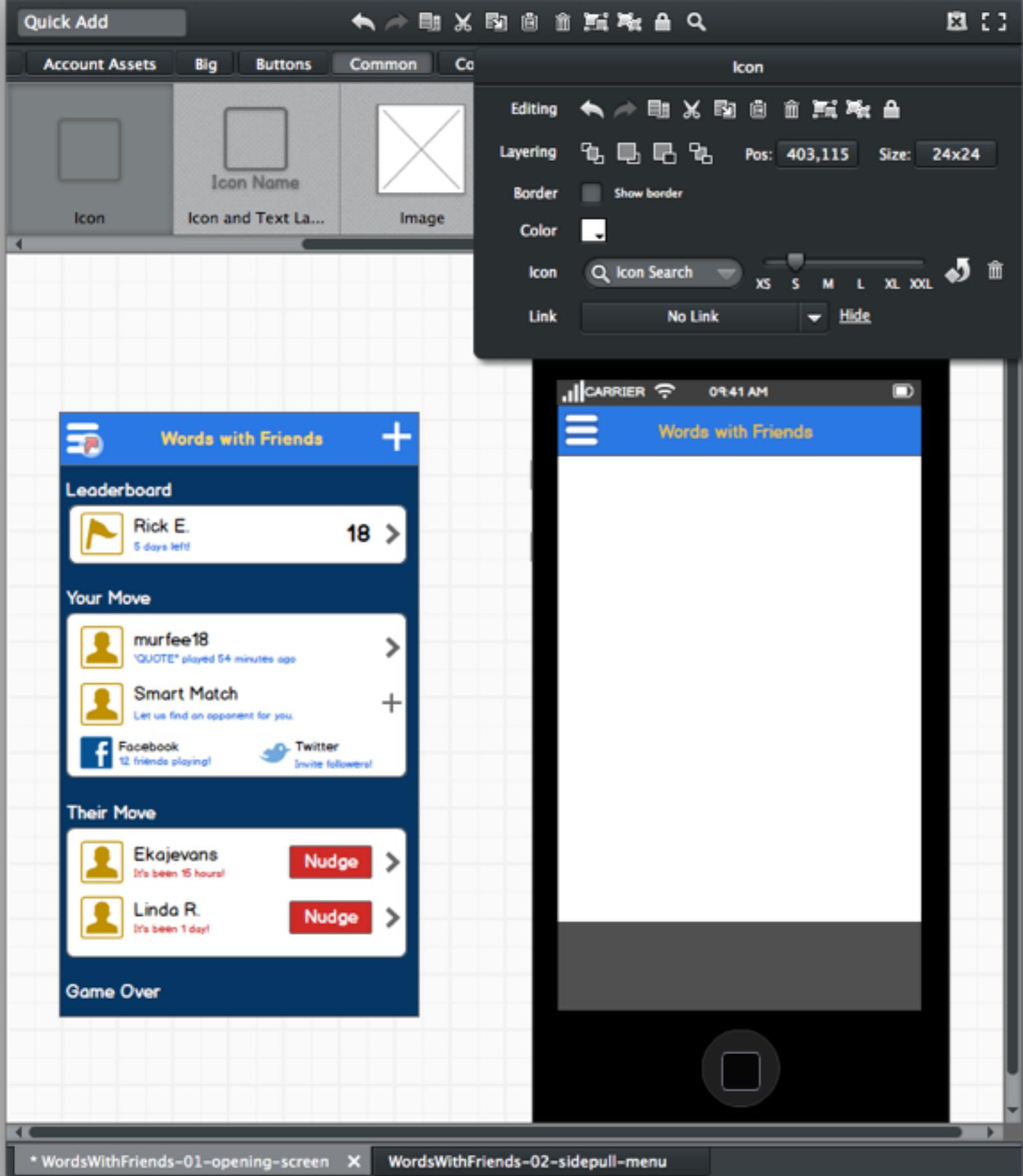
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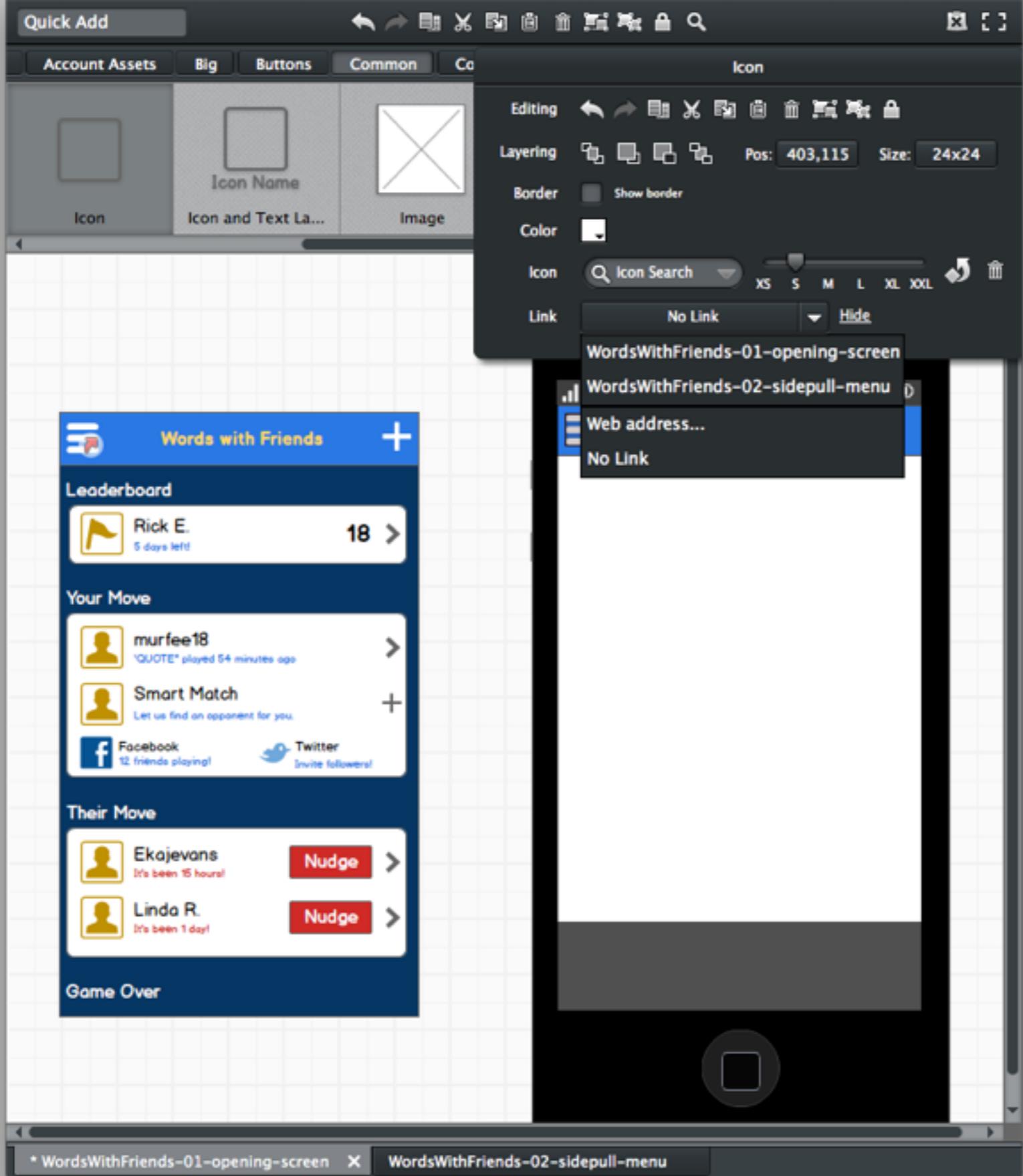
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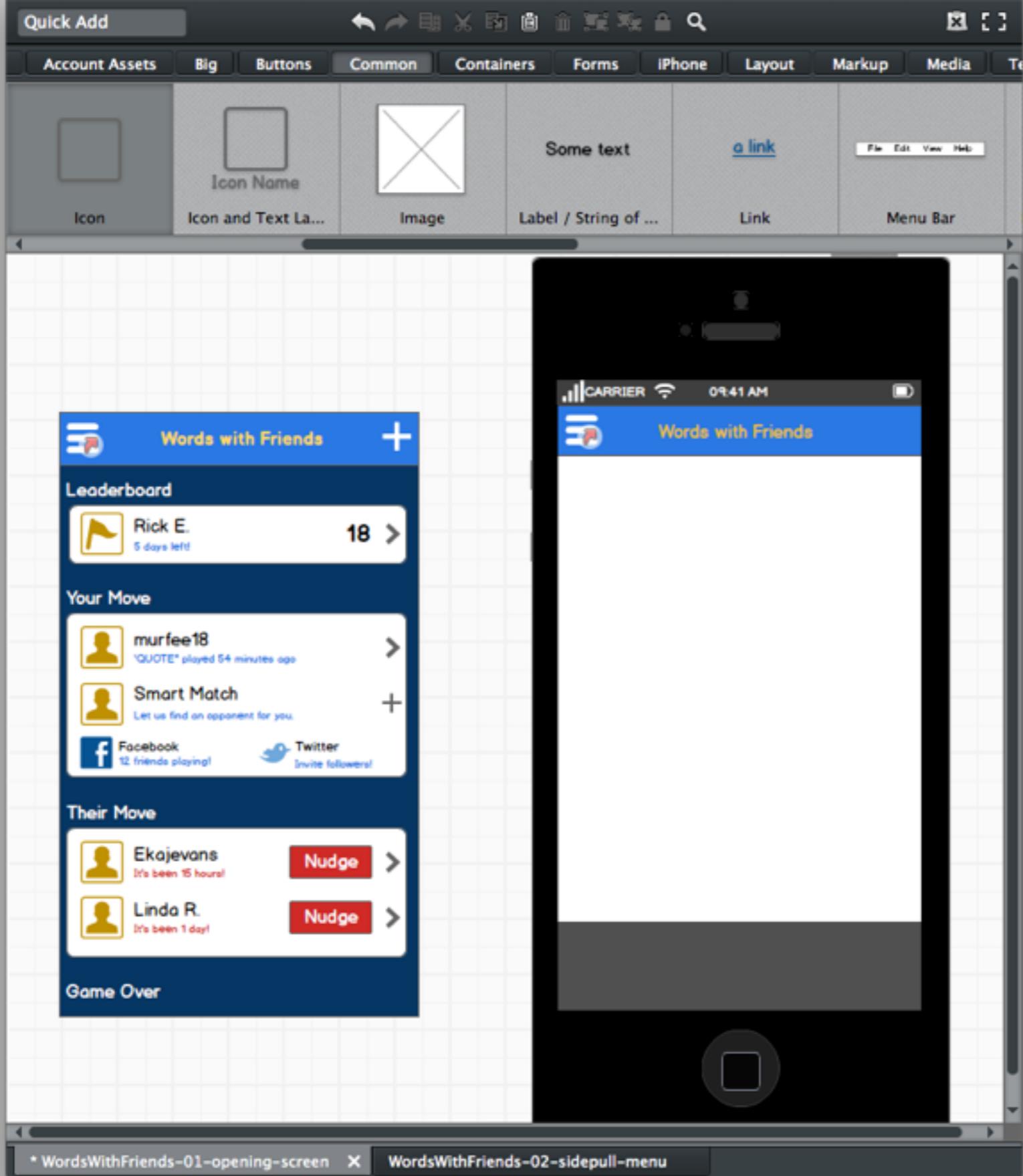
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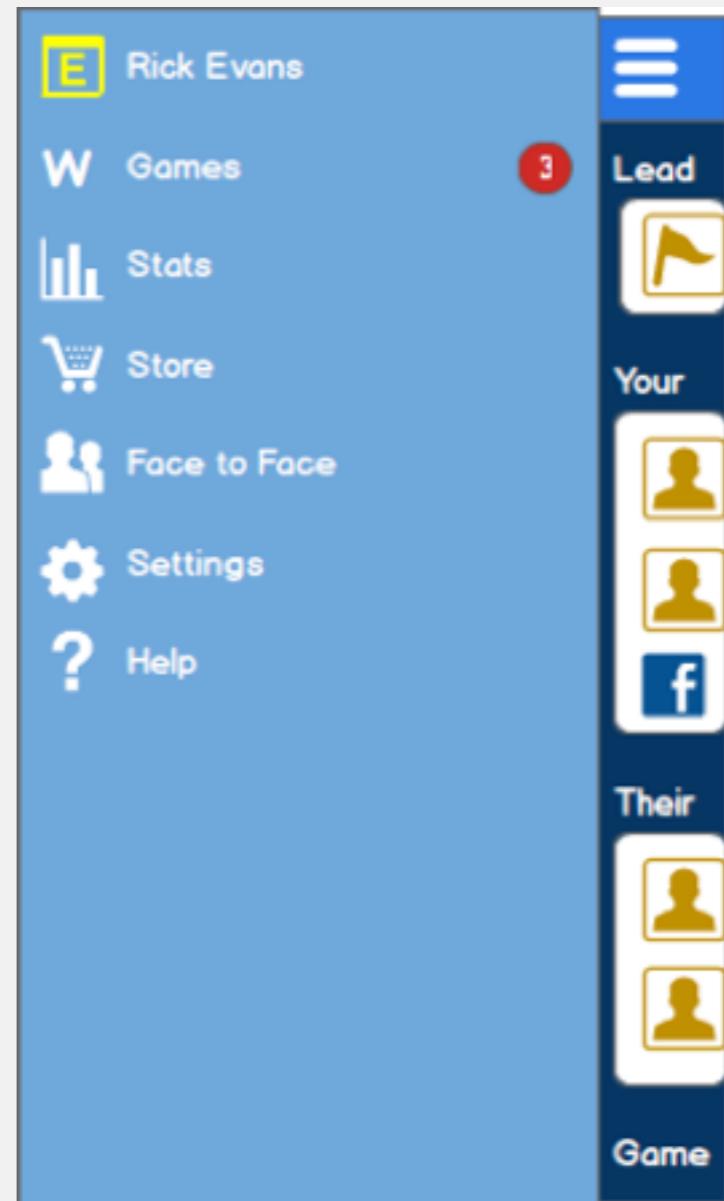
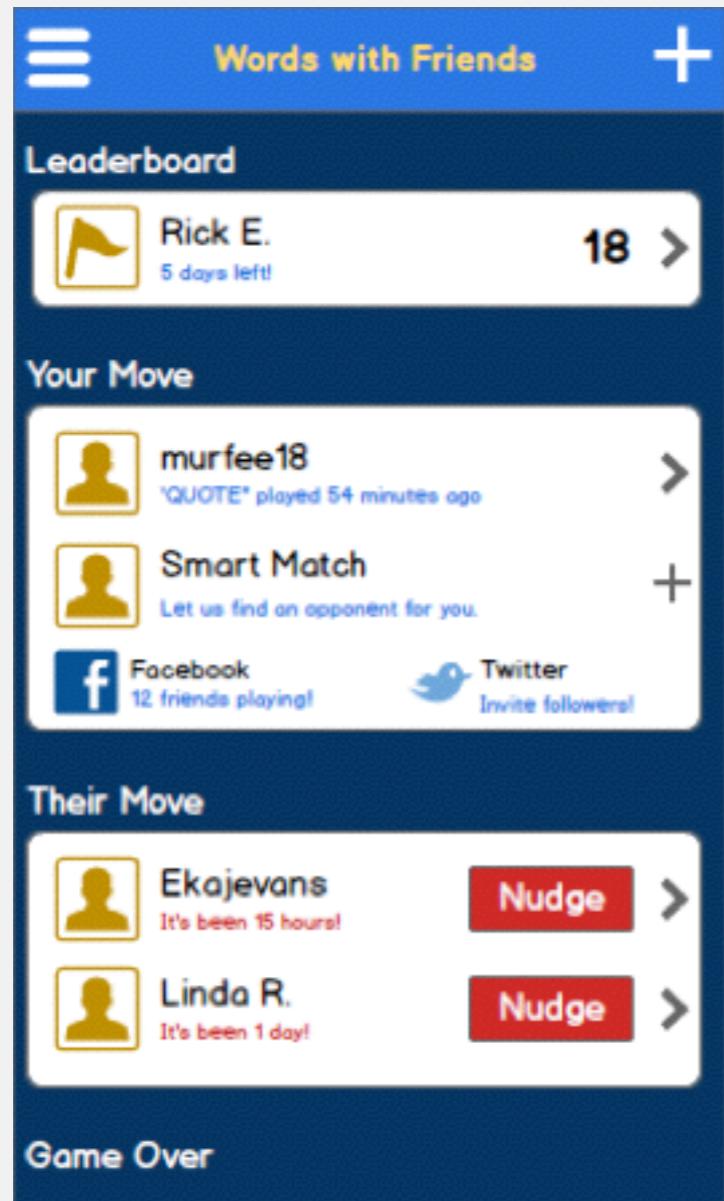
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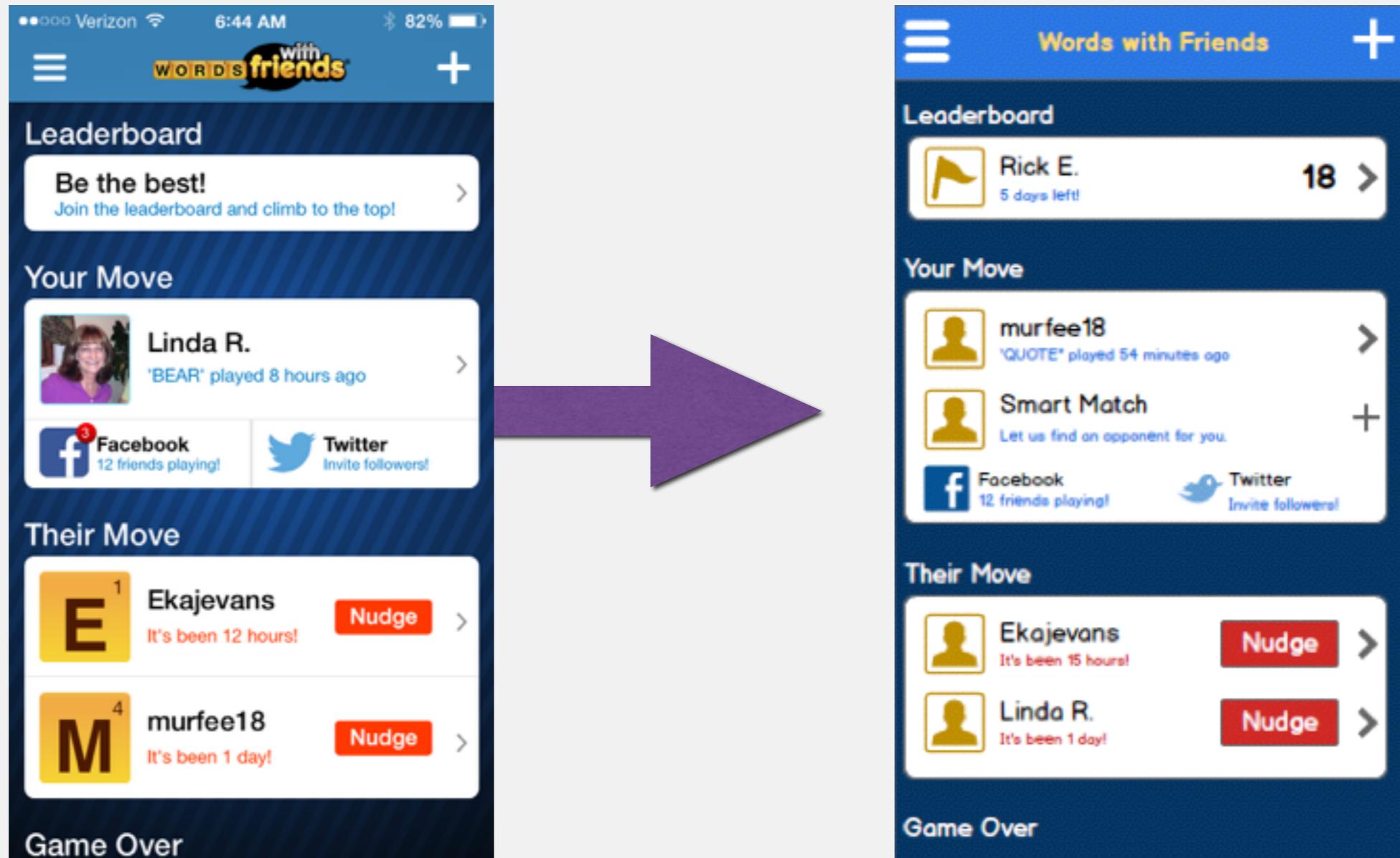
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# Balsamiq Prototype



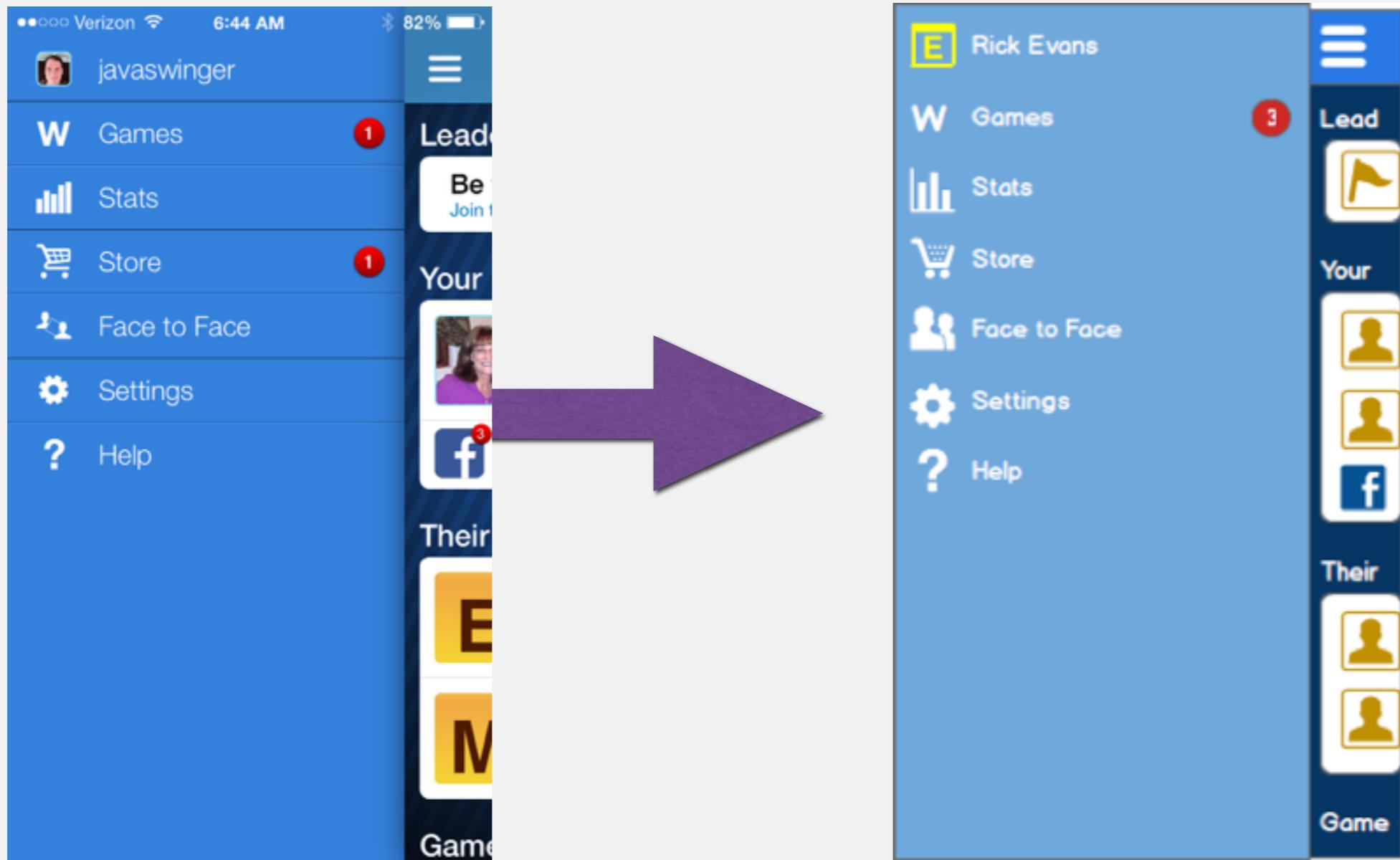
# Balsamiq Screen #1



1 Hour

RoleModel

# Balsamiq Screen #2



[Previous](#)[Next](#)[Done](#)

Option 1

Option 2

Option 3

Option 4

Thu Jul 29

11

55

Item

Item

Item

Item

Today

12

00

Sat July 31

01

05



Sun Aug 1

02

10

Mon Aug 2

03

15

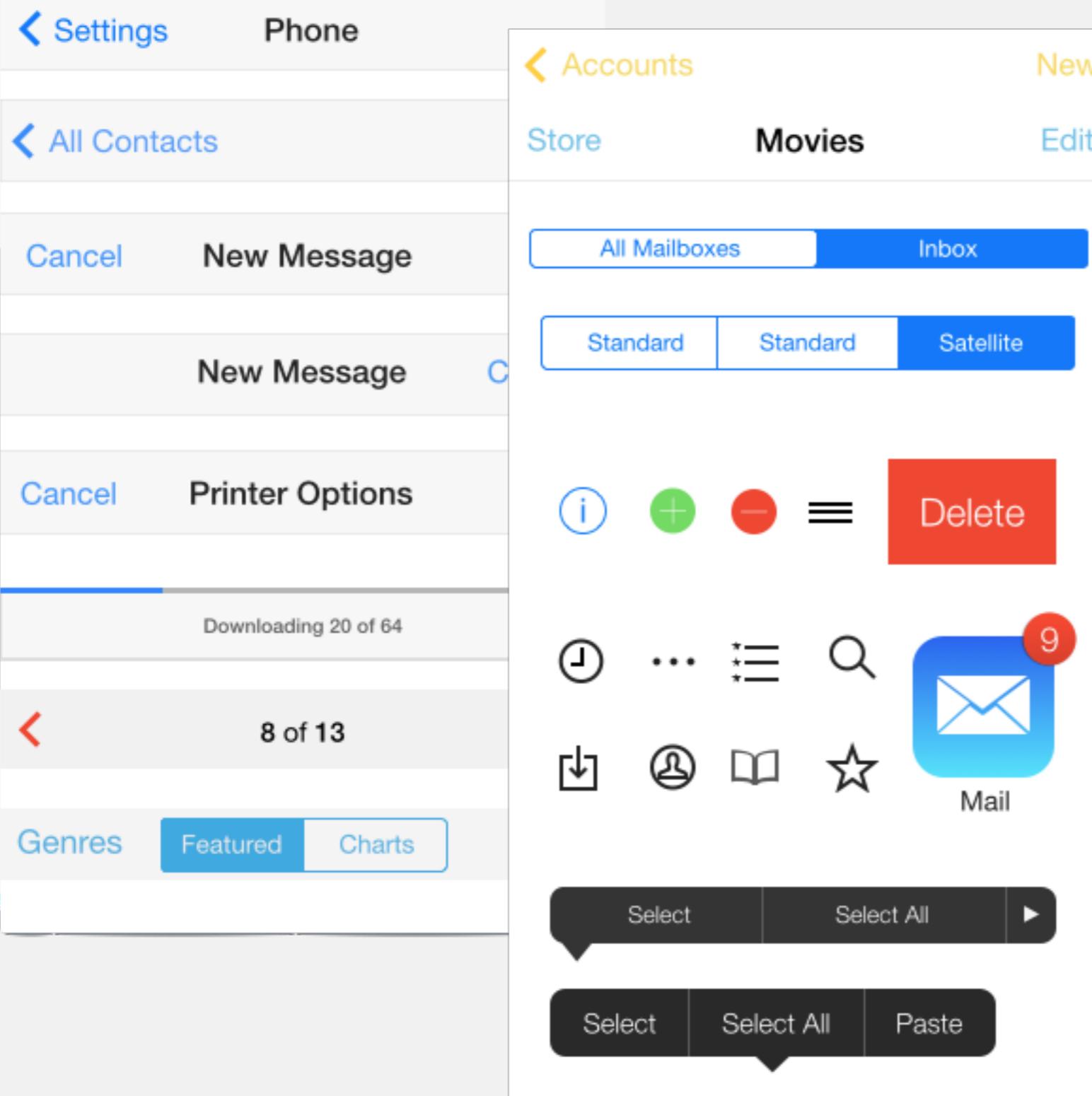
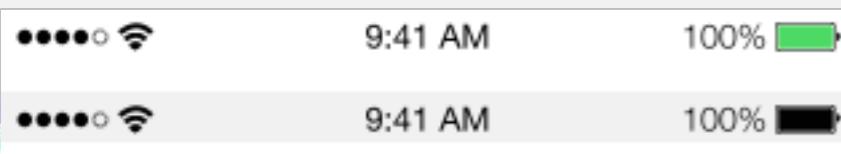
Progress...

Toolbar Label



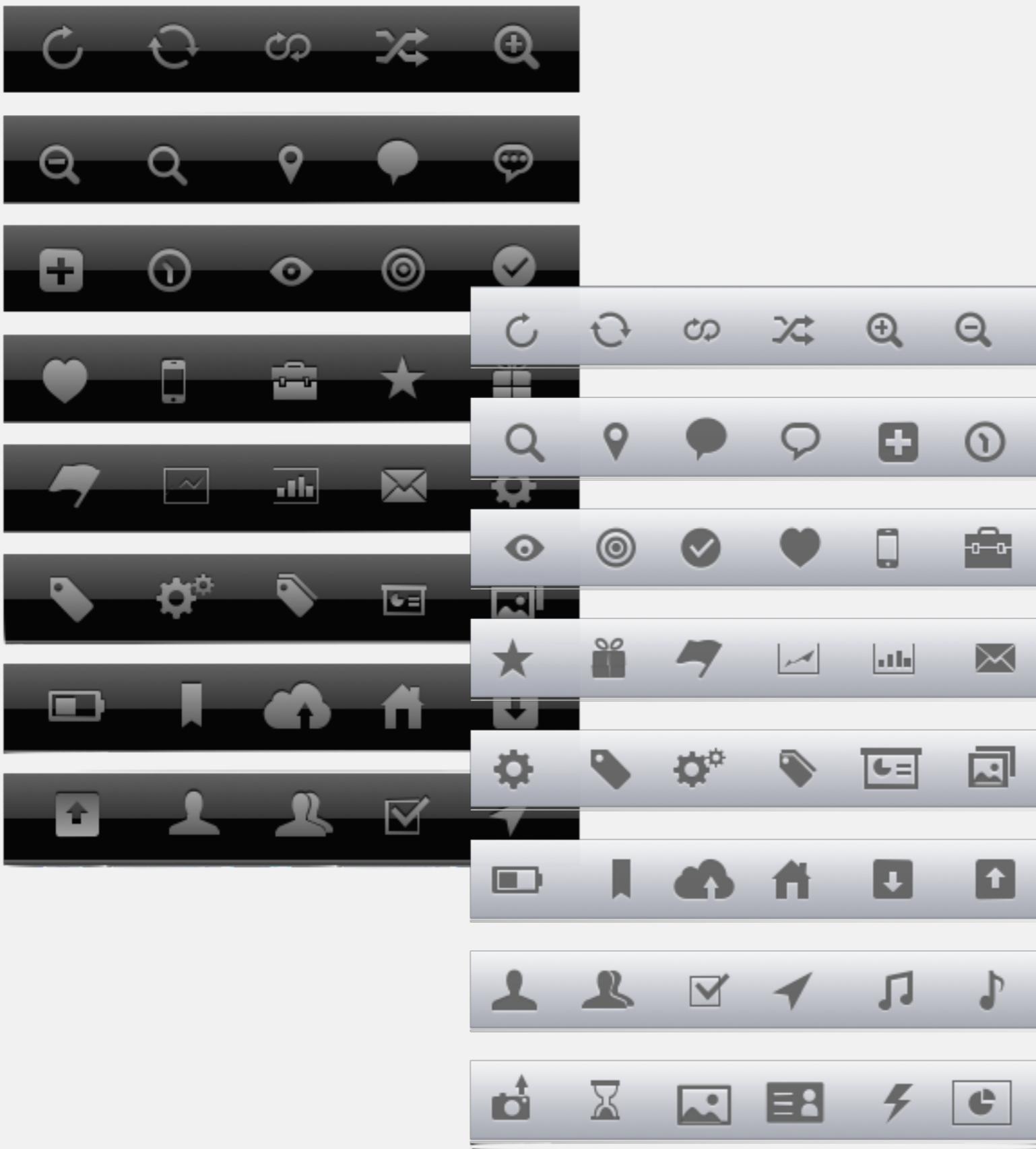
# Keynotopia

- iPhone wireframes
- iOS 7 templates
- iPhone icons



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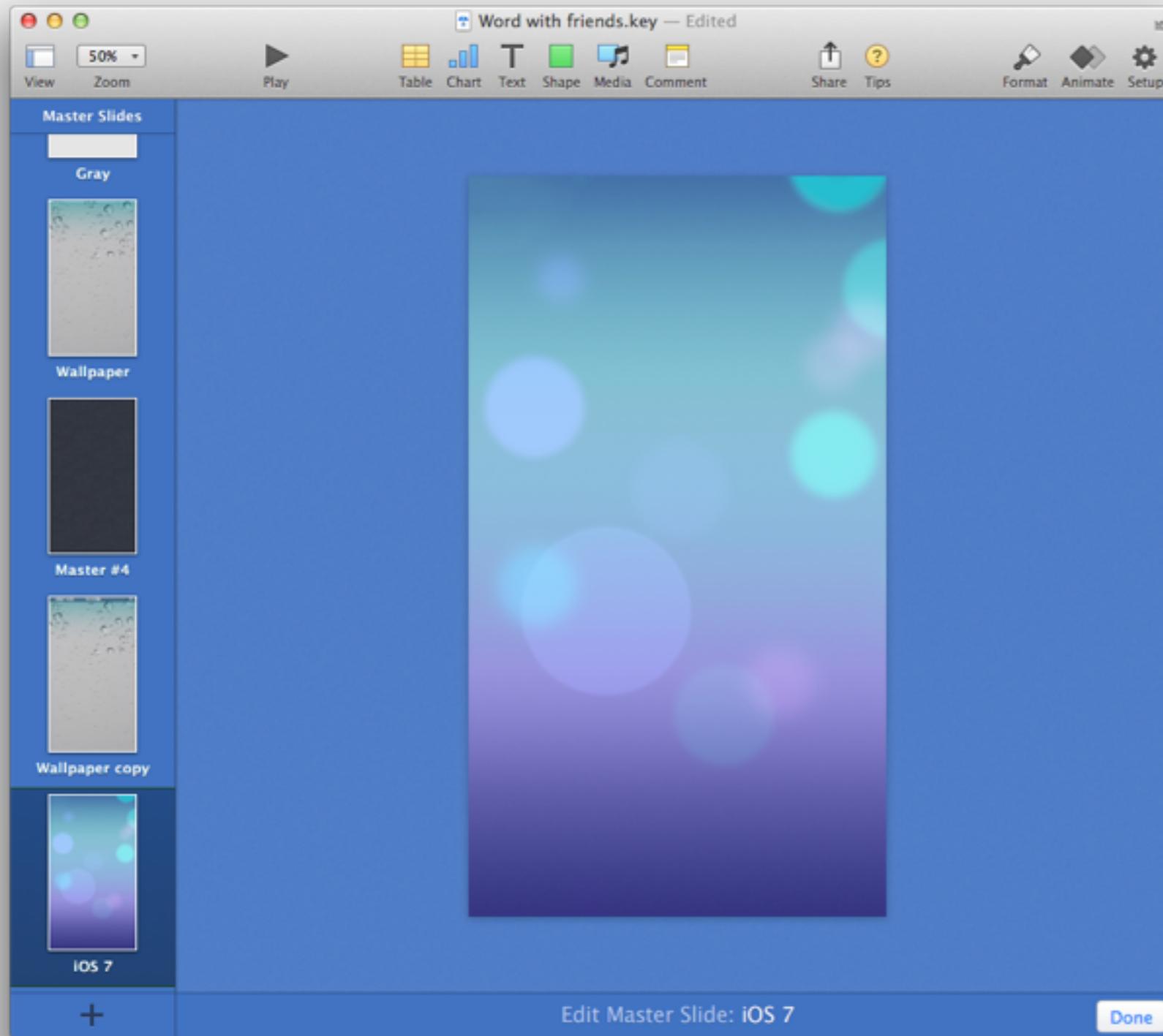
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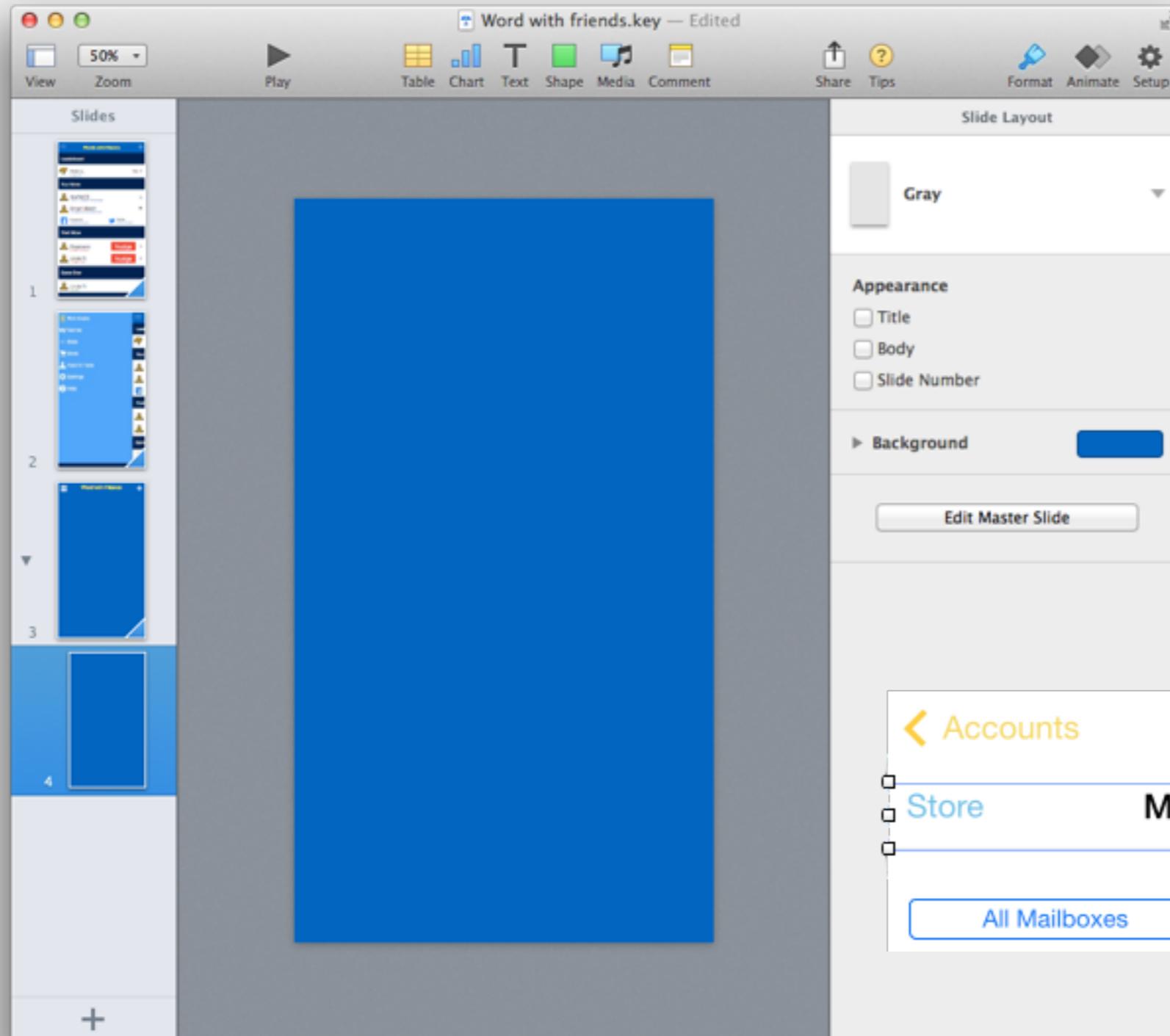
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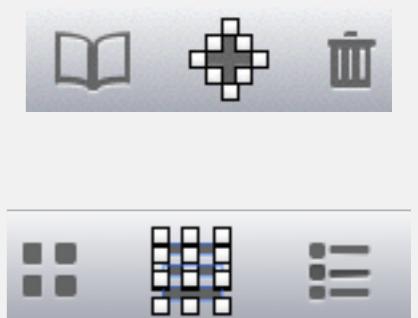


- iPhone master
- iOS controls
- Shapes
- Text
- Links

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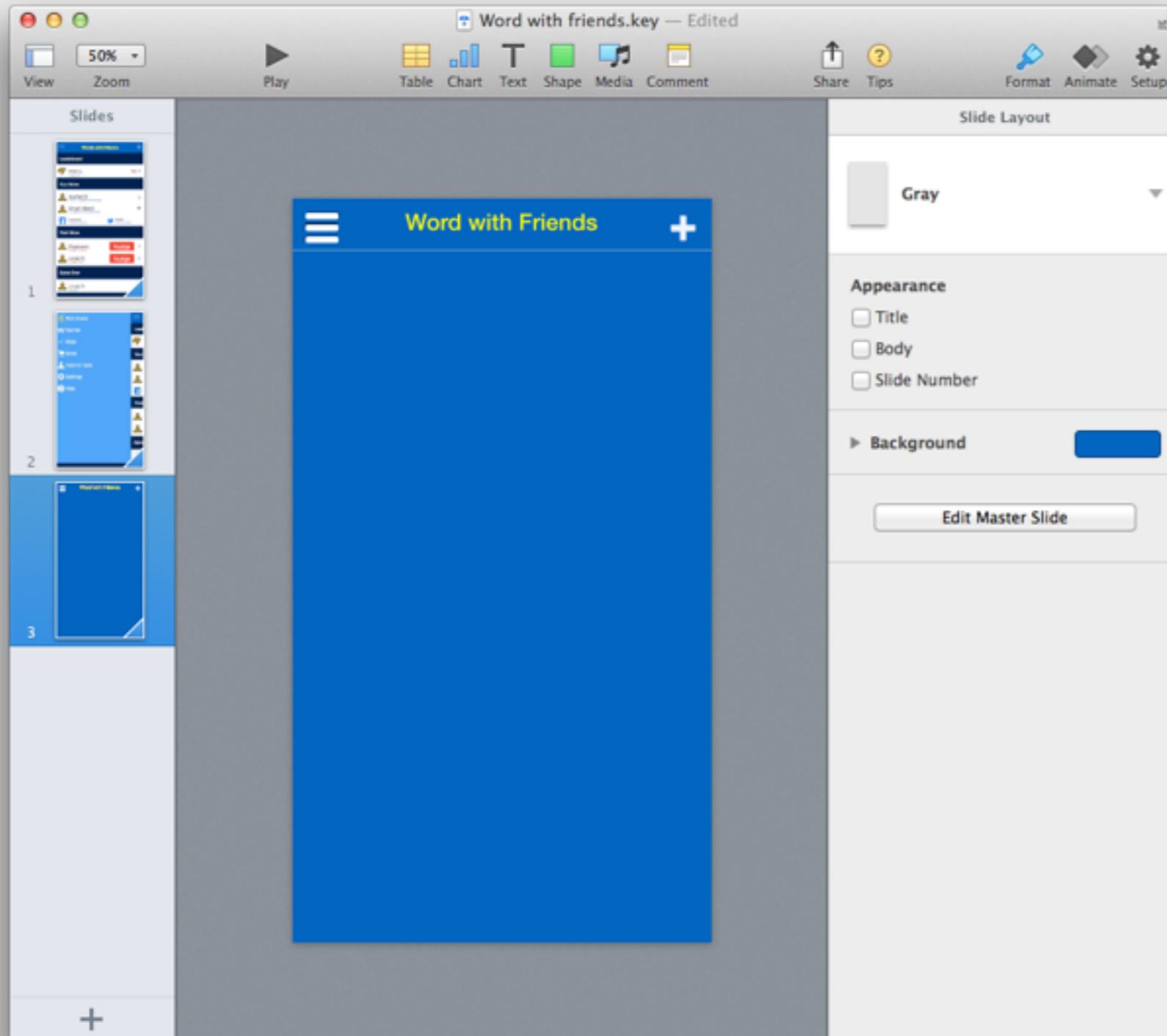


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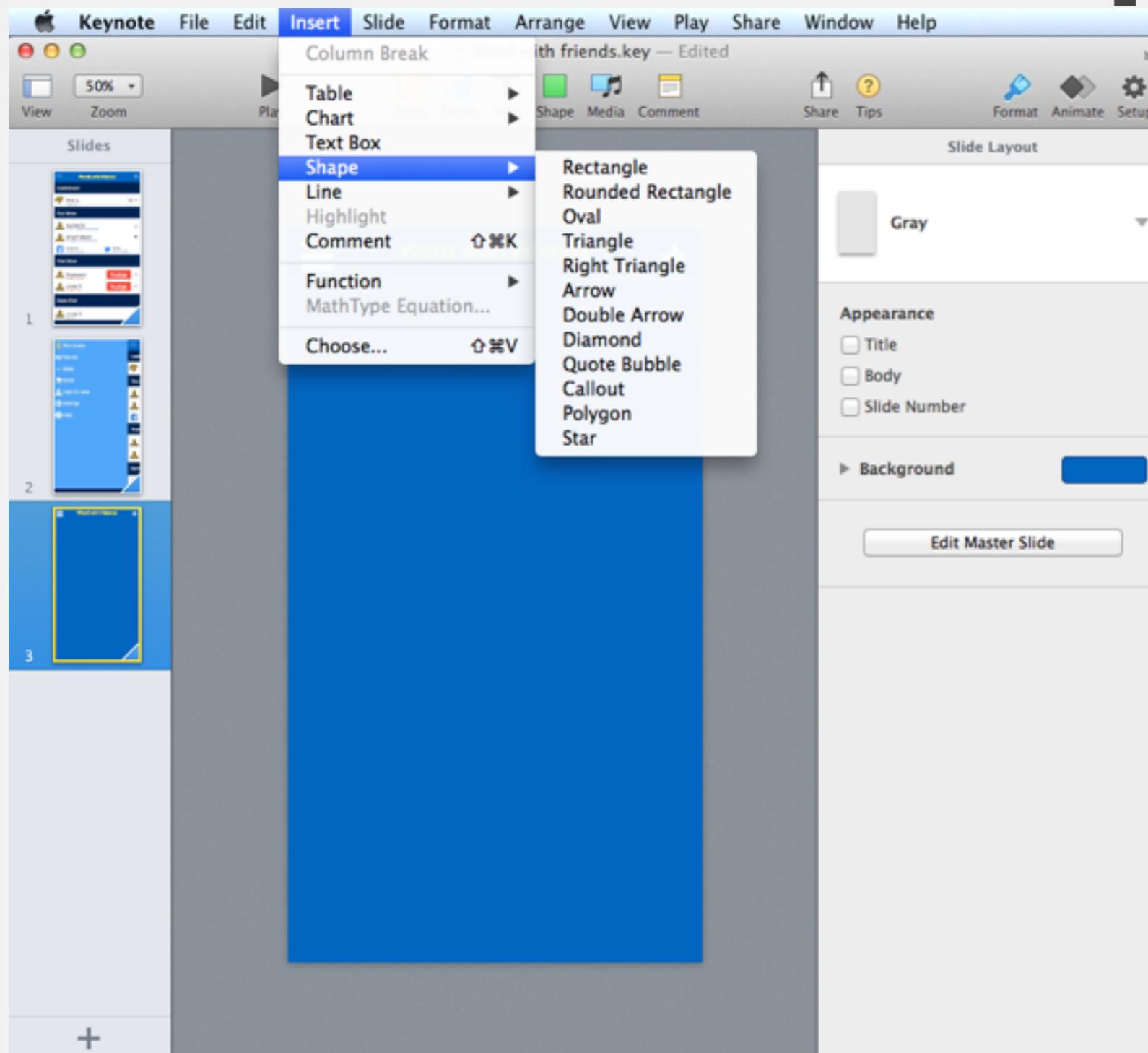
RoleModel

# Keynotopia



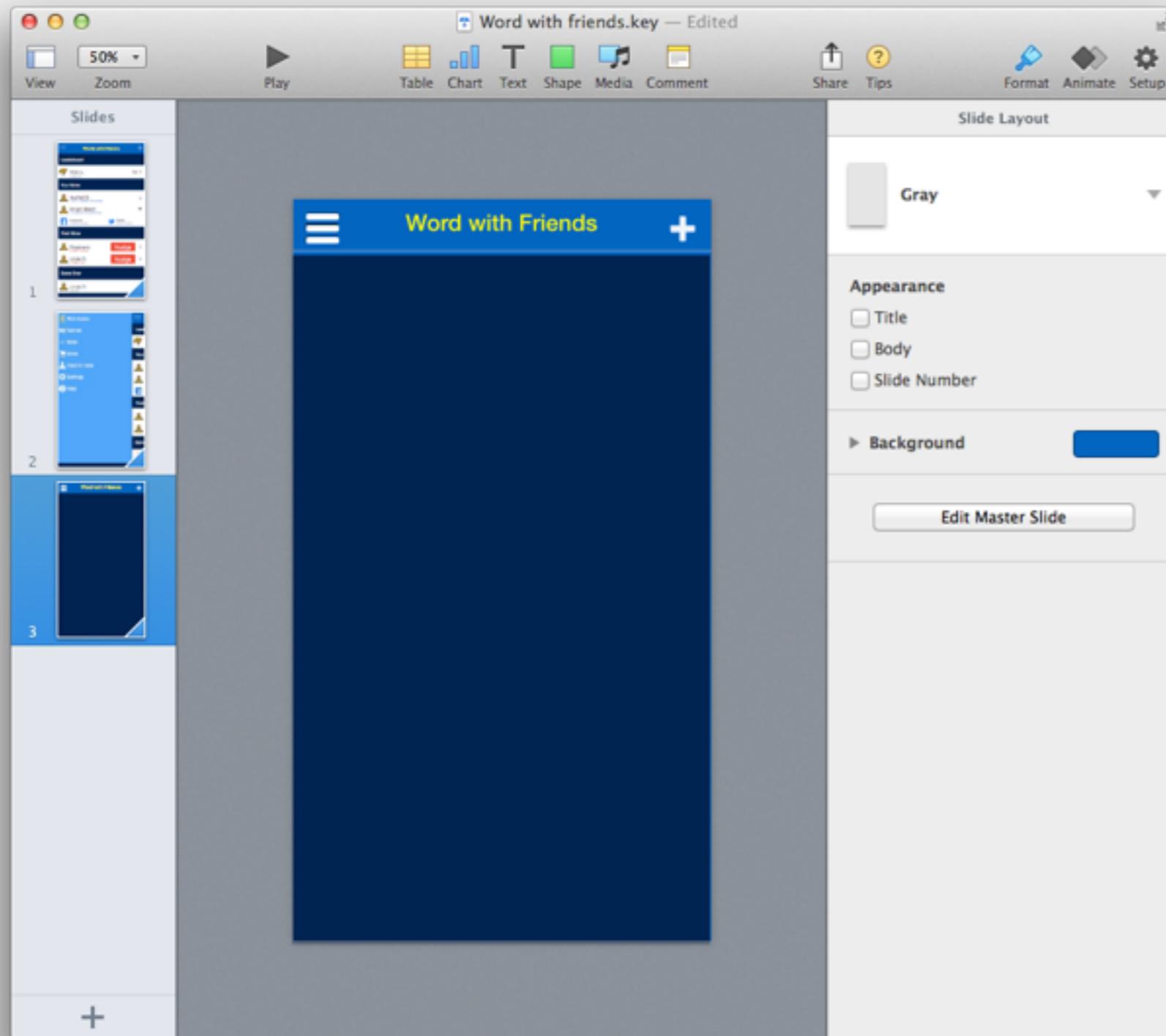
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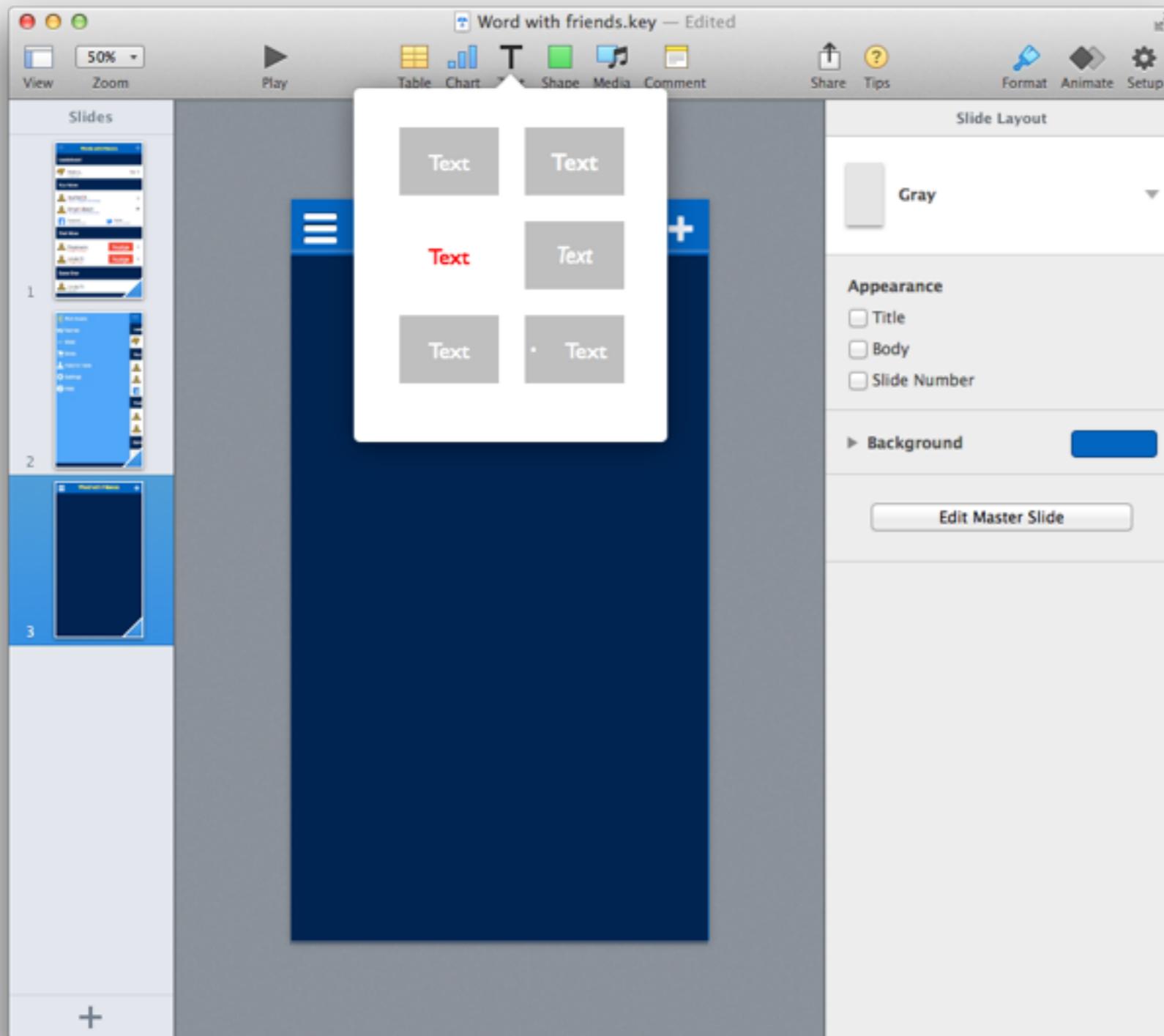
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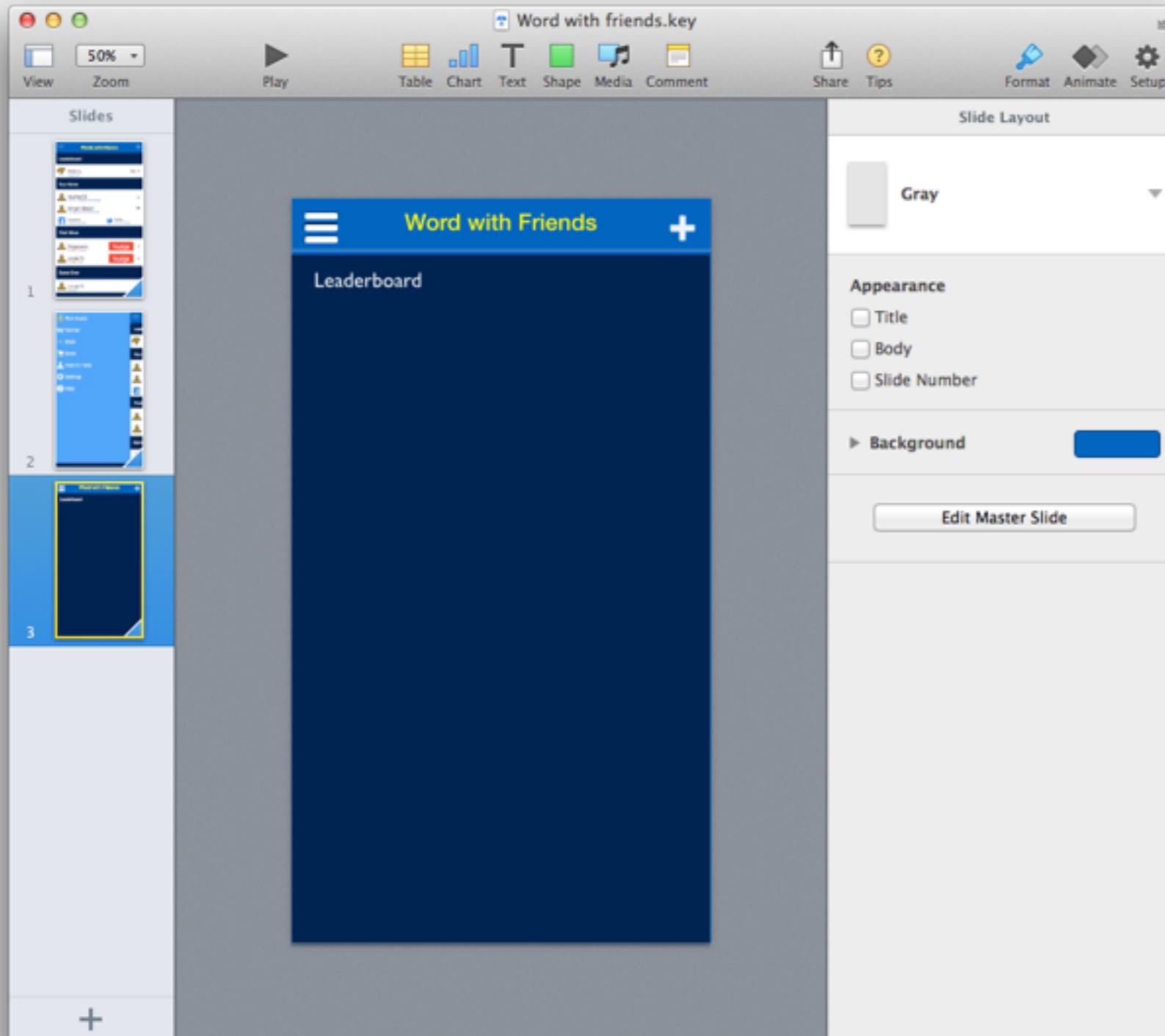
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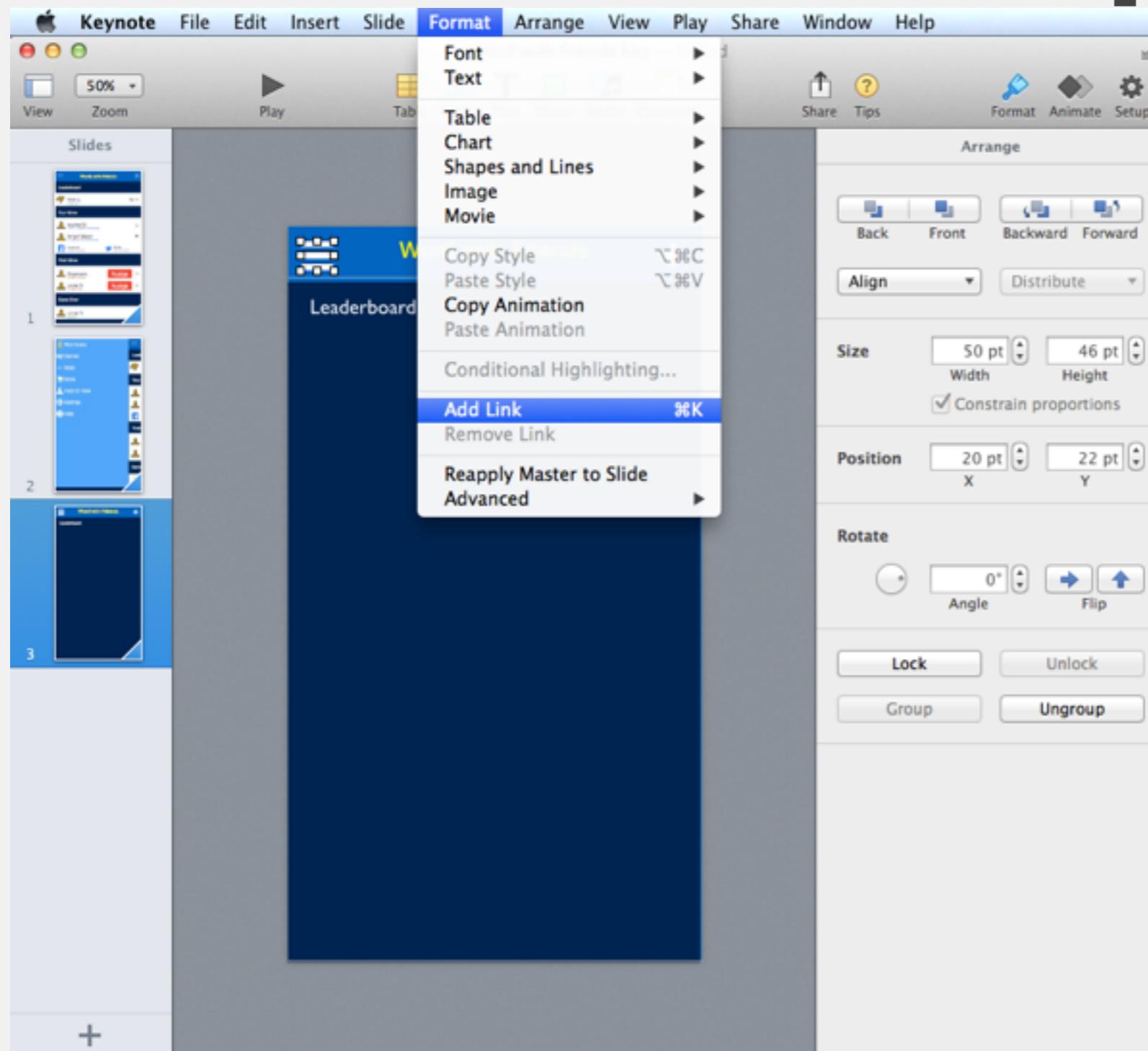
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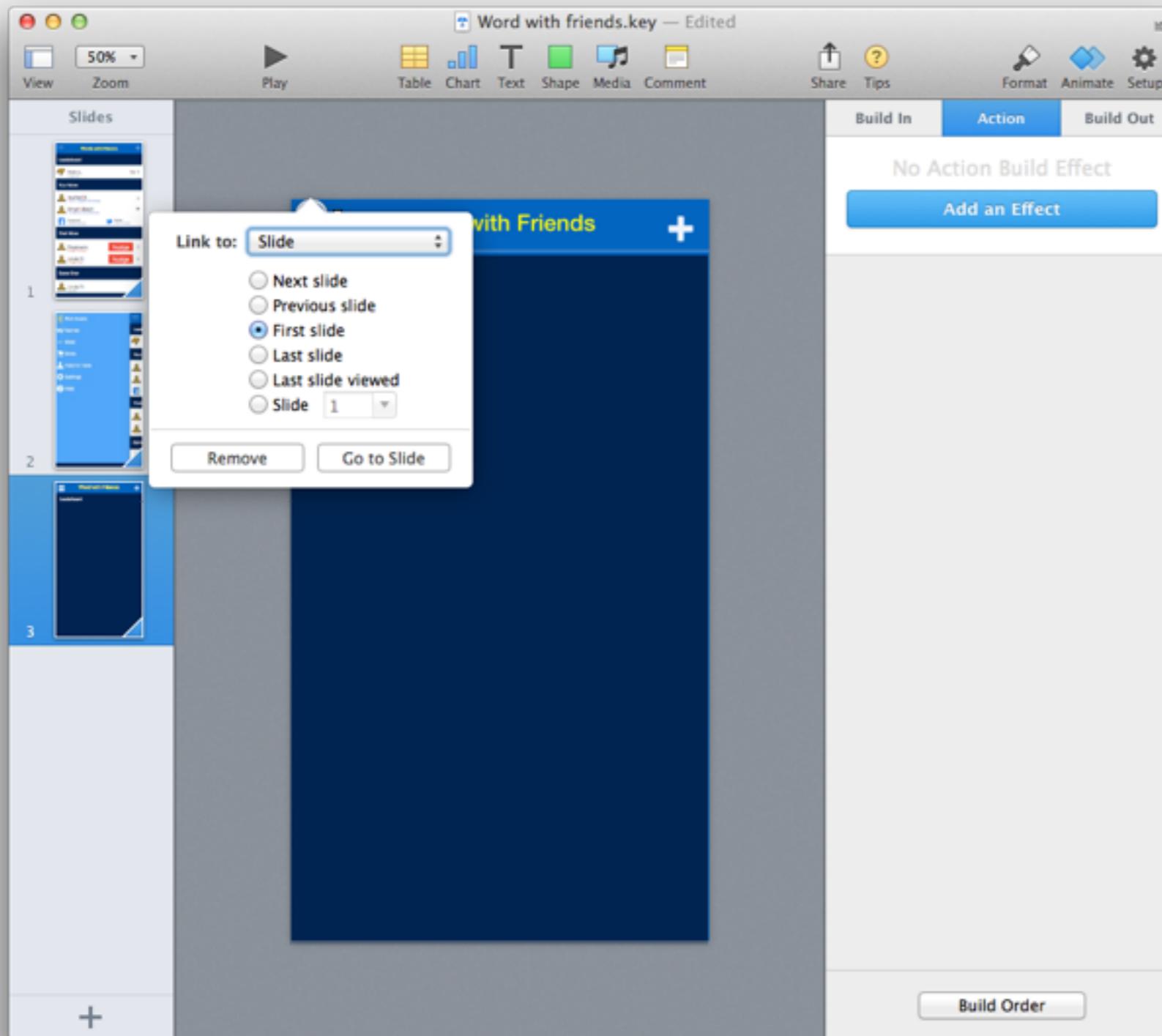
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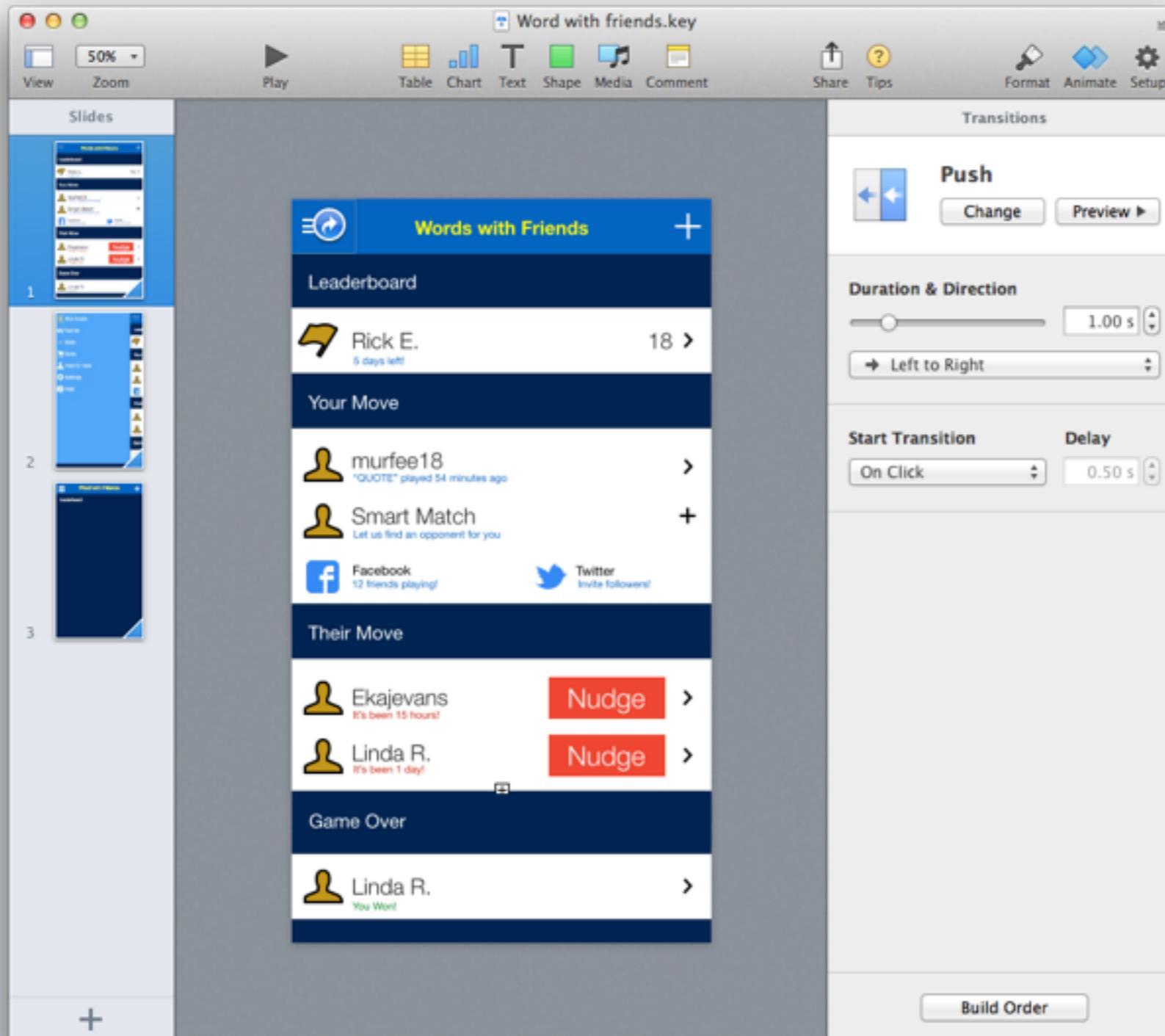
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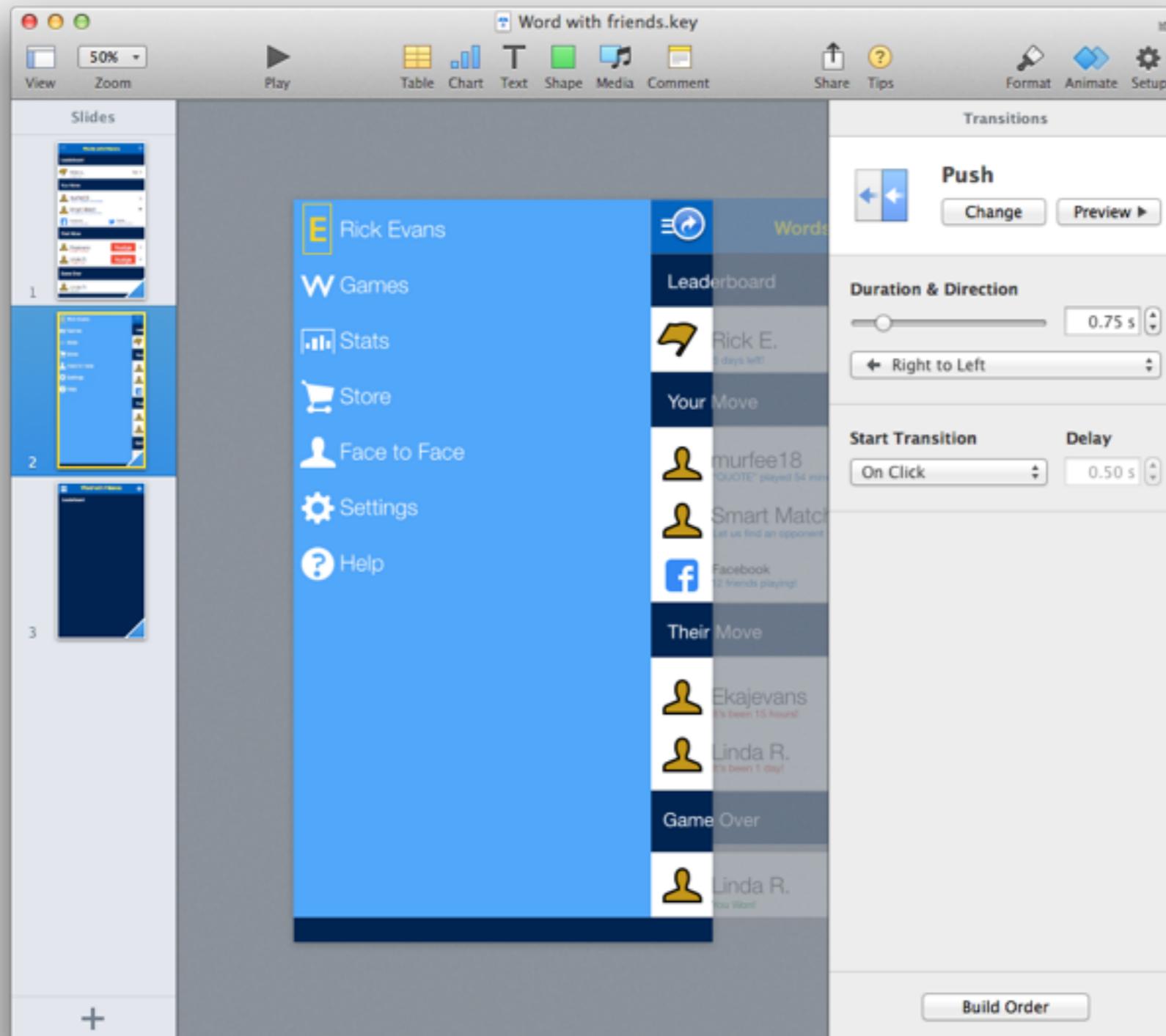
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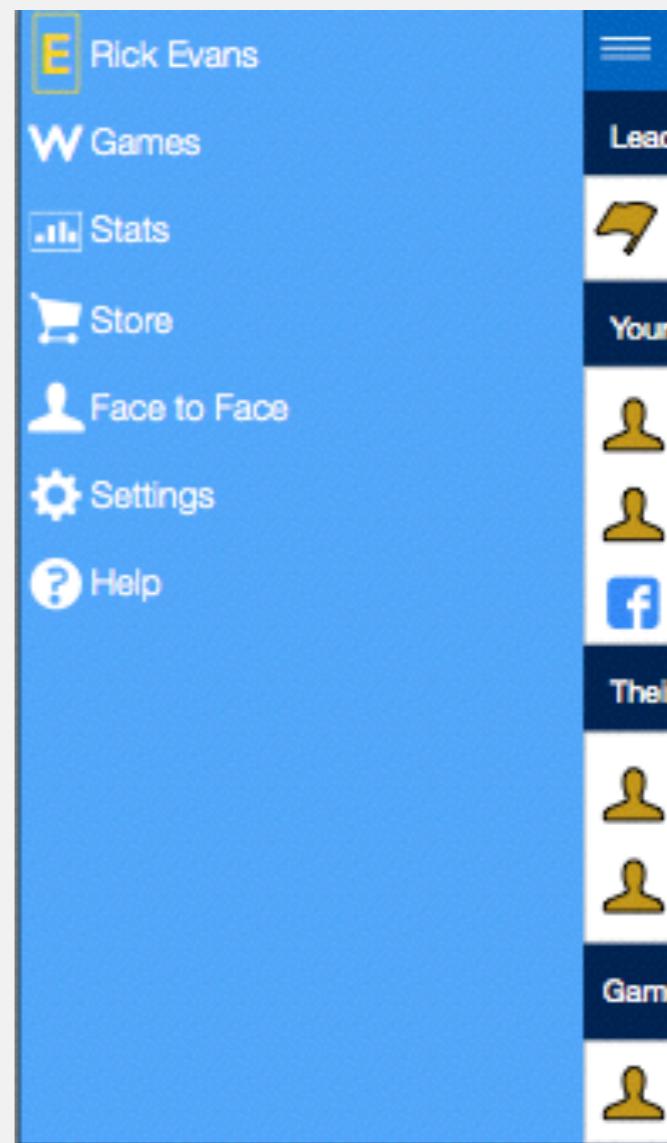
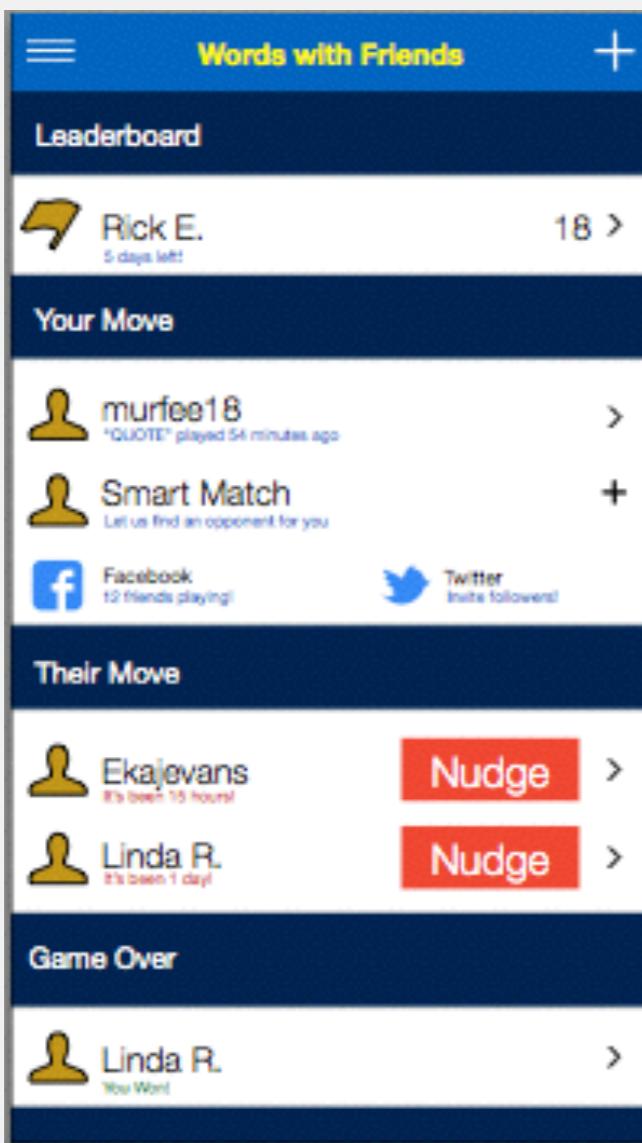
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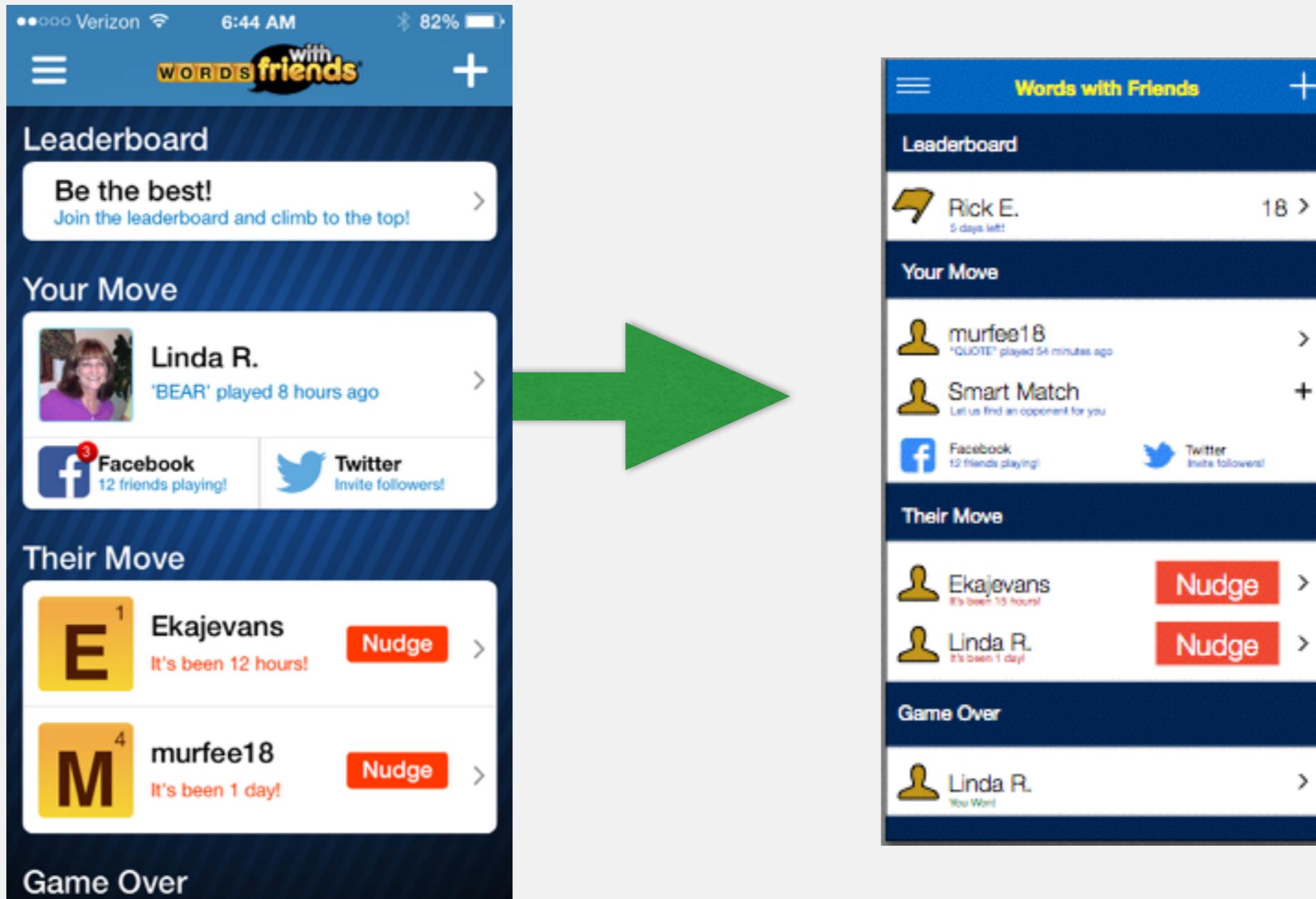
# Keynotopia Prototype



1 Hour

RoleModel

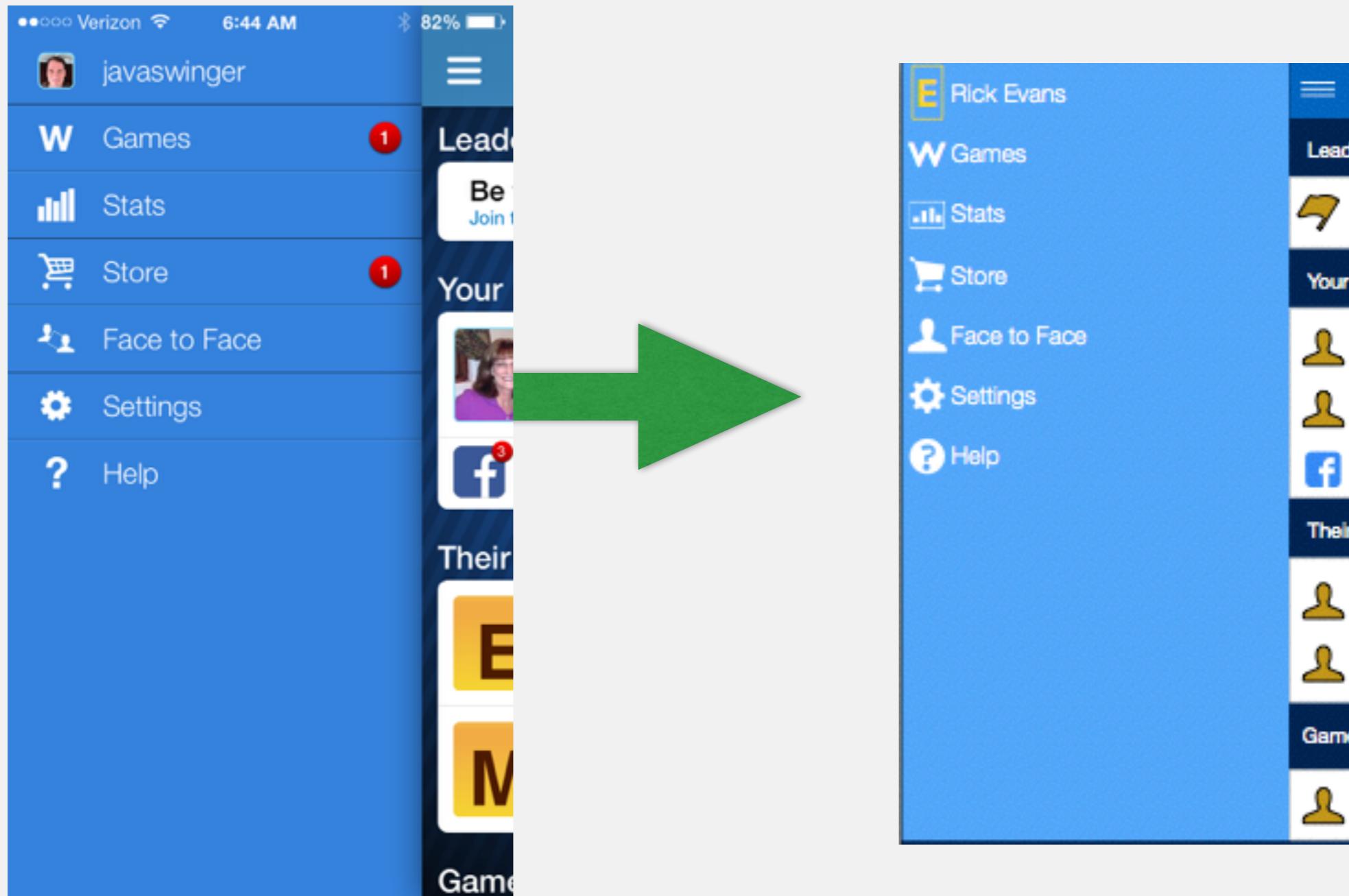
# Keynotopia Prototype #1

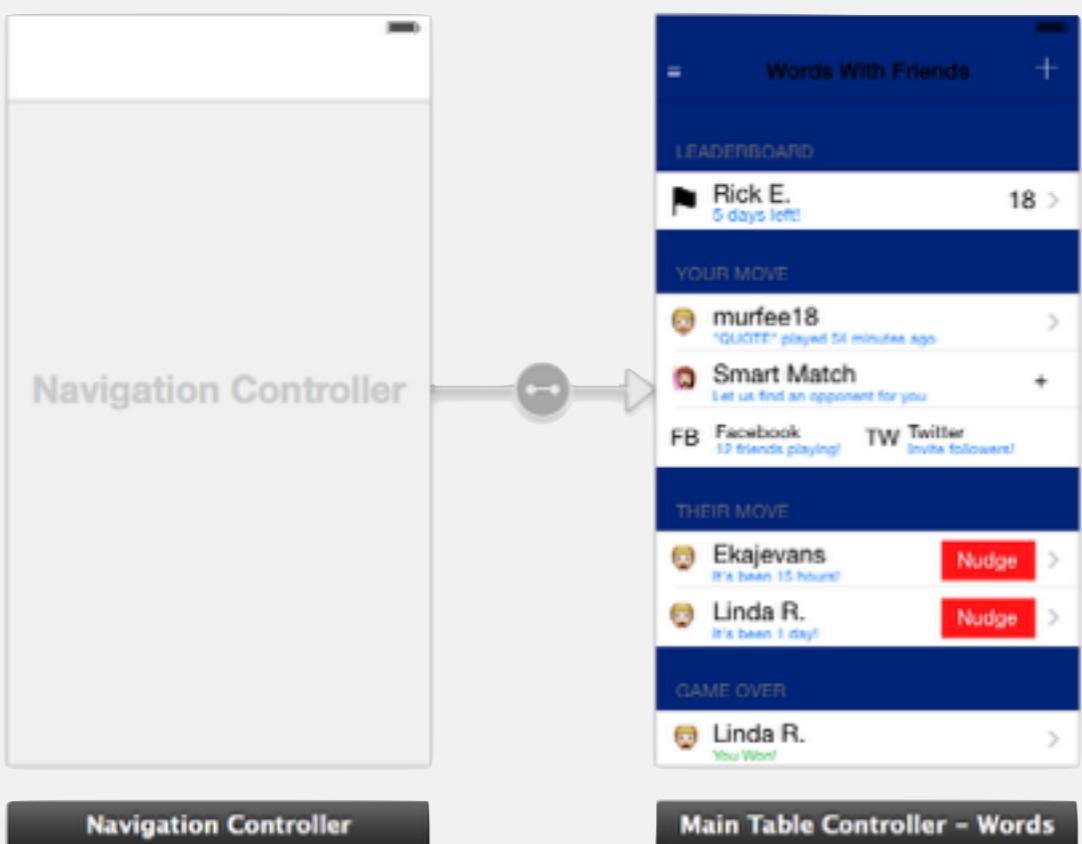
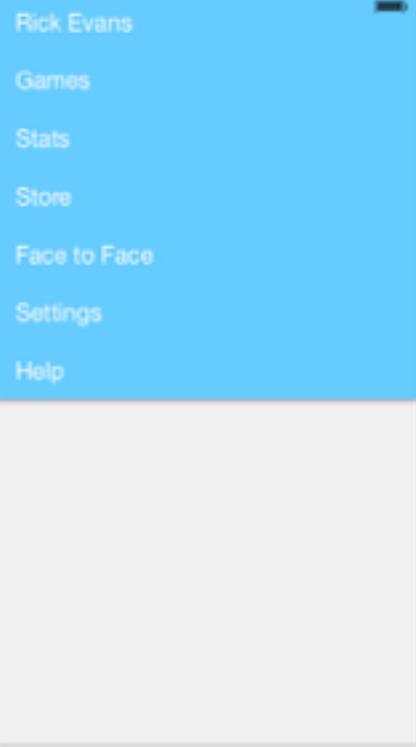


1 Hour

RoleModel

# Keynotopia Prototype #2



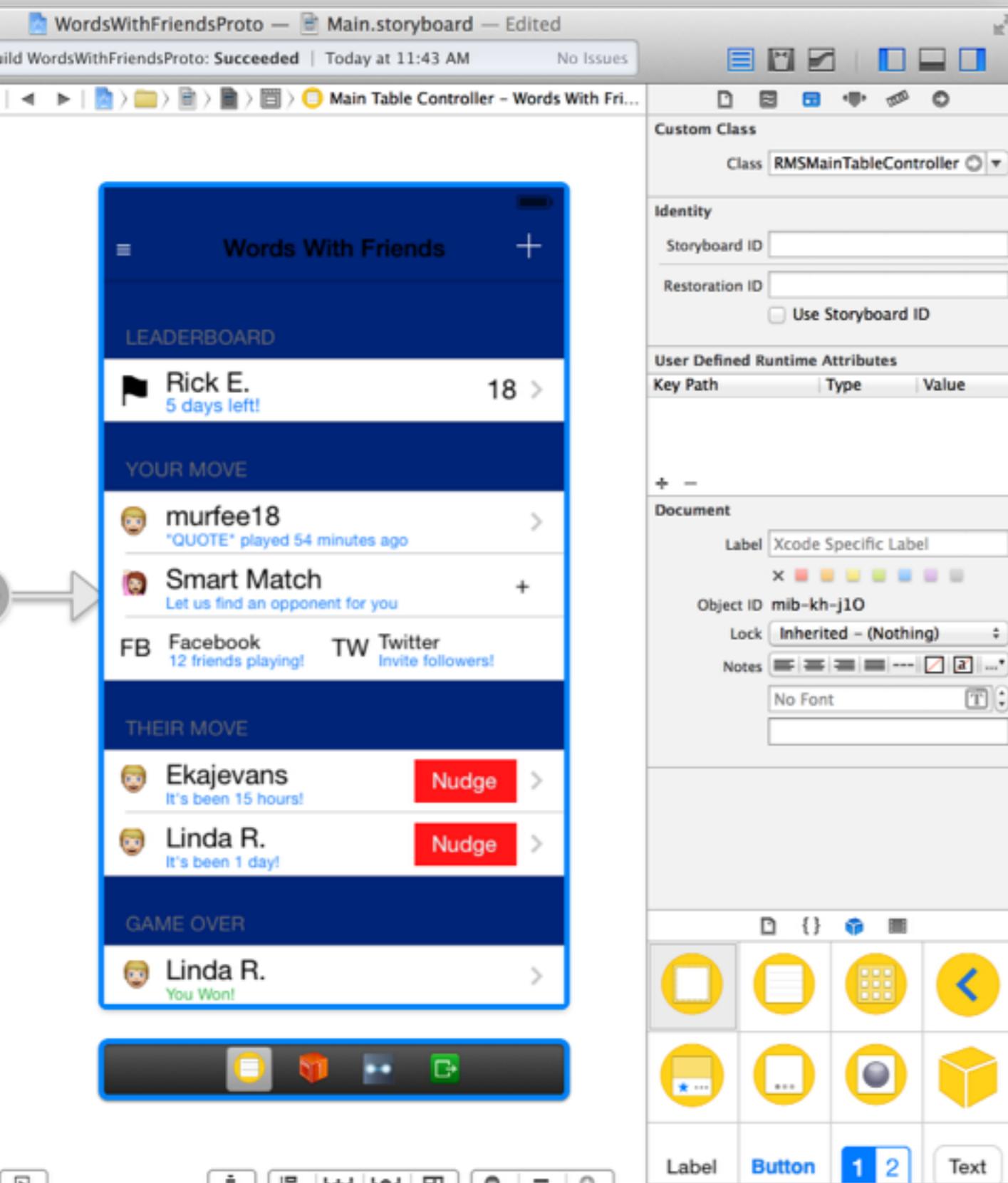


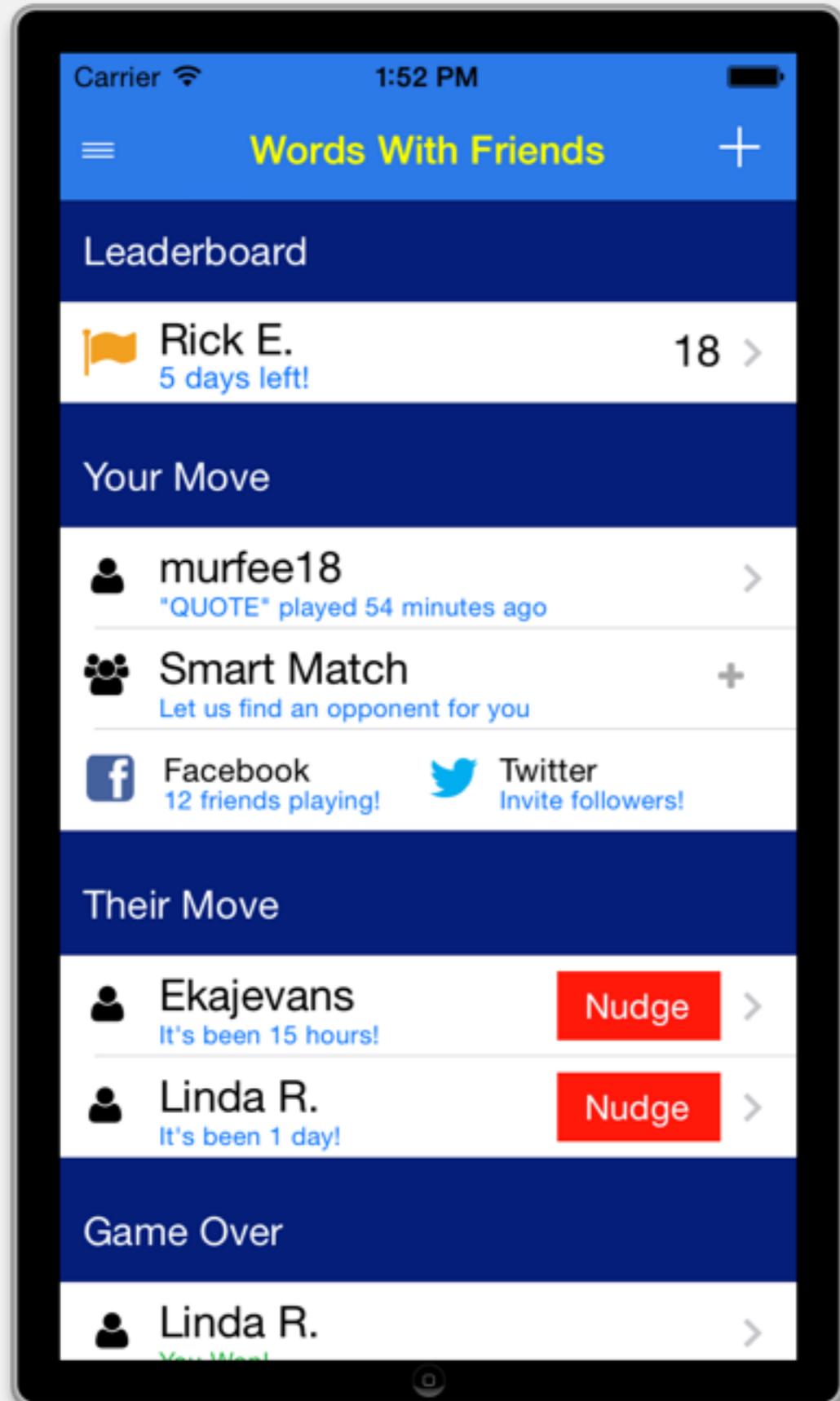
# Xcode

- Storyboard uses
- Storyboard gotchas
- Slide out menu
- Objective-C tips

# Xcode

- Storyboard uses
  - static tables
  - segues
  - gestures
- Storyboard gotchas
  - Slide out menu
  - Objective-C tips



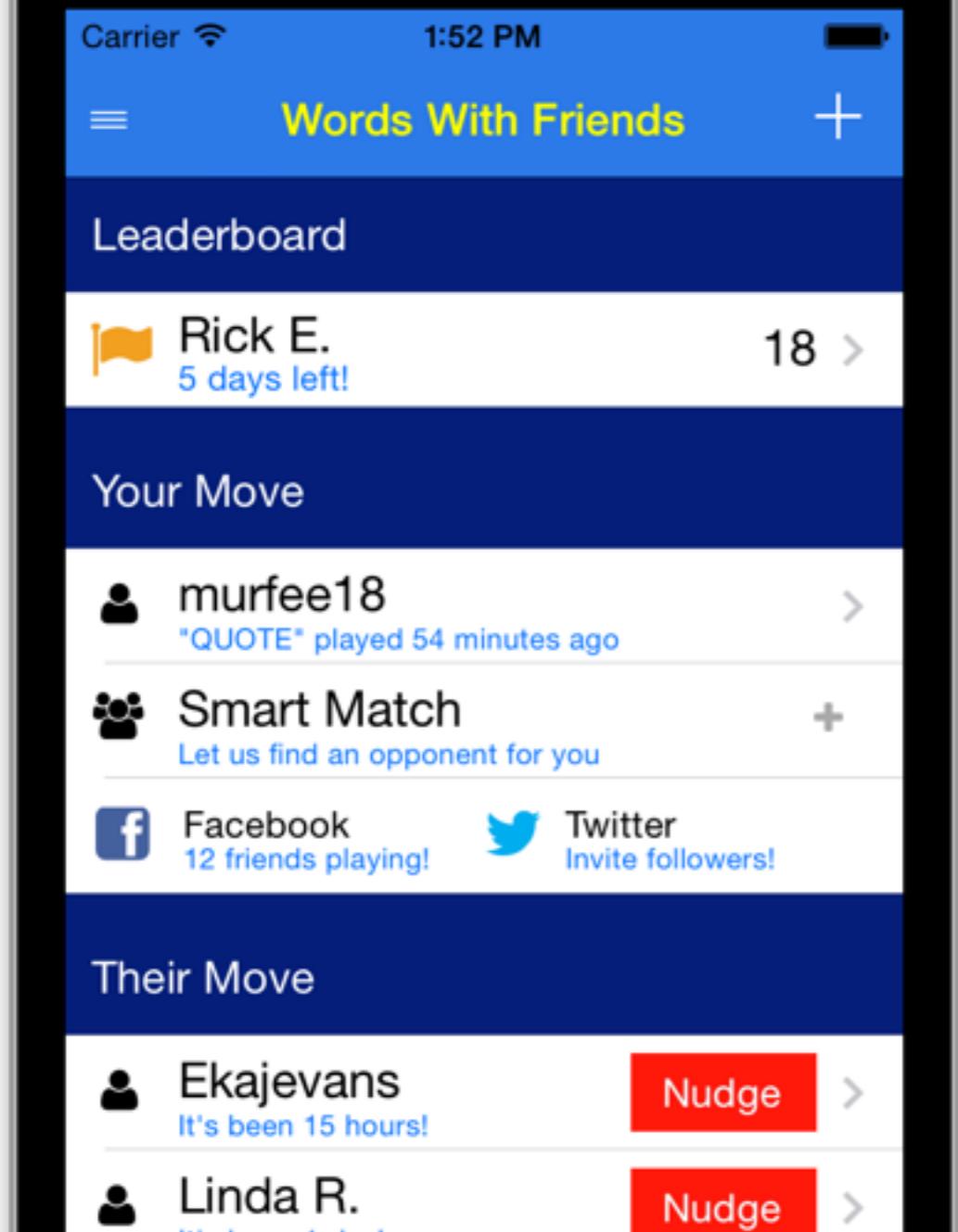


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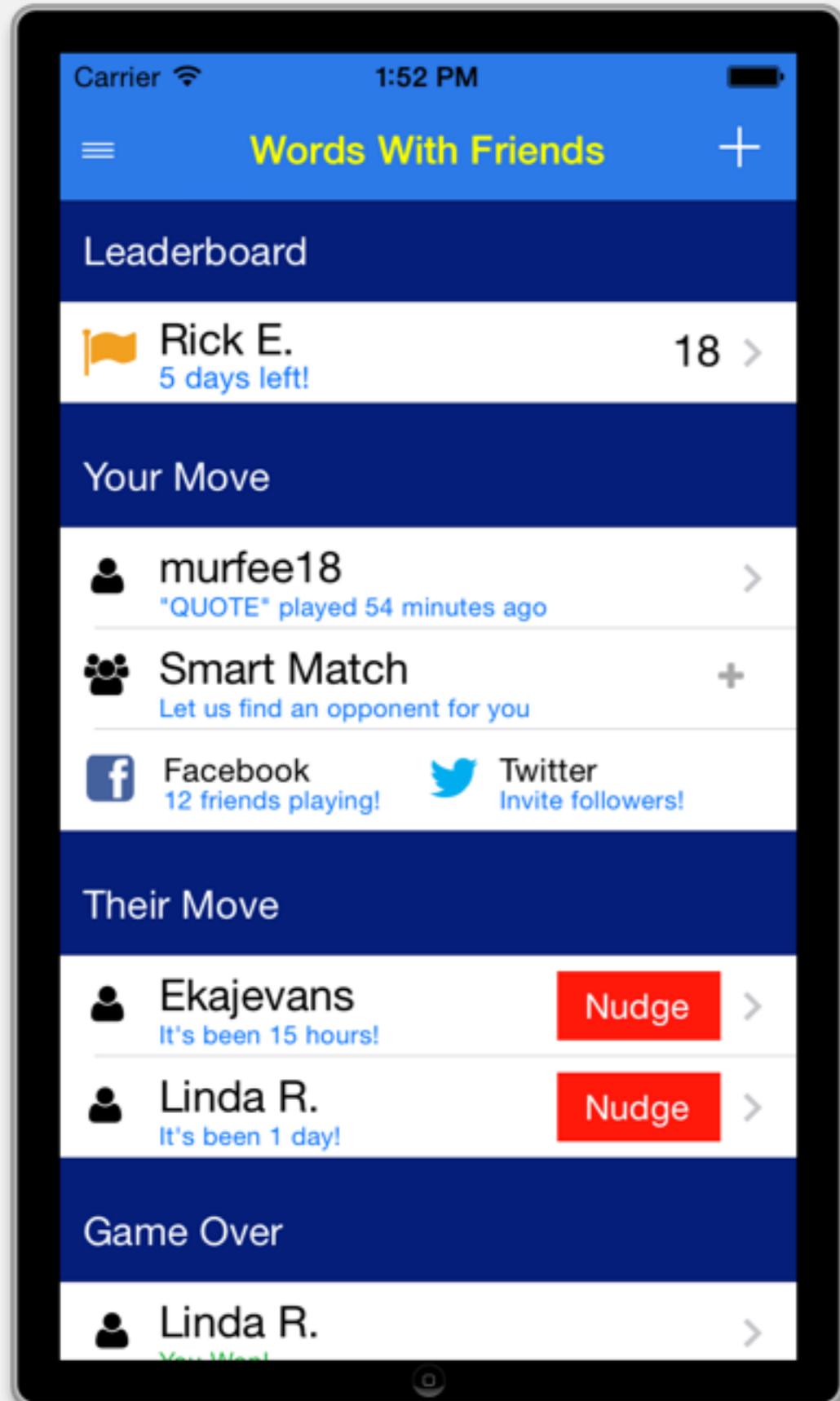
- Storyboard uses
- Storyboard gotchas
  - navigation icons
  - title text color
  - section text color
  - table cell icons
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# Xcode

- Storyboard uses
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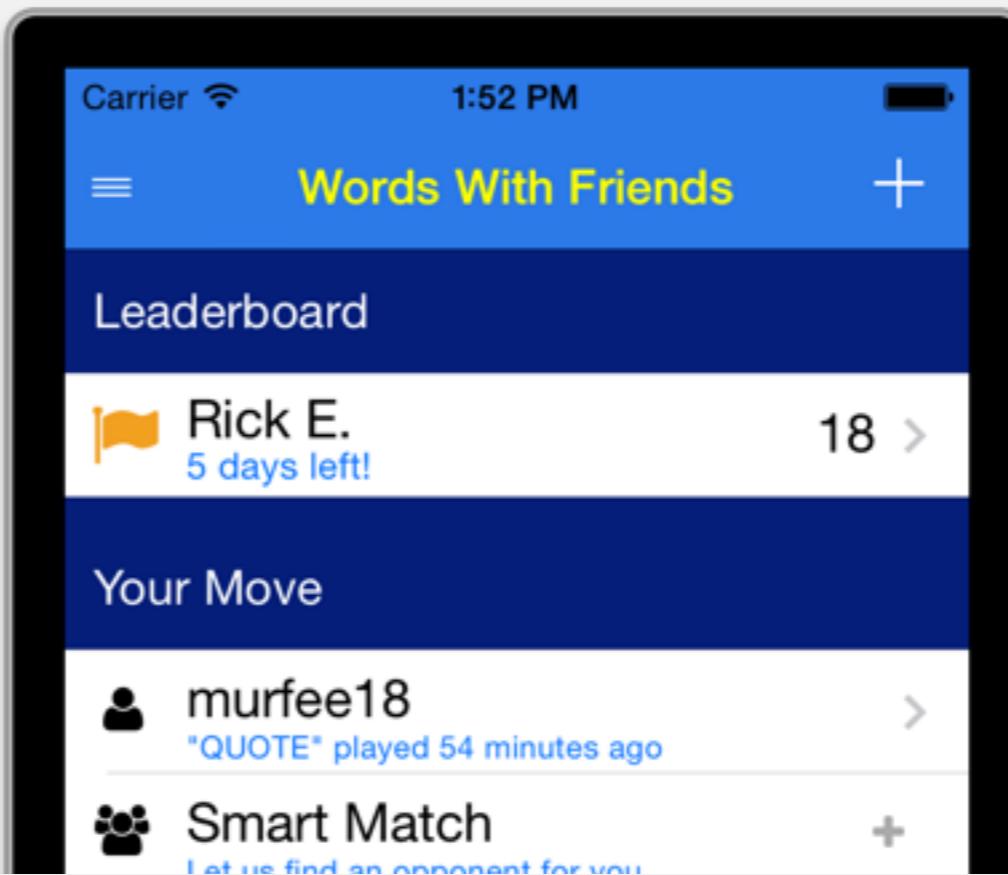


```
self.navigationController.navigationBar.titleTextAttributes =  
@{NSForegroundColorAttributeName:[UIColor yellowColor]};
```



# Xcode

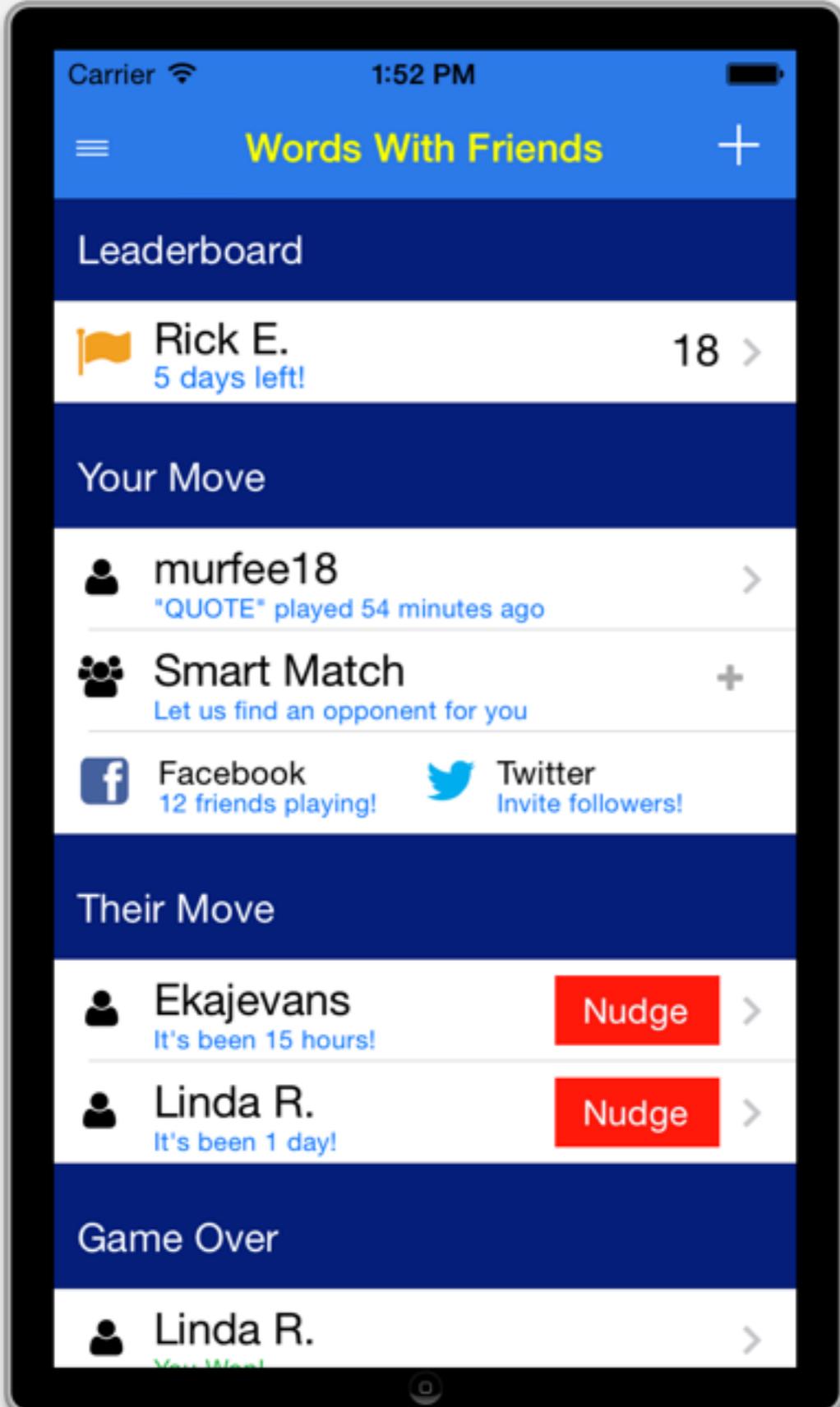
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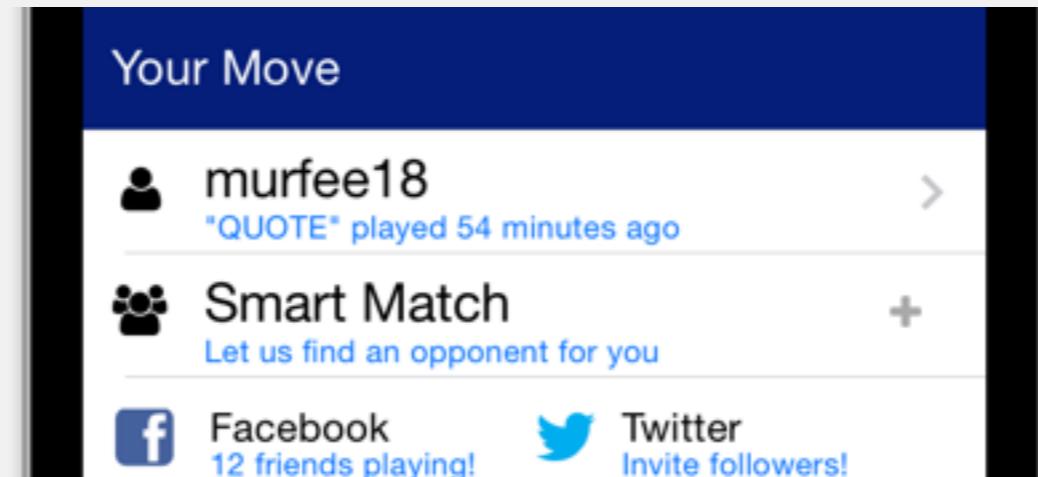
```
- (UIView *)tableView:(UITableView *)tableView  
    viewForHeaderInSection:(NSInteger)section {  
  
    CGRect headerRect...;  
    UIView *view = [[UIView alloc] initWithFrame:headerRect];  
    view.backgroundColor = [UIColor clearColor];  
  
    UILabel *label...;  
    label.text = @[@"Leaderboard", @"Your Move", @"Their Move", @"Game Over"] [section];  
    label.backgroundColor = [UIColor clearColor];  
    label.textColor = [UIColor whiteColor];  
    [view addSubview:label];  
    return view;  
}
```

# Xcode

- Storyboard uses
- Storyboard gotchas
  - navigation icons
  - title text color
  - section text color
- table cell icons
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  - Objective-C tips

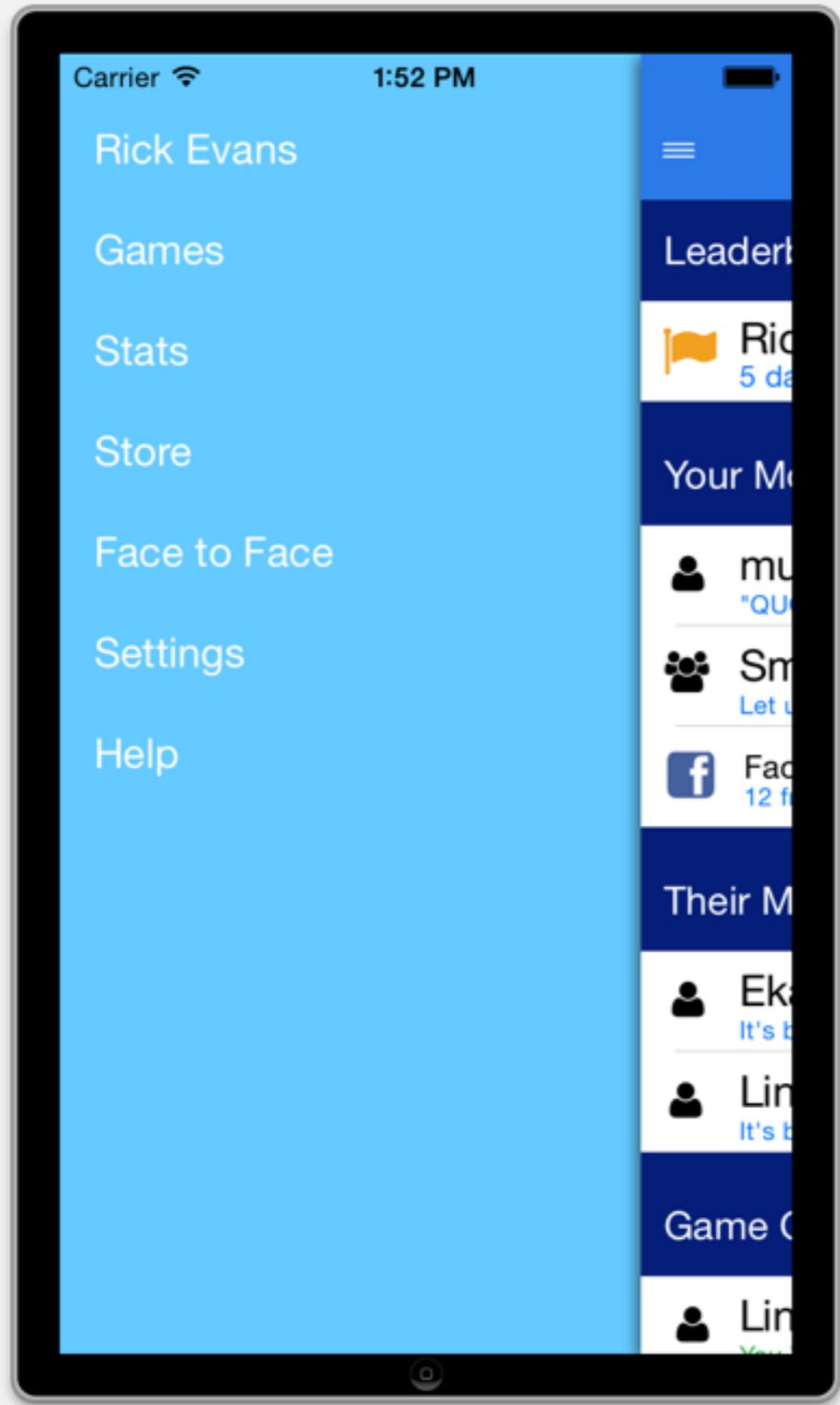


# FontAwesome



```
UIFont *largeFont = [UIFont fontWithName:@"FontAwesome" size:24];
UIFont *font = [UIFont fontWithName:@"FontAwesome" size:18];
UIFont *smallFont = [UIFont fontWithName:@"FontAwesome" size:14];

self.leaderboardLabelFlag.font = largeFont;
self.leaderboardLabelFlag.text = @"\uf024";
self.leaderboardLabelFlag.textColor =
[UIColor colorWithRed:0.94 green:0.62 blue:0.18 alpha:1.0];
```



# Xcode

- Storyboard uses
- Storyboard gotchas
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Objective-C coding needed

# Slide Out Menu

```
- (void)viewDidLoad {
    ...
    [[NSNotificationCenter defaultCenter] addObserver:self
        selector:@selector(toggleMenu) name:@"Menu Slide" object:nil];
    UIViewController *slideVC = [storyboard
        instantiateViewControllerWithIdentifier:@"slideMenu"];
    [self addChildViewController:slideVC];
    [self.view addSubview:slideVC.view];
    ...

    UINavigationController *mainVC = [storyboard
        instantiateViewControllerWithIdentifier:@"mainTable"];
    [self addChildViewController:mainVC];
    [self.view addSubview:mainVC.view];
    ...
}

- (void)toggleMenu {
    [UIView animateWithDuration:0.3 delay:0.0
```

# Xcode

- Storyboard uses
- Storyboard gotchas
- Slide out menu
- Objective-C tips
  - Method swizzling
  - Template method pattern
  - Categories

# Method Swizzling

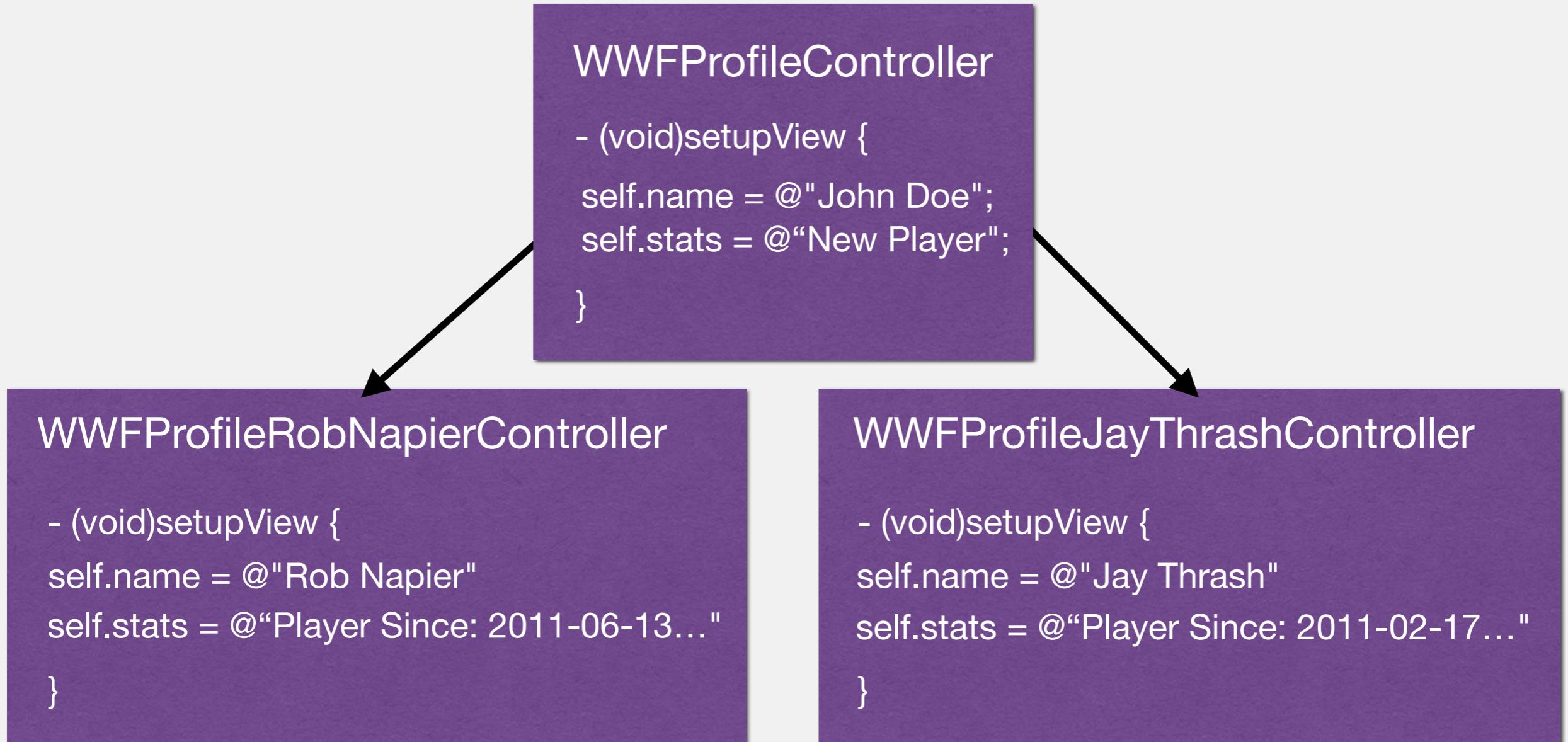
```
+ (void)startShowingUnimplementedMessages {
    SEL originalSelector = @selector(touchesEnded:withEvent:);
    SEL newSelector = @selector(unimplementedTouchesEnded:withEvent:);

    Method originalMethod = class_getInstanceMethod([UIButton class],
                                                    originalSelector);
    Method newMethod = class_getInstanceMethod(self.class,
                                                newSelector);

    if (class_addMethod([UIButton class], originalSelector,
                        method_getImplementation(newMethod),
                        method_getTypeEncoding(newMethod))) {
        class_replaceMethod(self.class, newSelector,
                            method_getImplementation(originalMethod),
                            method_getTypeEncoding(originalMethod));
    } else {
        method_exchangeImplementations(originalMethod, newMethod);
    }
}
```

(void)unimplementedTouchesEnded:(NSSet \*)touches

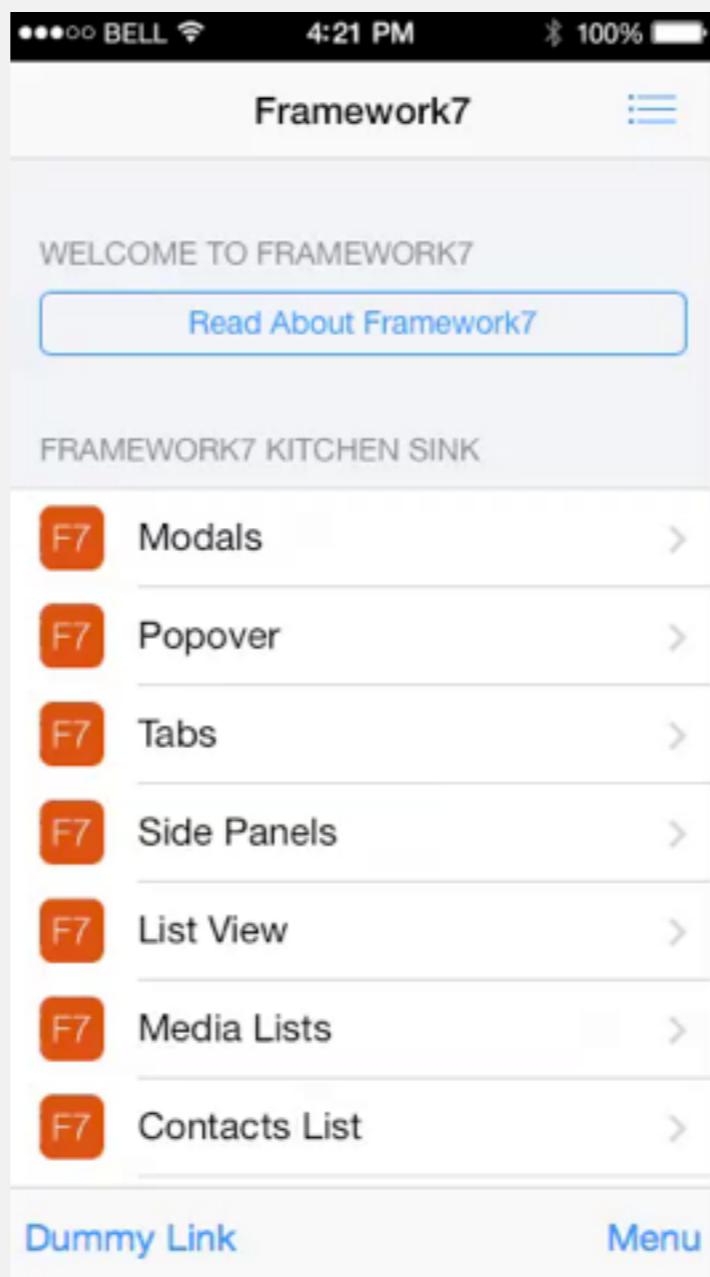
# Template Method Pattern



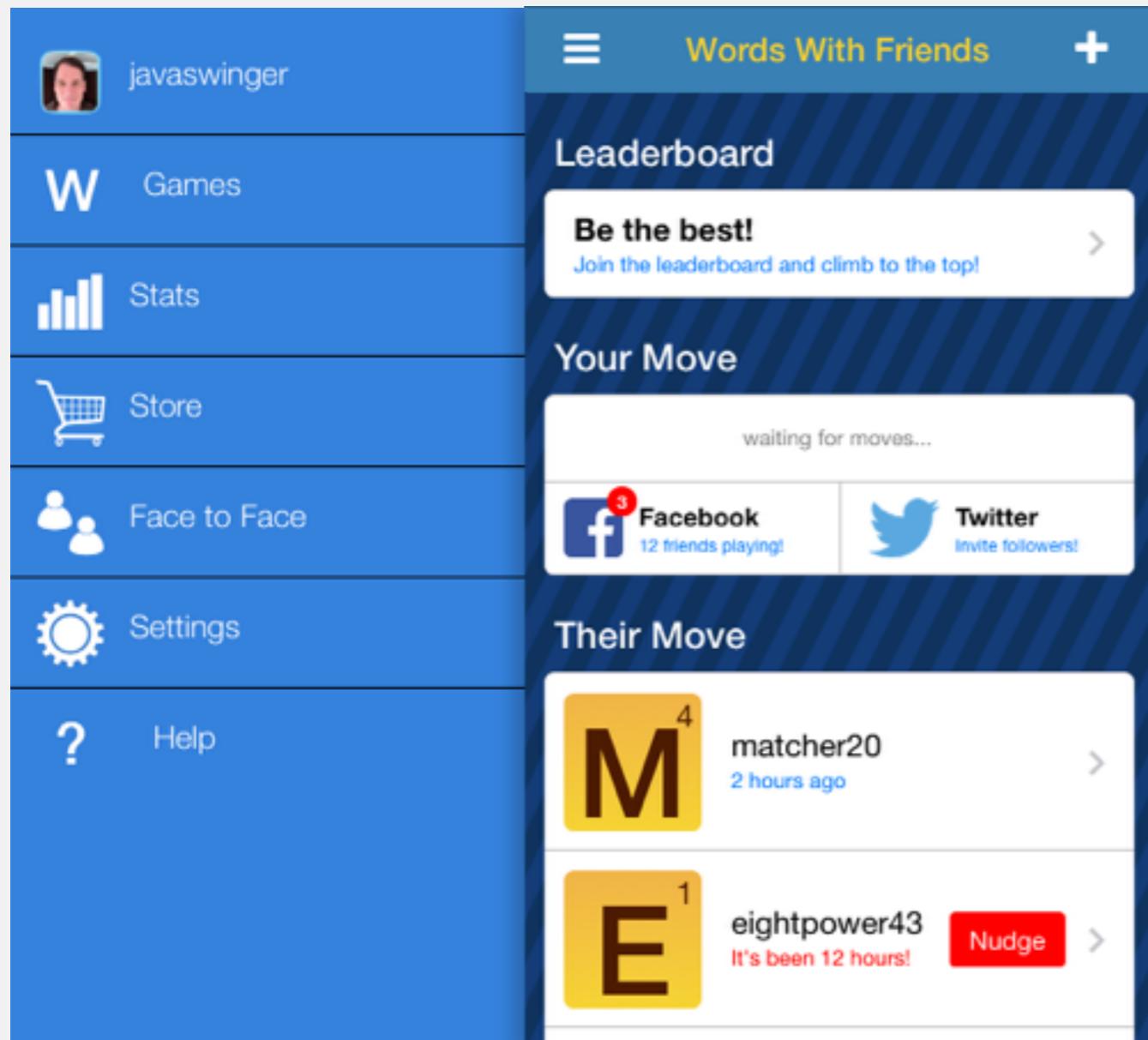
# Categories

- `(void)addSwipeGesture {  
 UITableView *tableView = ....;  
  
 UISwipeGestureRecognizer *swipeDownGesture =  
 [[[UISwipeGestureRecognizer alloc] initWithTarget:self  
 action:@selector(dismissViewController:)];  
 swipeDownGesture.direction = UISwipeGestureRecognizerDirectionDown;  
 swipeDownGesture.numberOfTouchesRequired = 2;  
  
 [self.view addGestureRecognizer:swipeDownGesture];  
 [tableView.panGestureRecognizer  
 requireGestureRecognizerToFail:swipeDownGesture];  
}`
- `(IBAction)dismissViewController:(id)sender {  
 [self dismissViewControllerAnimated:YES completion:nil];  
}`
- `(instancetype)initWithSwipeGesture {  
 ...  
}`

# Framework7



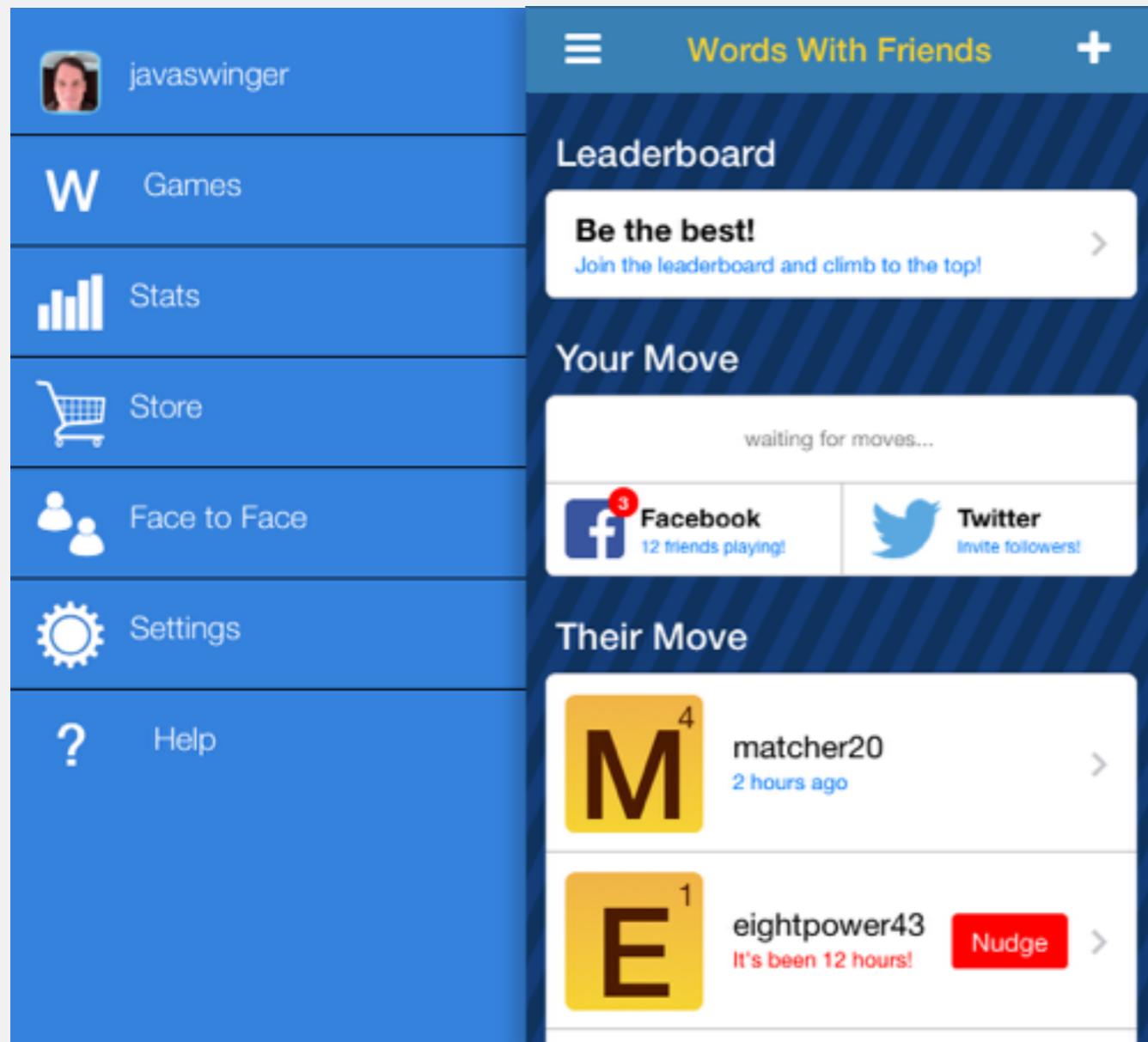
# Framework7



<http://cdilorenzo.github.io/WordsWithFriendsWeb/>

RoleModel

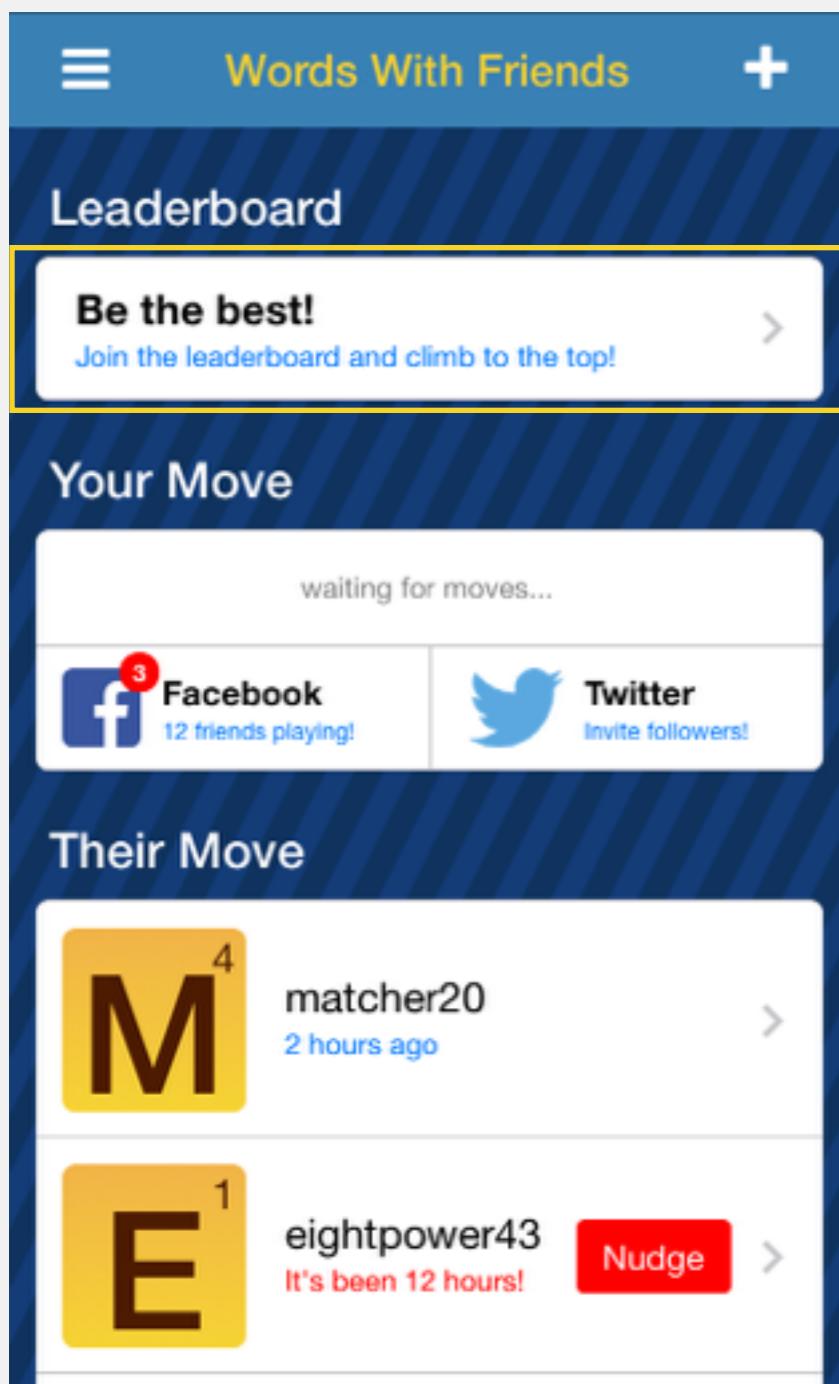
# Framework7



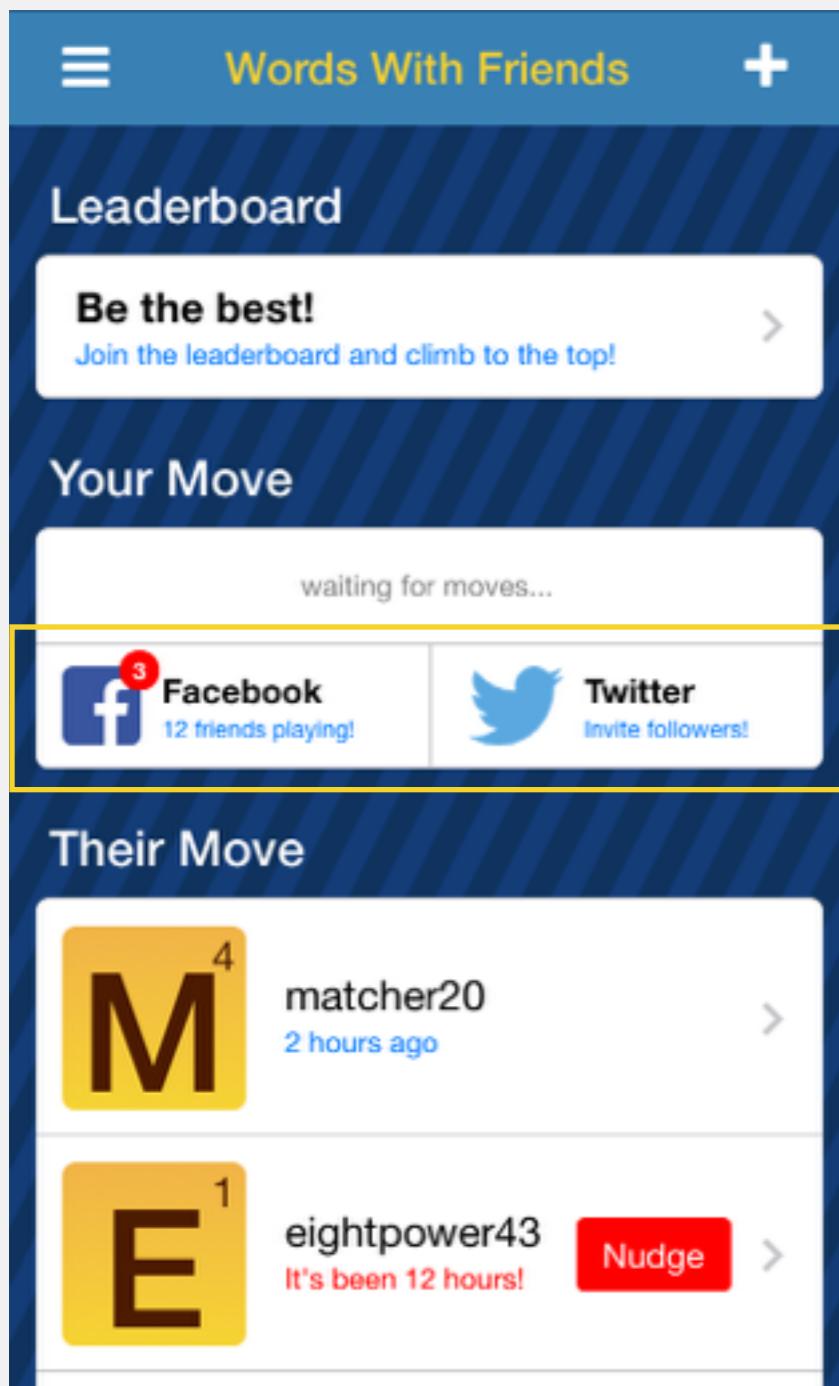
- Built for iOS 7
- User Interaction
- CSS Styling



# Framework7



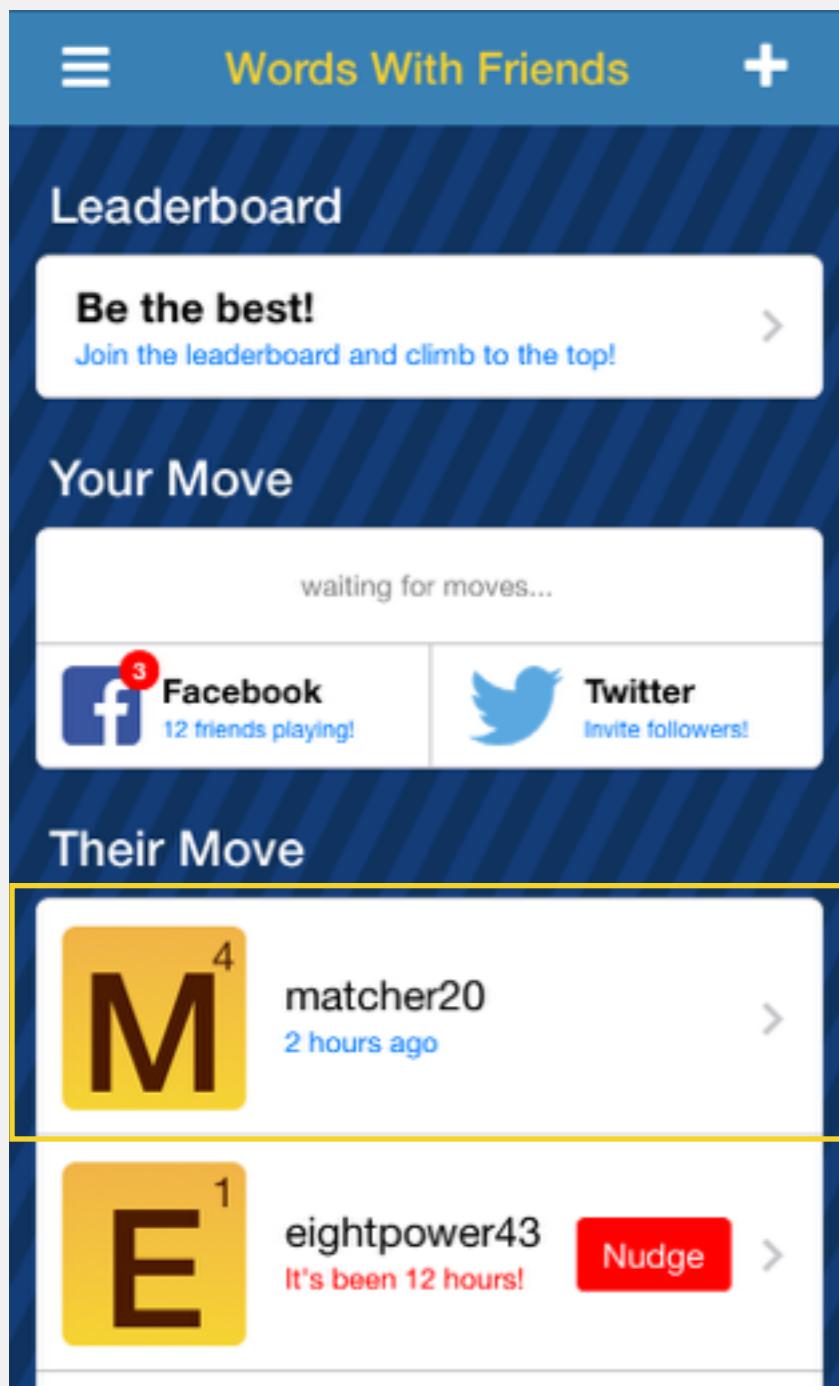
```
<div class="content-block-title">Leaderboard</div>
<div class="list-block">
  <ul>
    <li><a href="#" class="item-link">
      <div class="item-content" id="leaderboard">
        <div class="item-inner">
          <div class="left">
            <div class="item-title">Be the best!</div>
            <div class="item-subtitle">Join the..</div>
          </div>
        </div>
      </a></li>
    </ul>
  </div>
```



# Framework7

```
<li><a href="#" class="item-link">
  <div class="item-content">
    <div class="item-inner item-no-accessory">
      <div class="left">
        
        <span class="badge-count">3</span>
      <div class="item-title-small">
        Facebook</div>
      <div class="item-title-small-subtitle">
        12 friends playing!</div>
    </div>
    <div class="divider"></div>
    <div class="right">
      
      <div class="item-title-small">Twitter</div>
      <div class="item-title-small-subtitle">
        Invite followers!</div>
    </div>
  </div>
</a></li>
```

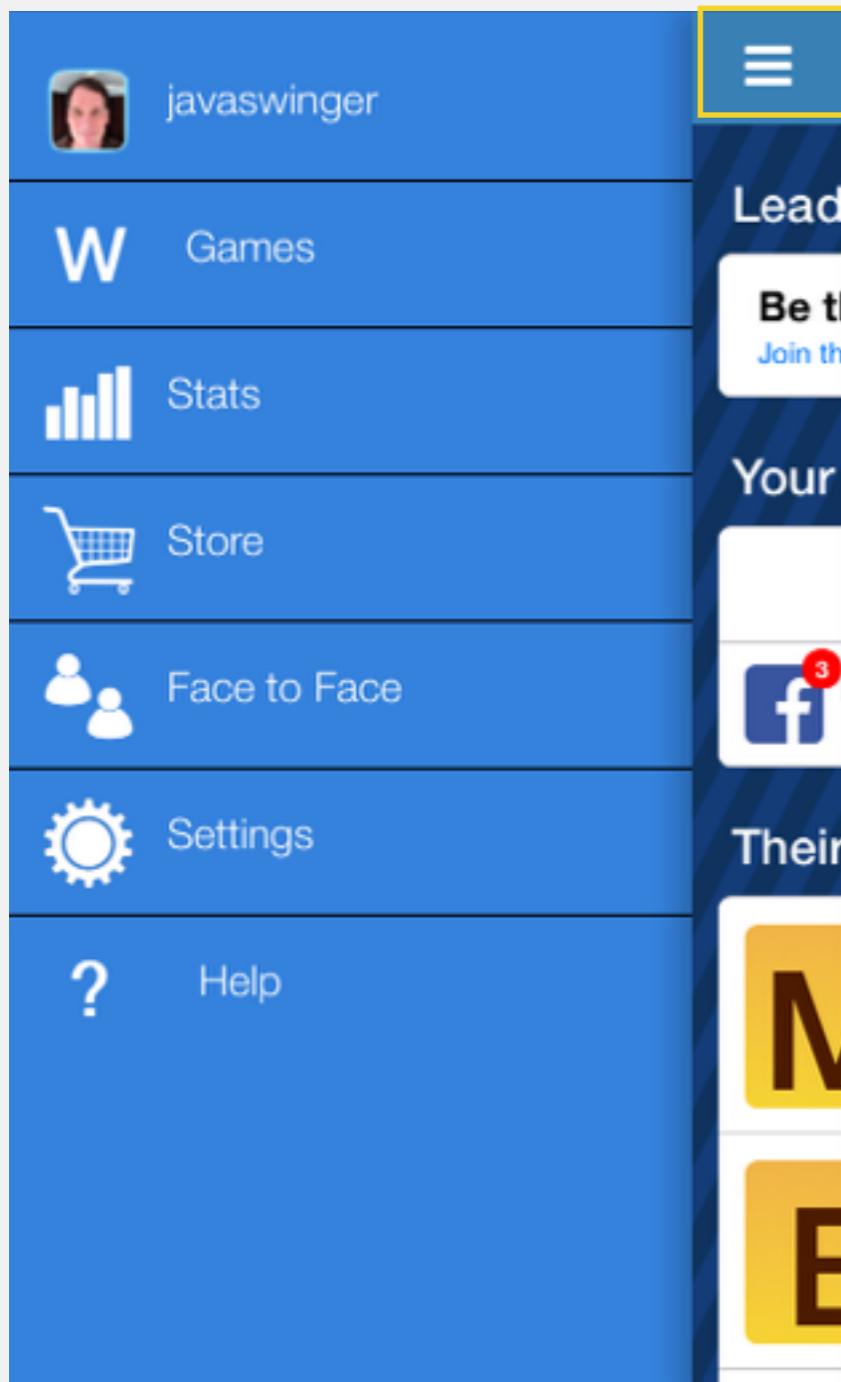




# Framework7

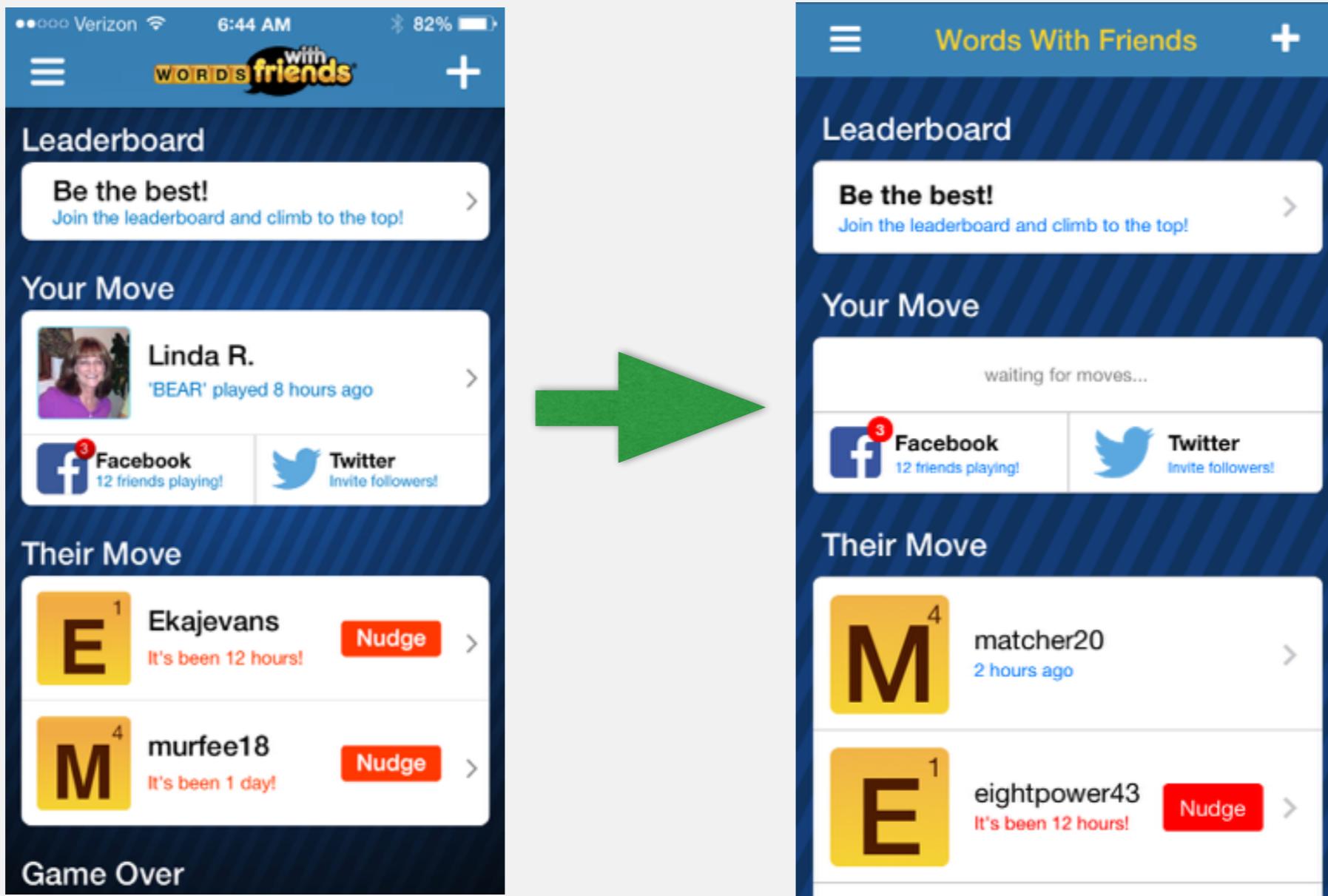
```
<li><a href="#" class="item-link">
  <div class="item-content">
    <div class="item-inner item-no-accessory">
      <div class="left">
        <div class="avatar">
          <h1>M</h1><sup>4</sup>
        </div>
        <div class="item-title">matcher20</div>
        <div class="item-subtitle">
          2 hours ago</div>
        </div>
      </div>
    </div>
  </a></li>
```

# Framework7

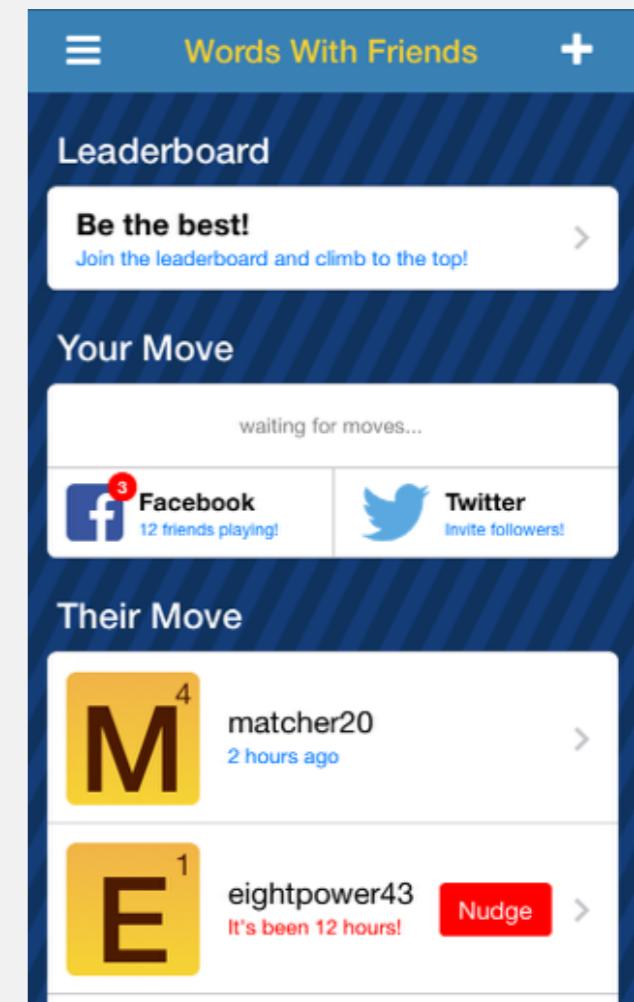
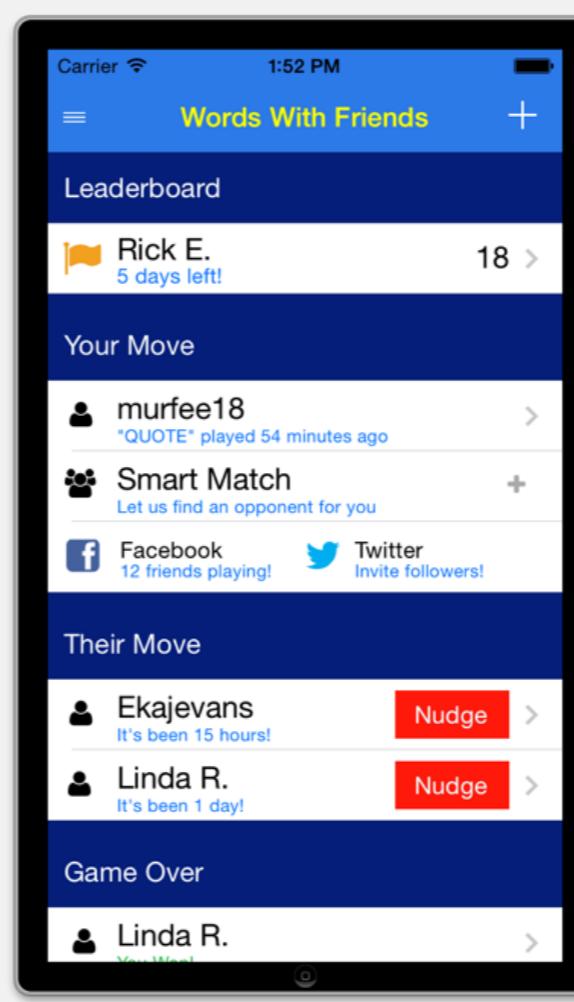
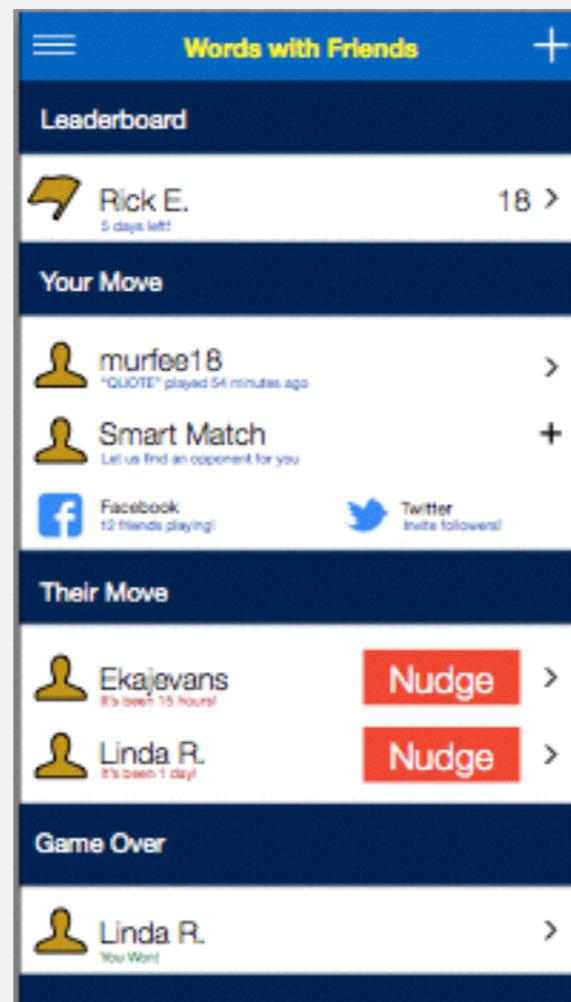
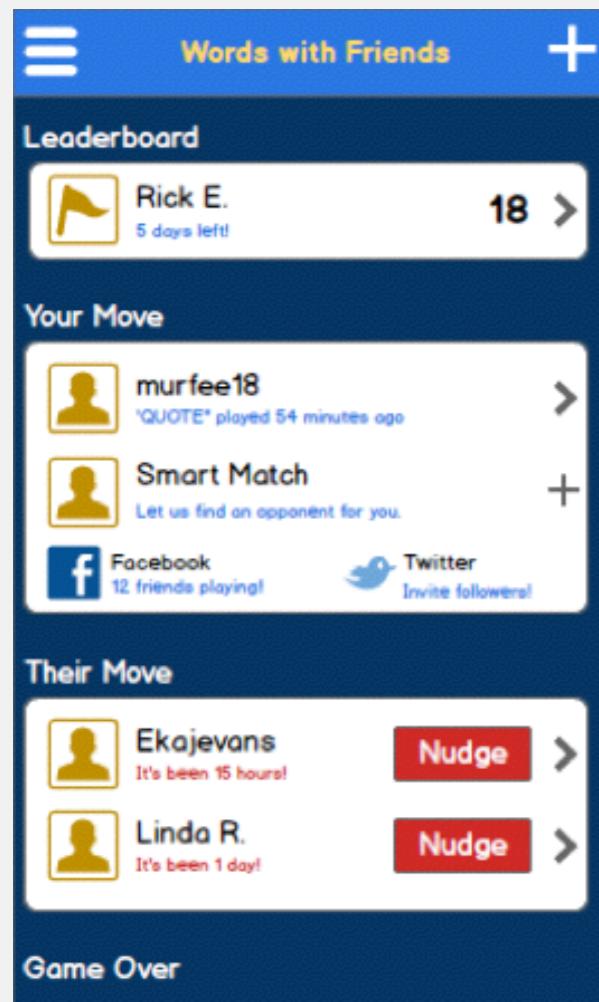


```
<a href="#" class="link icon-only open-panel">  
  <i class="icon fa fa-bars fa-5"></i>  
</a>
```

# Framework7



# Prototype Comparisons



Balsamiq



Keynotopia



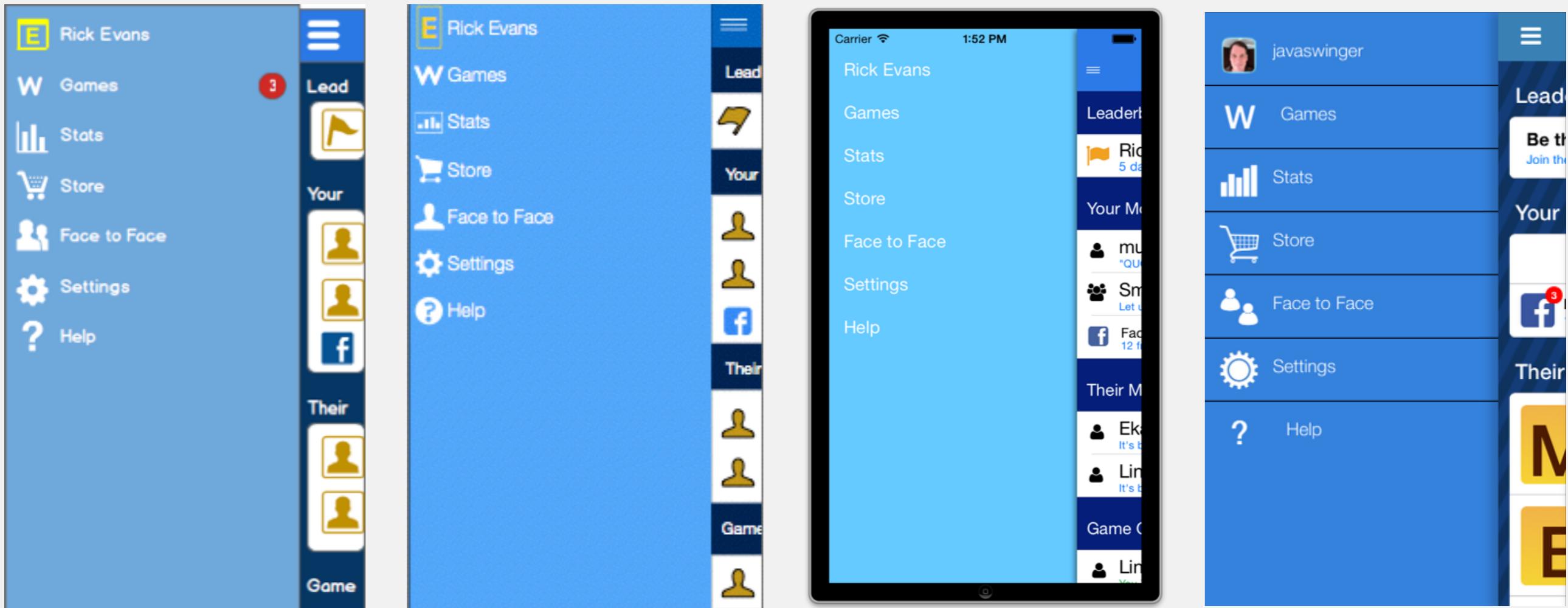
Xcode



Framework7

RoleModel

# Prototype Comparisons



Balsamiq



Keynotopia



Xcode



Framework7

RoleModel



# Balsamiq

## *Keys to success*

- Separate design from code
- Sketch mode : appears as prototype
- Generates clickable PDF
- Time box every task
- Mindset : trash your prototype



# Keynotopia

*Keys to success*

- Separate design from code
- Familiar with Keynote & transitions
- Generates clickable PDF
- Time box every task
- Mindset : trash your prototype



# Xcode Prototypes

*Keys to success*

- Limit amount of Objective-C coding
- Use storyboards as much as possible
- Use default plain styles
- Time box every task
- Mindset : trash your prototype



# Framework7

## *Keys to success*

- Already know HTML, CSS & Javascript
- Can show prototype as web page
- Use PhoneGap to test prototypes
- Time box every task
- Mindset : trash your prototype

# When to use each tool

	Balsamiq	Keynotopia	Xcode	Framework7
Sketchy	★			
Quick Layout	★	★		★
Test Anywhere	★	★		★
Realistic			★	★
Custom Components		★	★	★
Complex Animations			★	

# Prototyping

- What?
  - Just enough to get feedback
- Why?
  - Better understand customer and problem
- How?
  - Timebox with the best tool for job

# Questions?

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Slides available at:

<https://github.com/rcdilorenzo/WordsWithFriendsWeb/>