Storyboards and Controllers on OS X

Contain yourself

Session 212

Mike Swingler
Interface Builder Engineer

Raleigh Ledet
AppKit Engineer

Introduction

Cool new API concepts

Storyboards

View controllers

Window controllers

Gesture recognizers

Storyboards

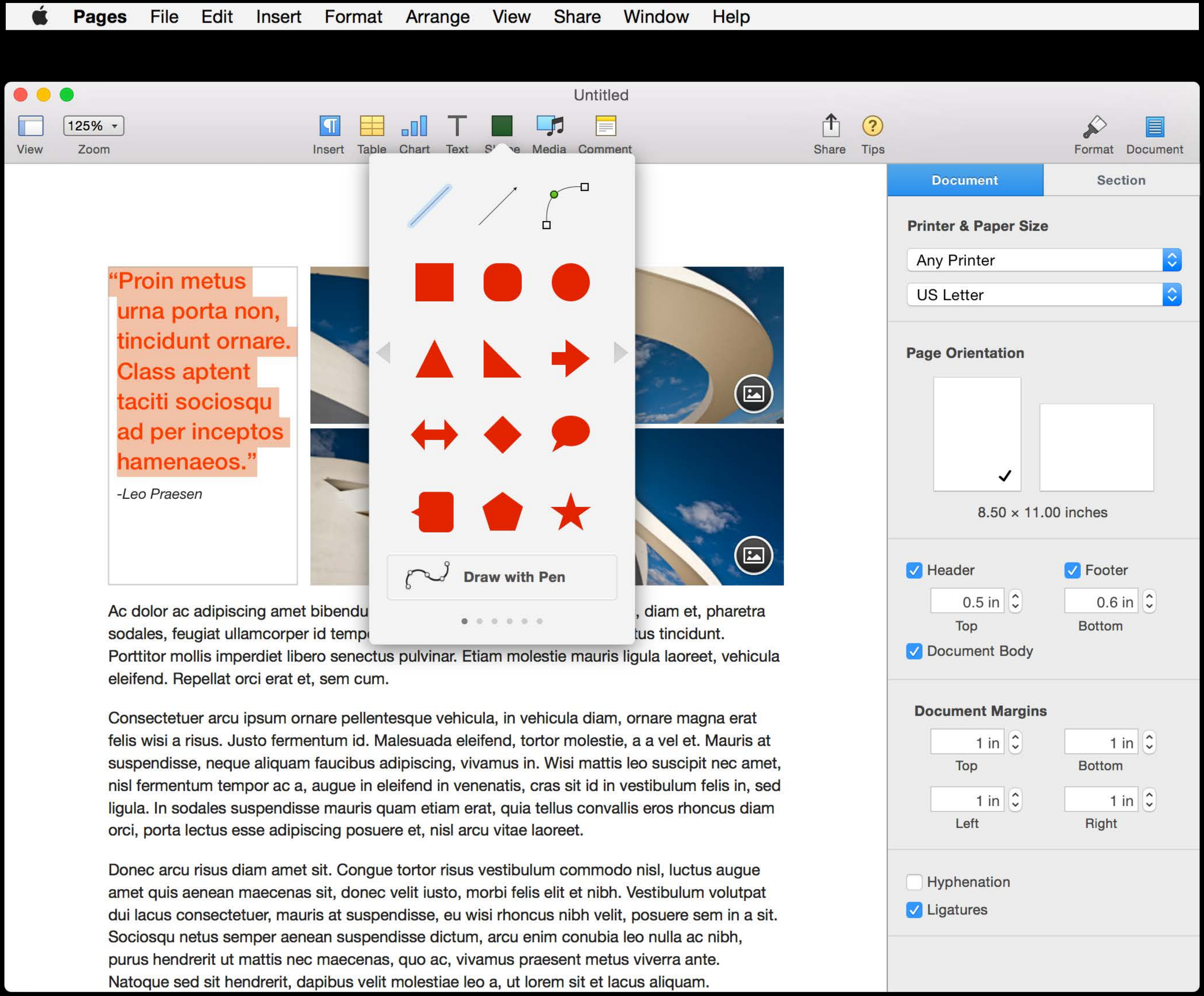
Lines and boxes and segues, oh my

Storyboards on OS X

Xcode

Storyboards on OS X

Xcode



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-Leo Praesen

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Any Printer

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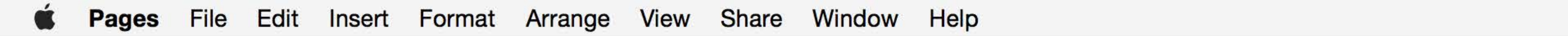

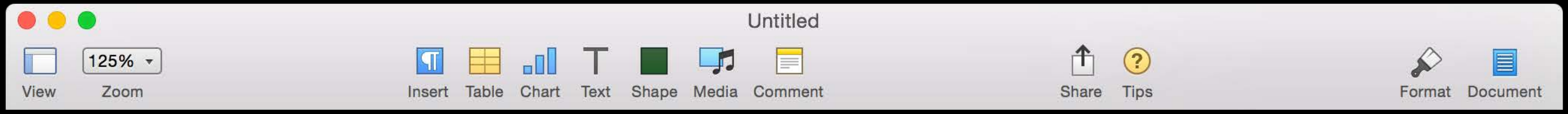

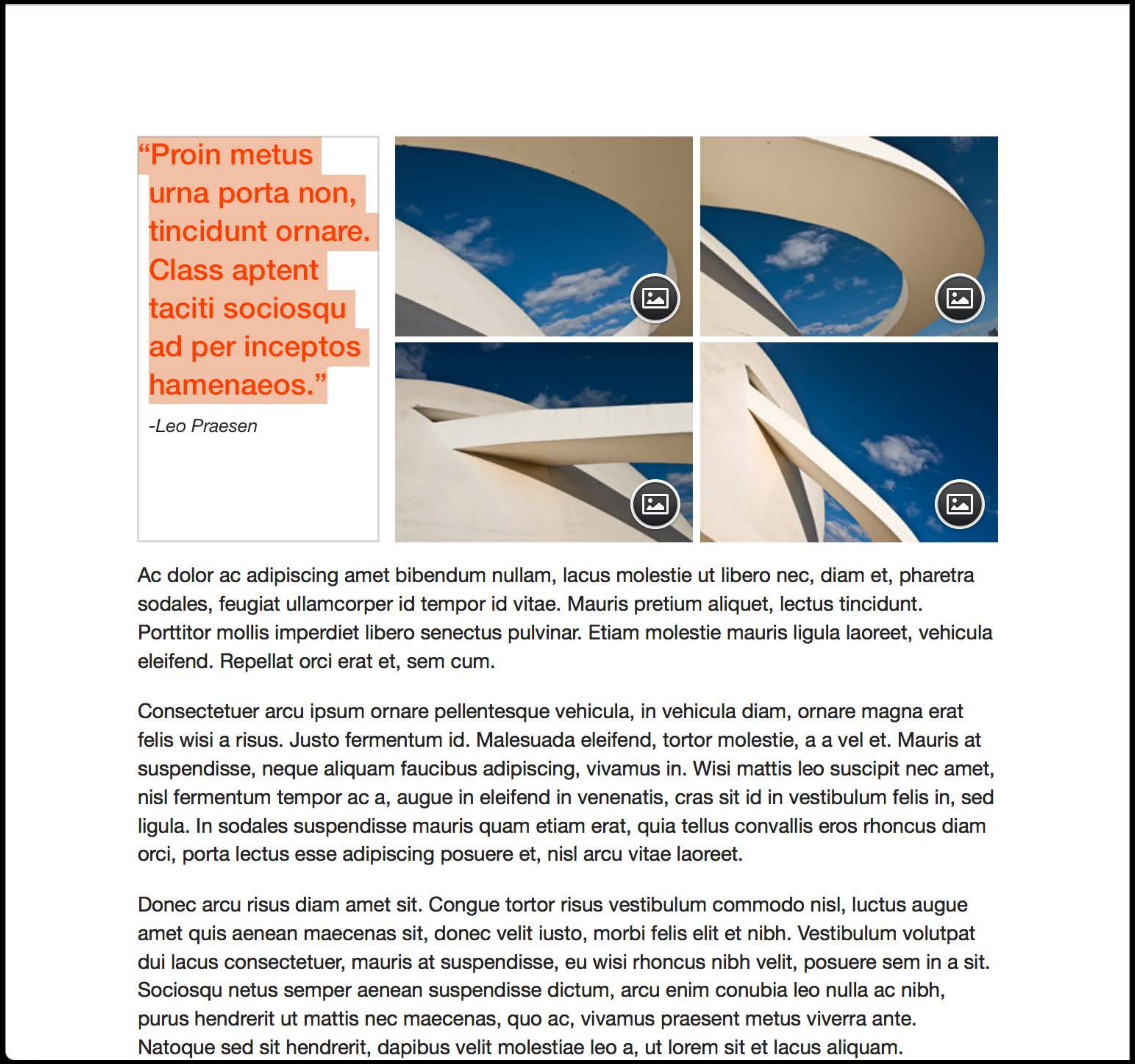

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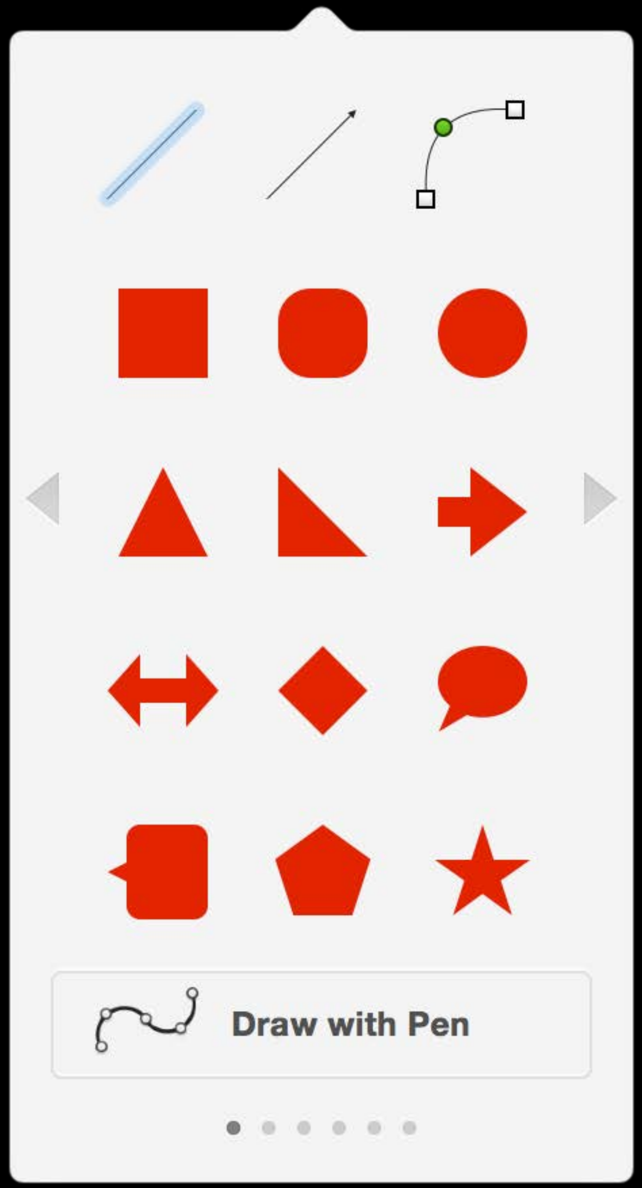

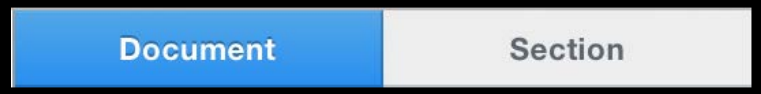

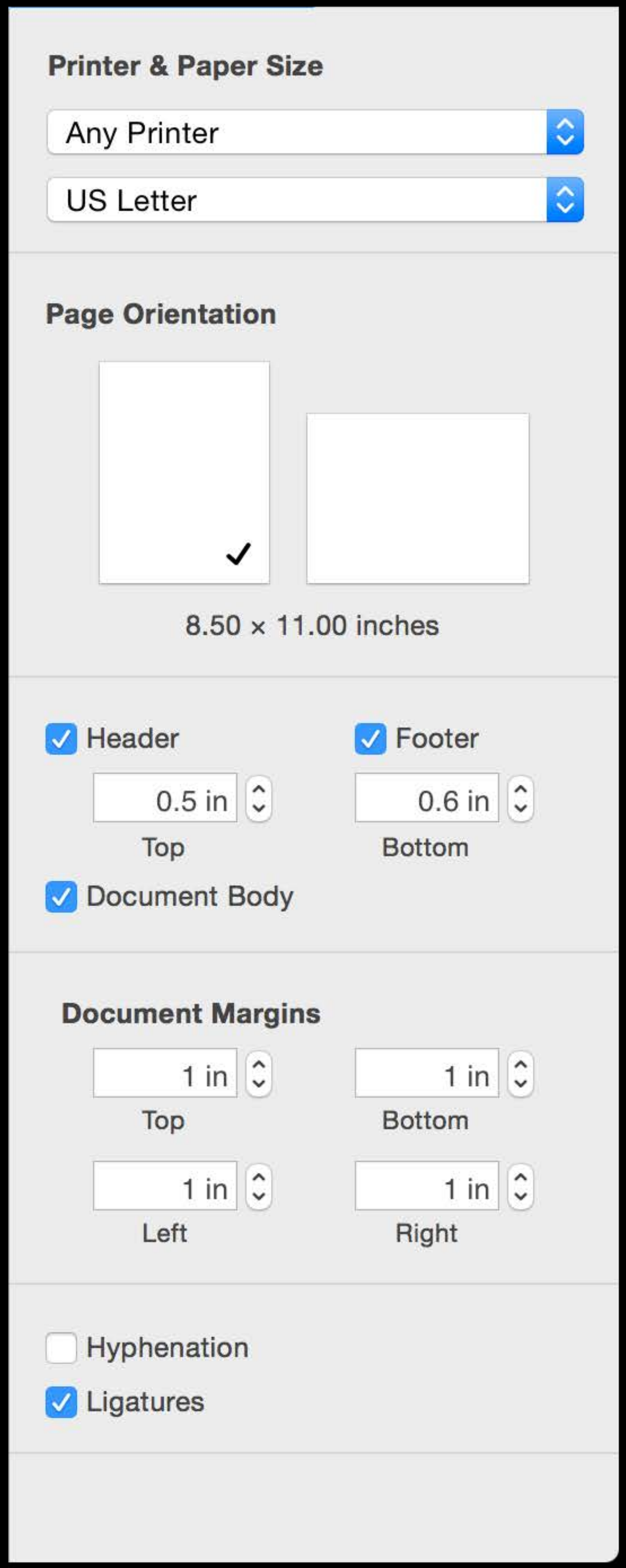

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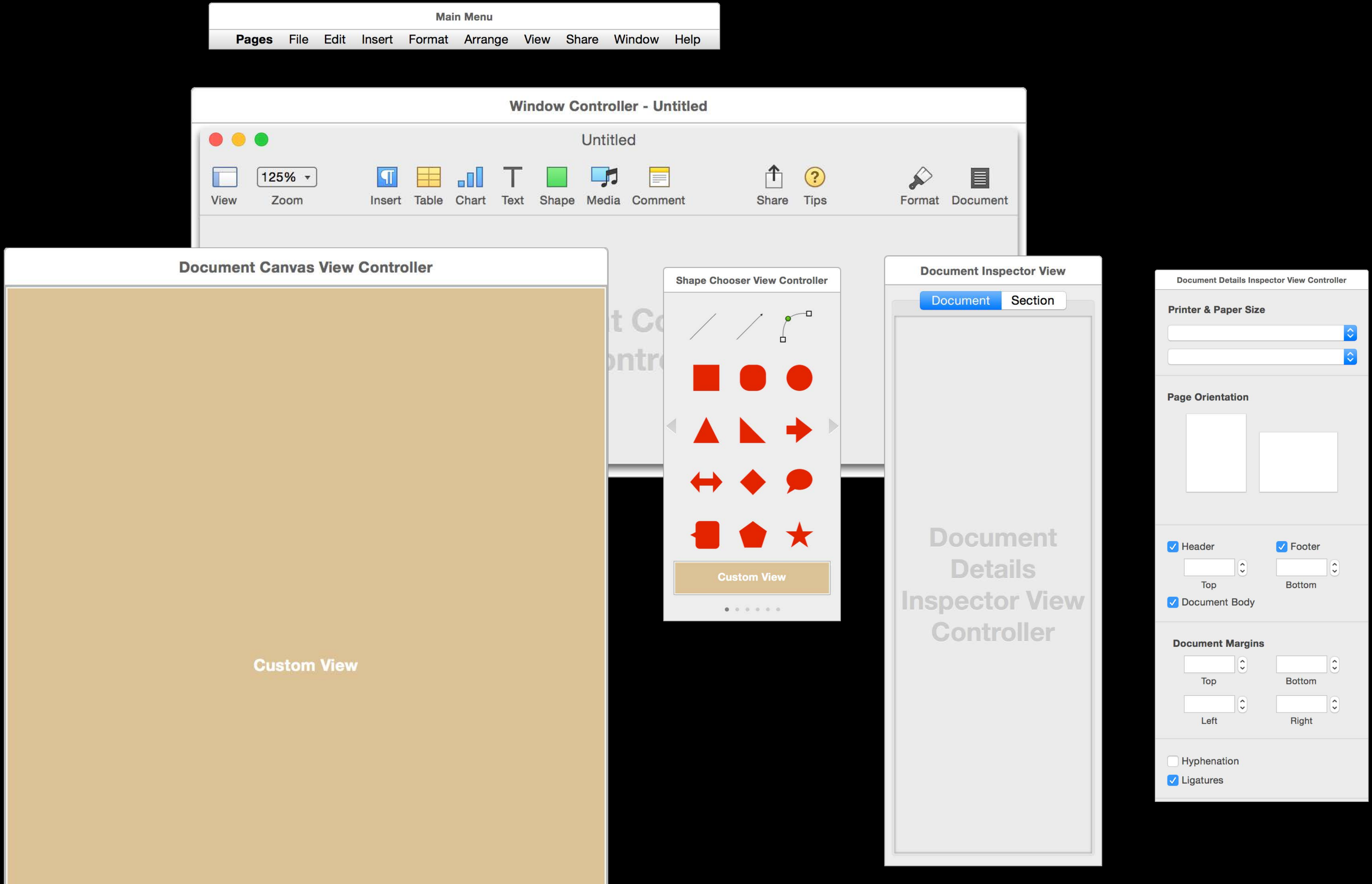

Main Menu

Window Controller - Untitled

Document Canvas View Controller

Shape Chooser View Controller

Document Inspector View

Document Details Inspector View Controller

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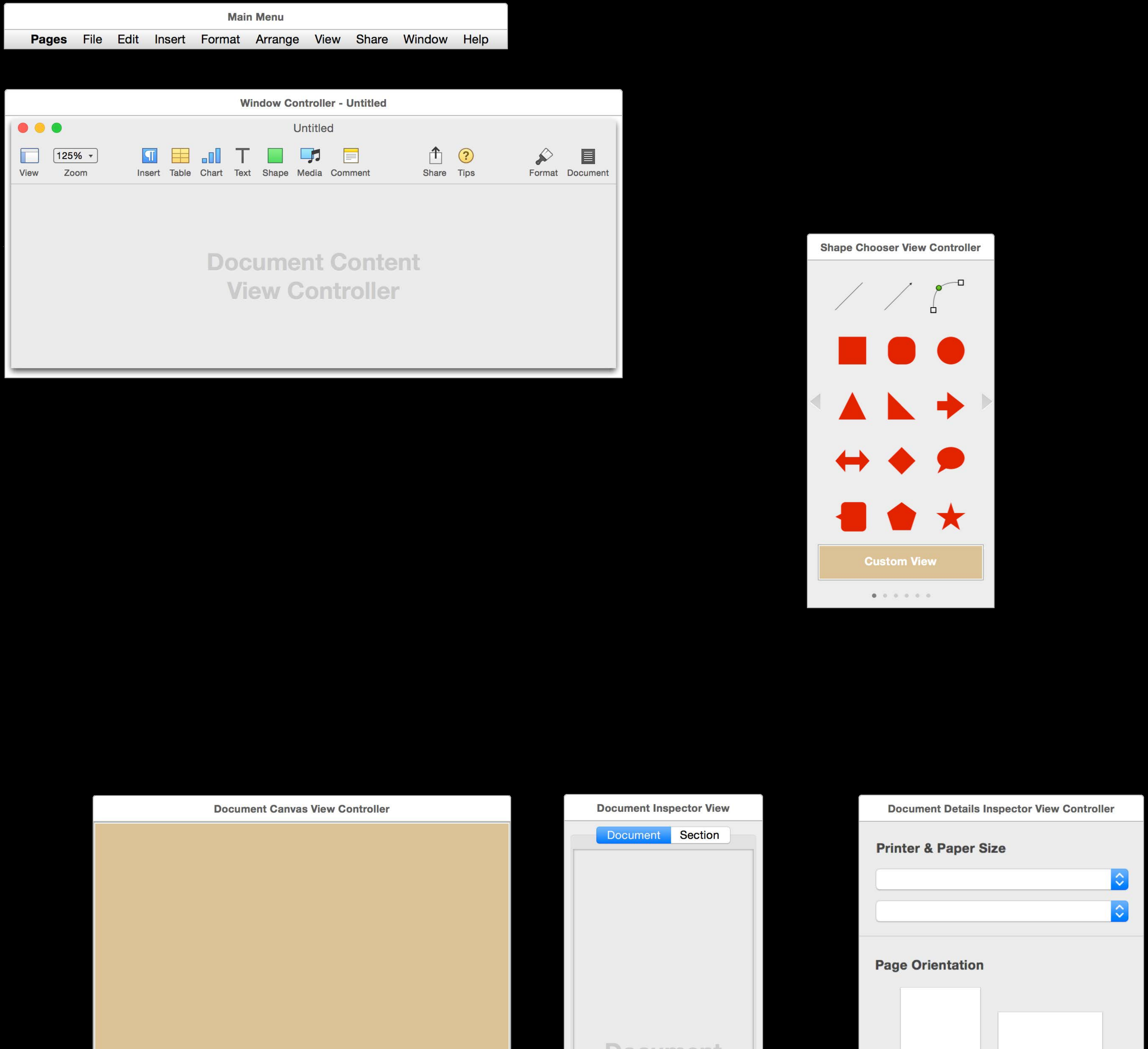
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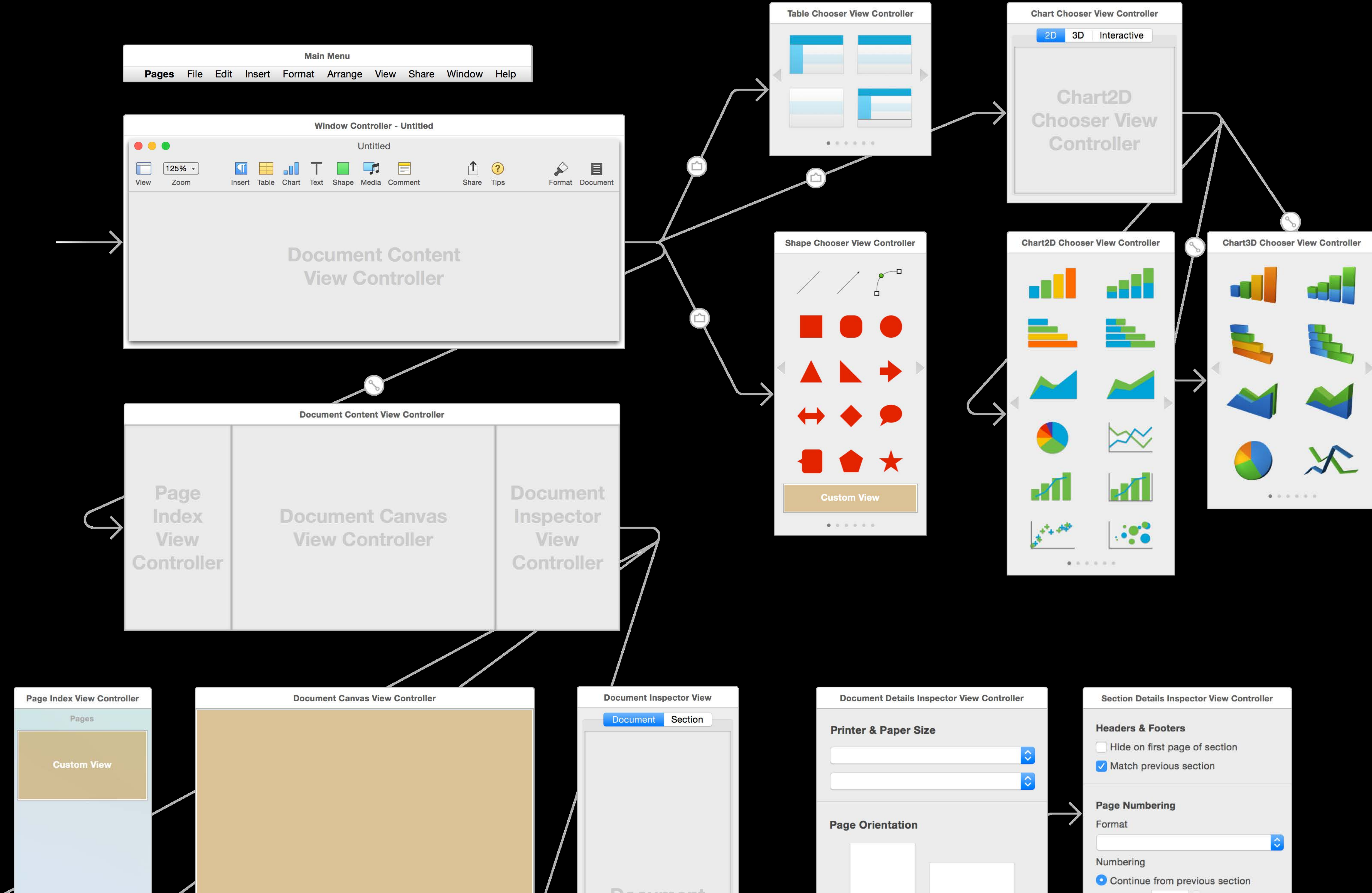
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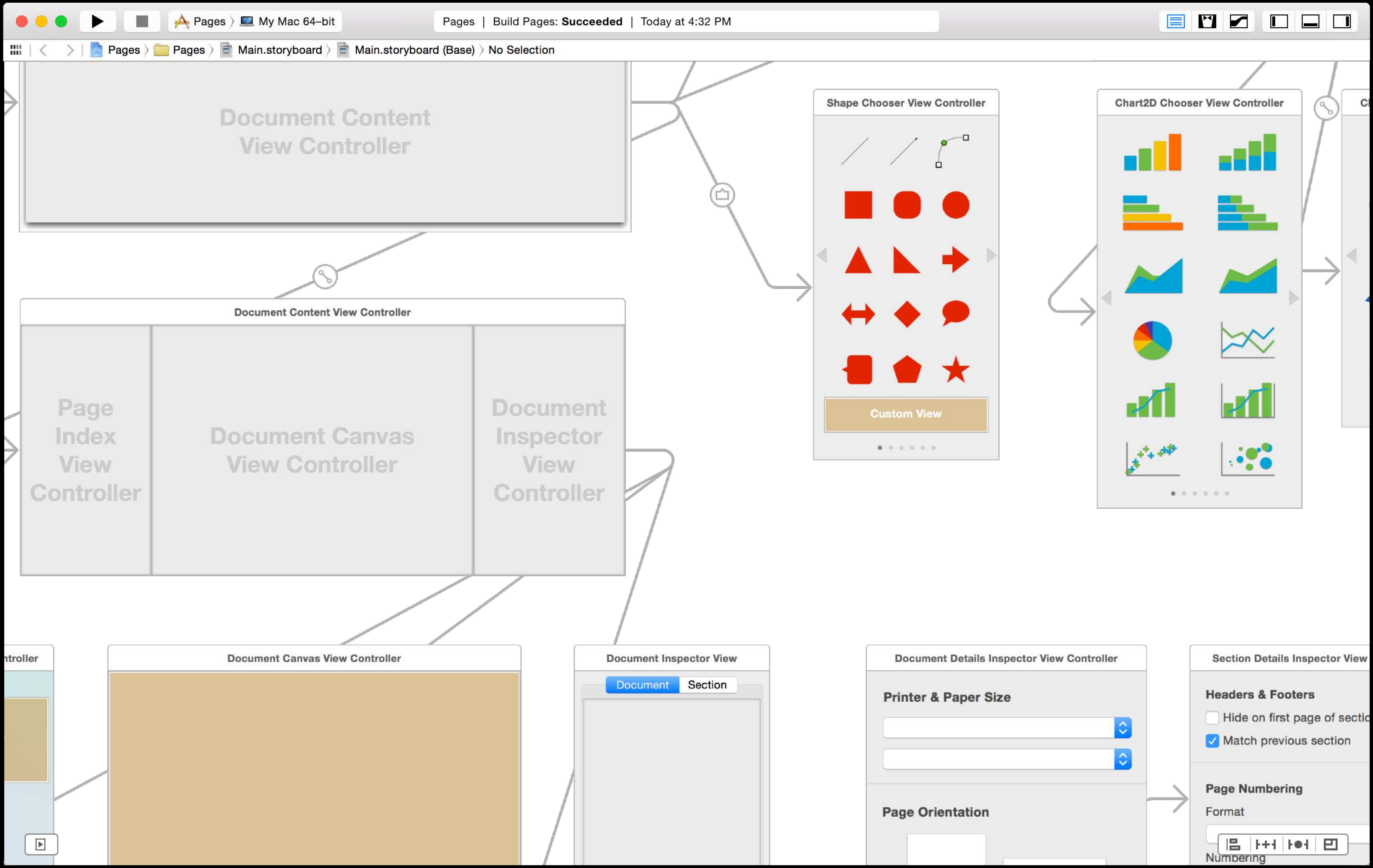
Storyboards on OS X

Xcode



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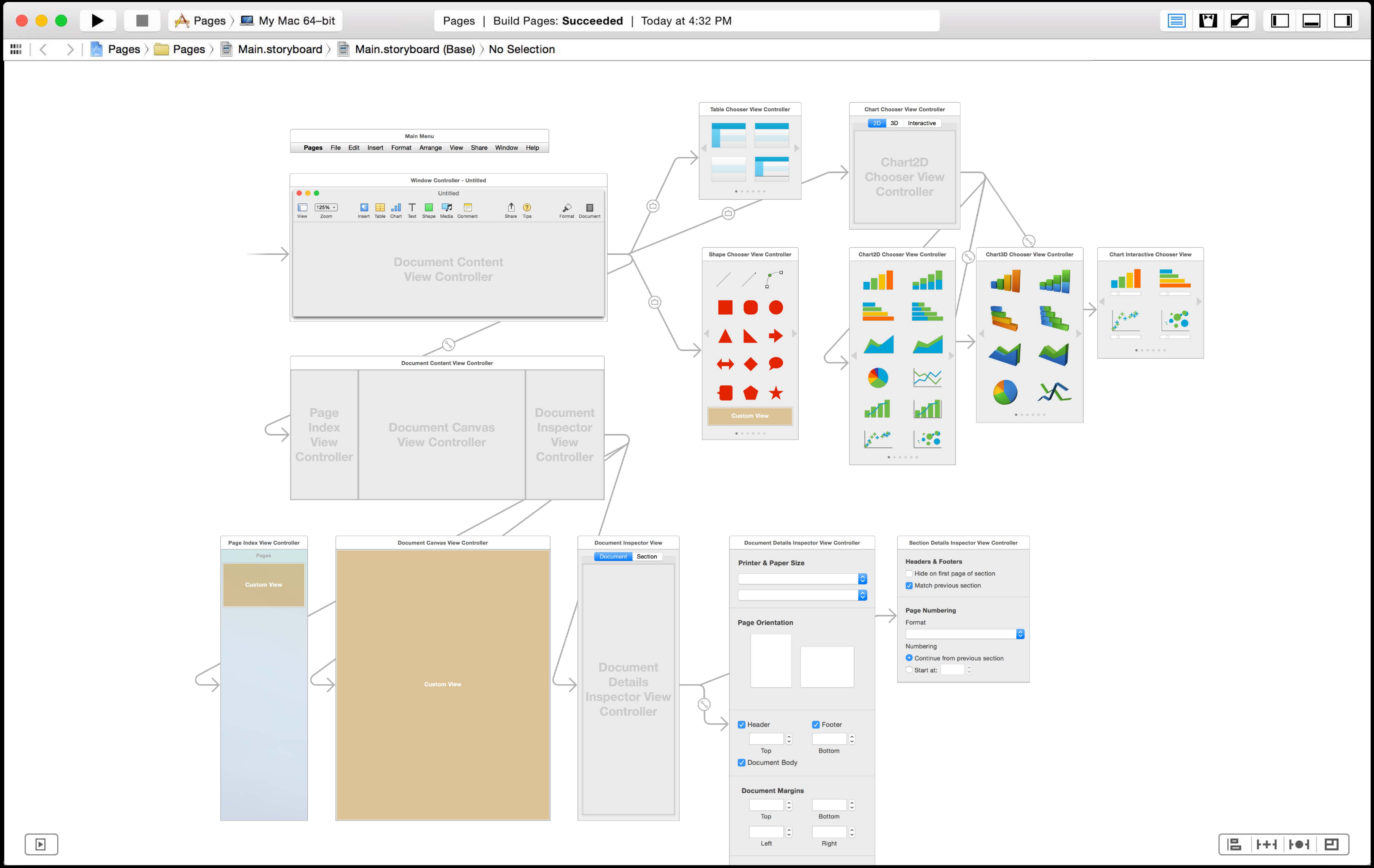
Storyboards on OS X

Xcode



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Storyboards on OS X

View Controllers

Connection between model and view

Storyboards on OS X

View Controllers

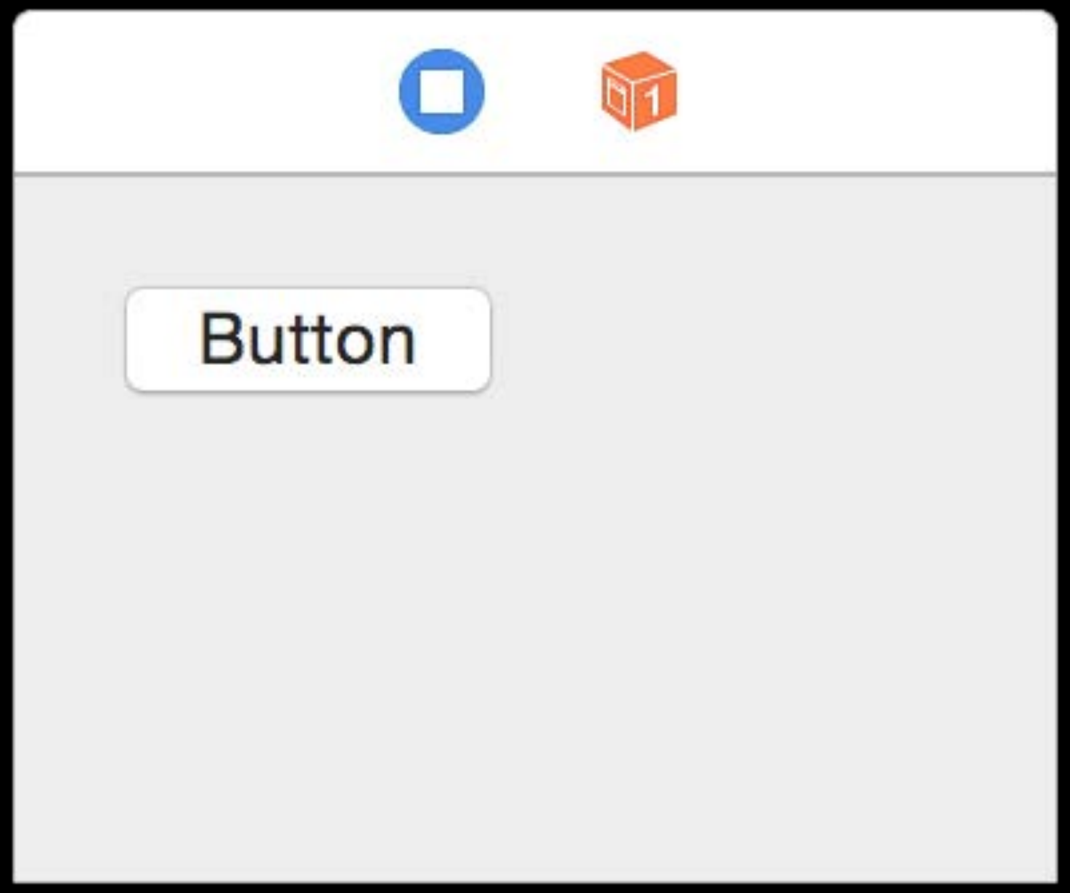
Connection between model and view

Storyboards on OS X

View Controllers

Connection between model and view

Place views

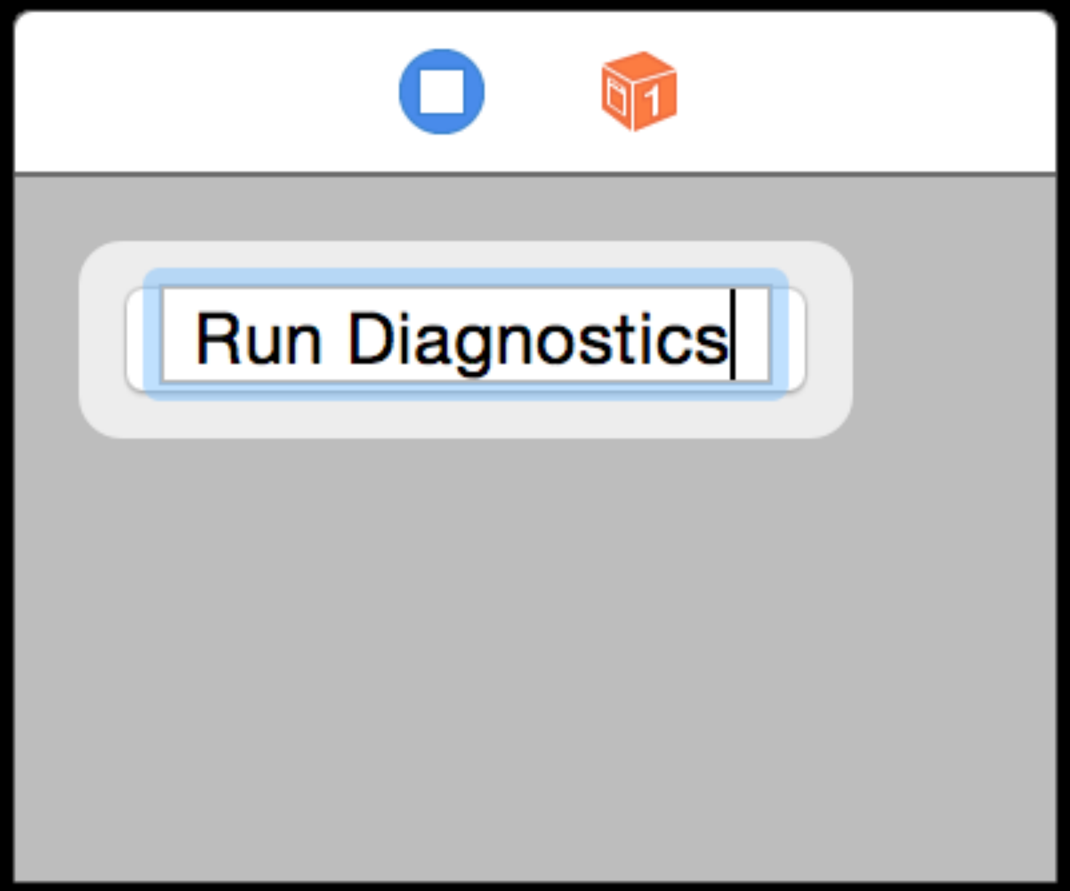


Storyboards on OS X

View Controllers

Connection between model and view

Place views



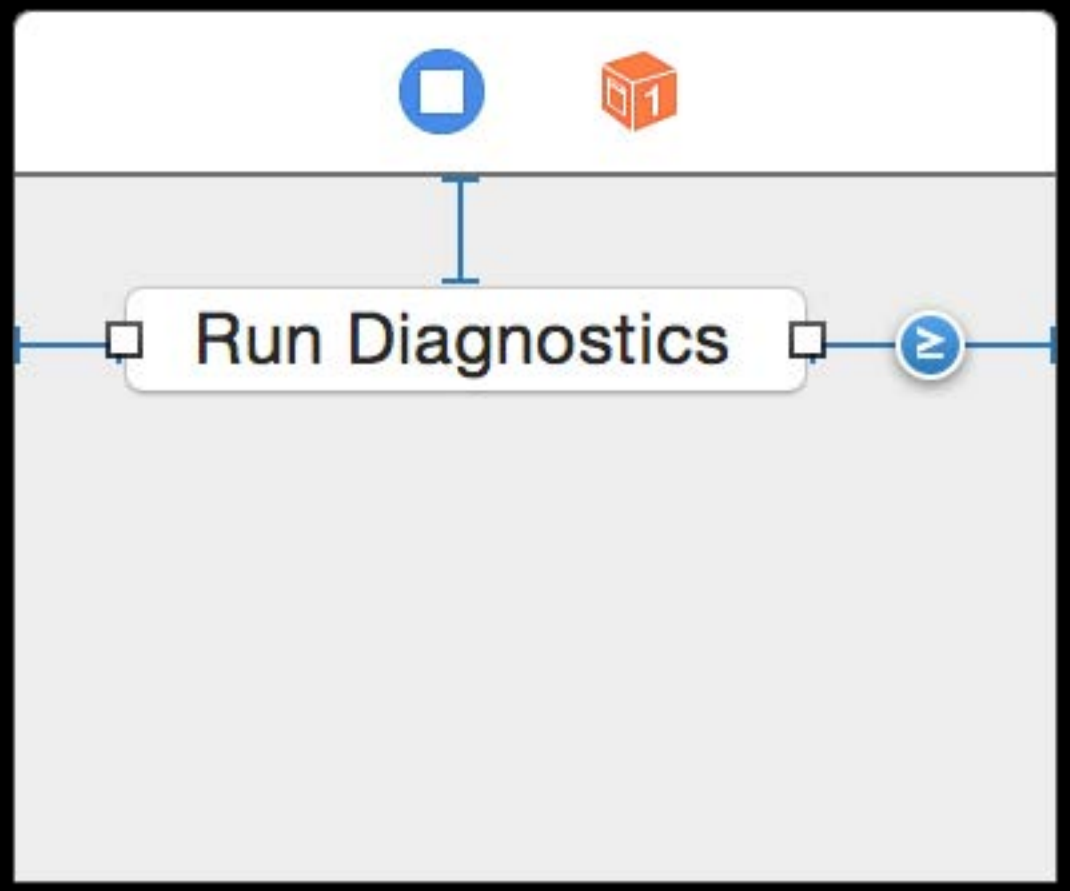
Storyboards on OS X

View Controllers

Connection between model and view

Place views

Setup Auto Layout constraints



Storyboards on OS X

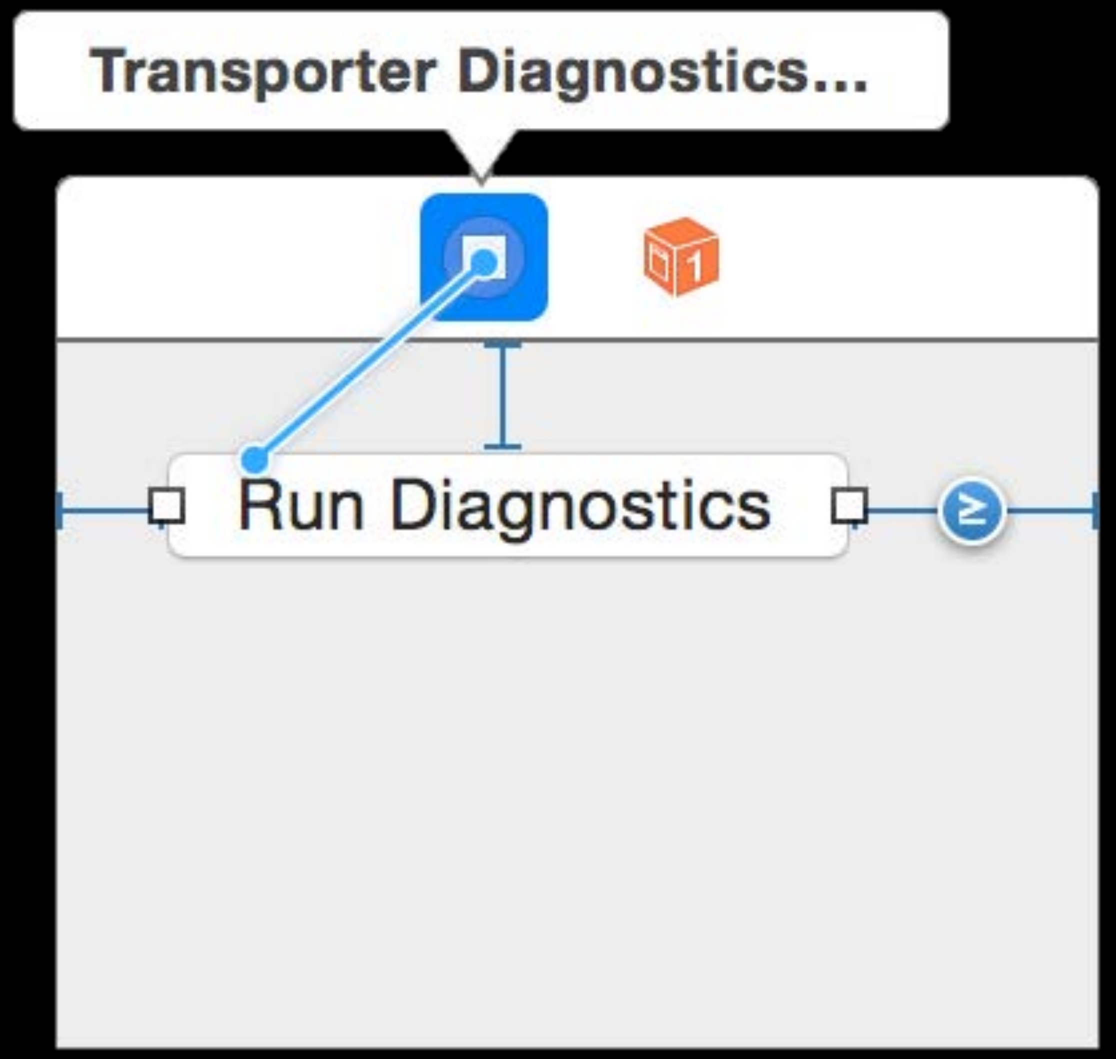
View Controllers

Connection between model and view

Place views

Setup Auto Layout constraints

Connect actions and outlets



Storyboards on OS X

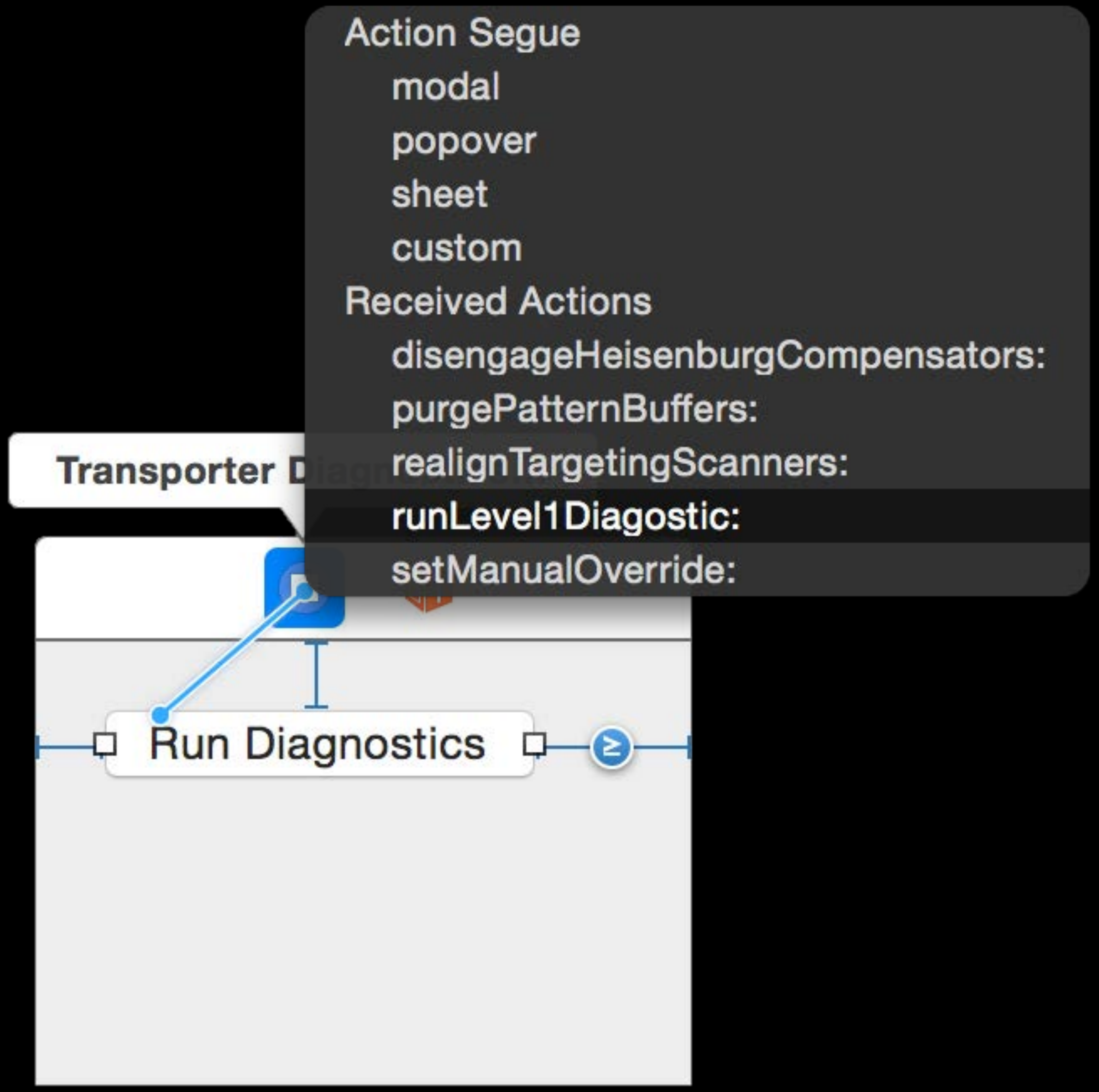
View Controllers

Connection between model and view

Place views

Setup Auto Layout constraints

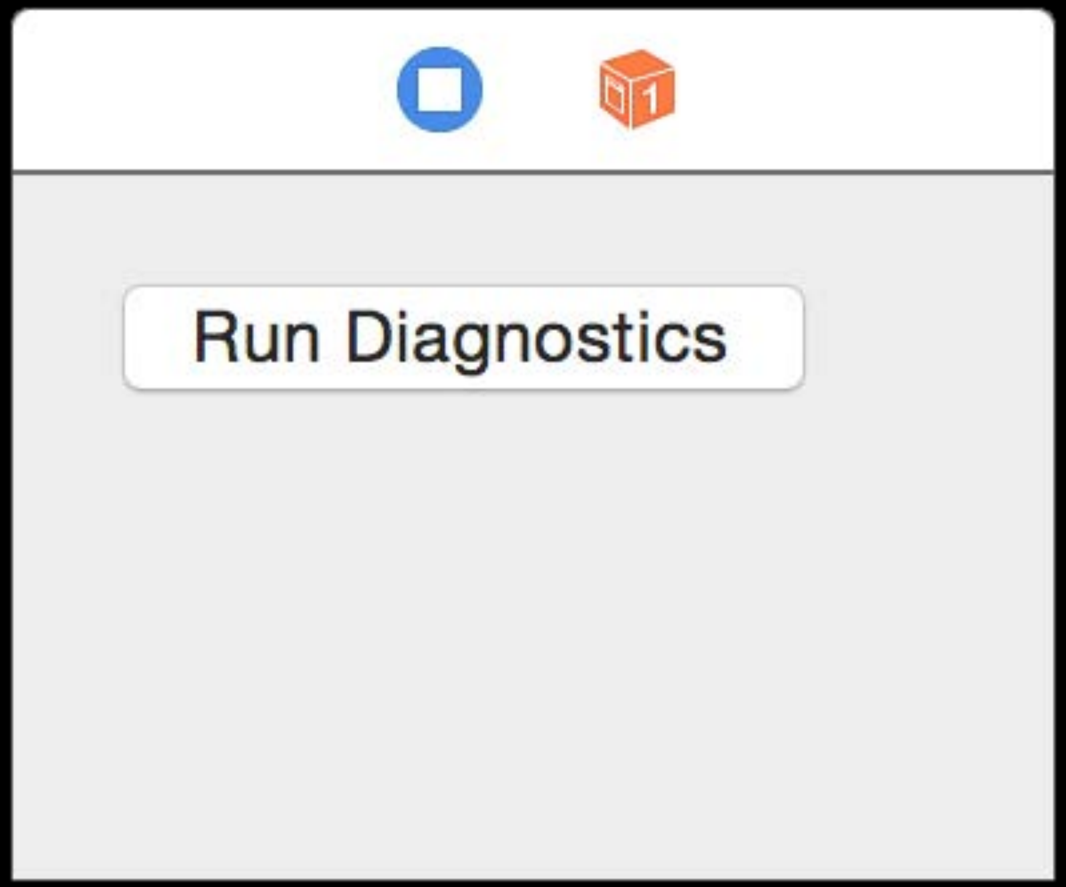
Connect actions and outlets



Storyboards on OS X

View Controllers

- Connection between model and view
- Place views
- Setup Auto Layout constraints
- Connect actions and outlets



Storyboards on OS X

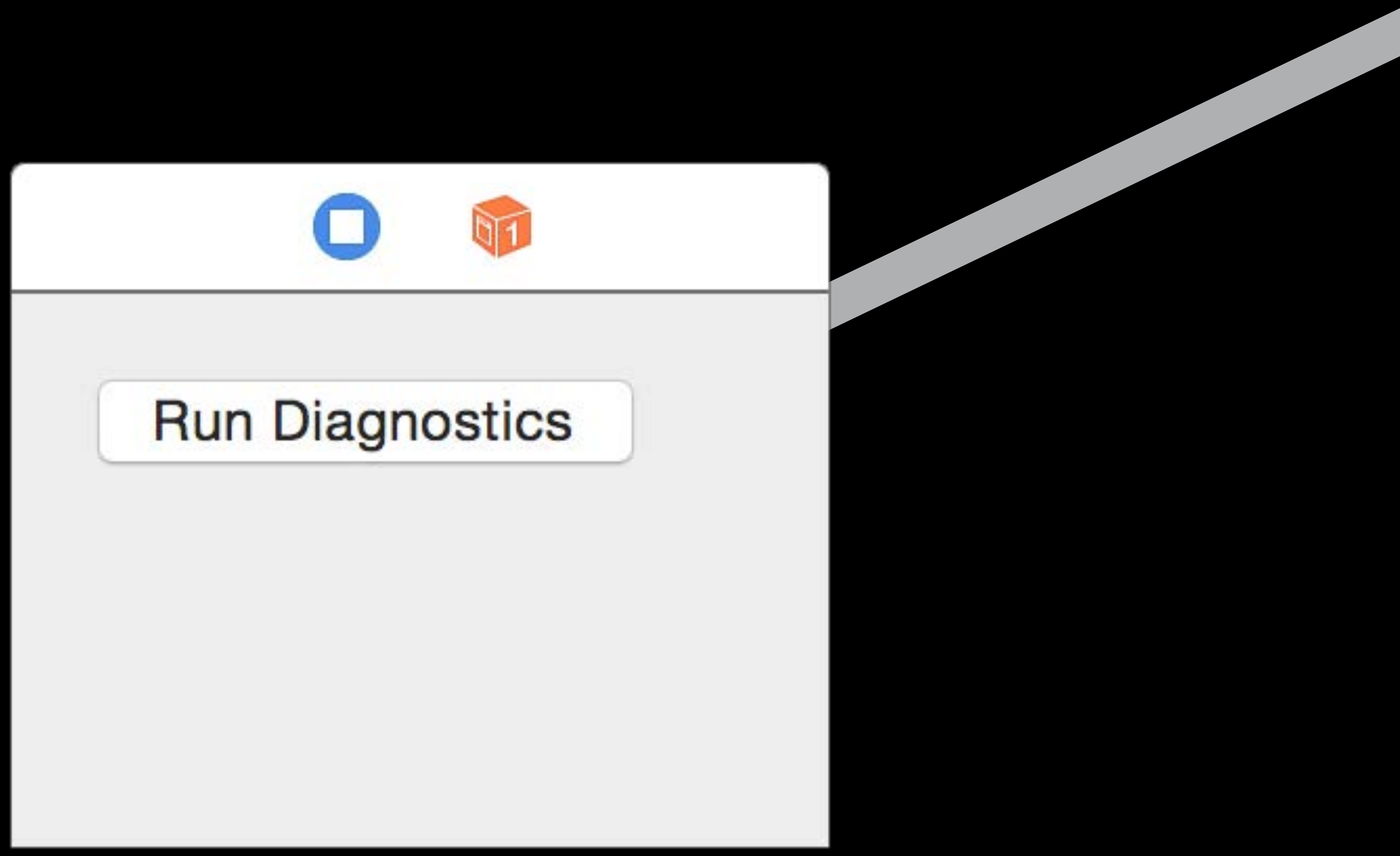
View Controllers

Connection between model and view

Place views

Setup Auto Layout constraints

Connect actions and outlets

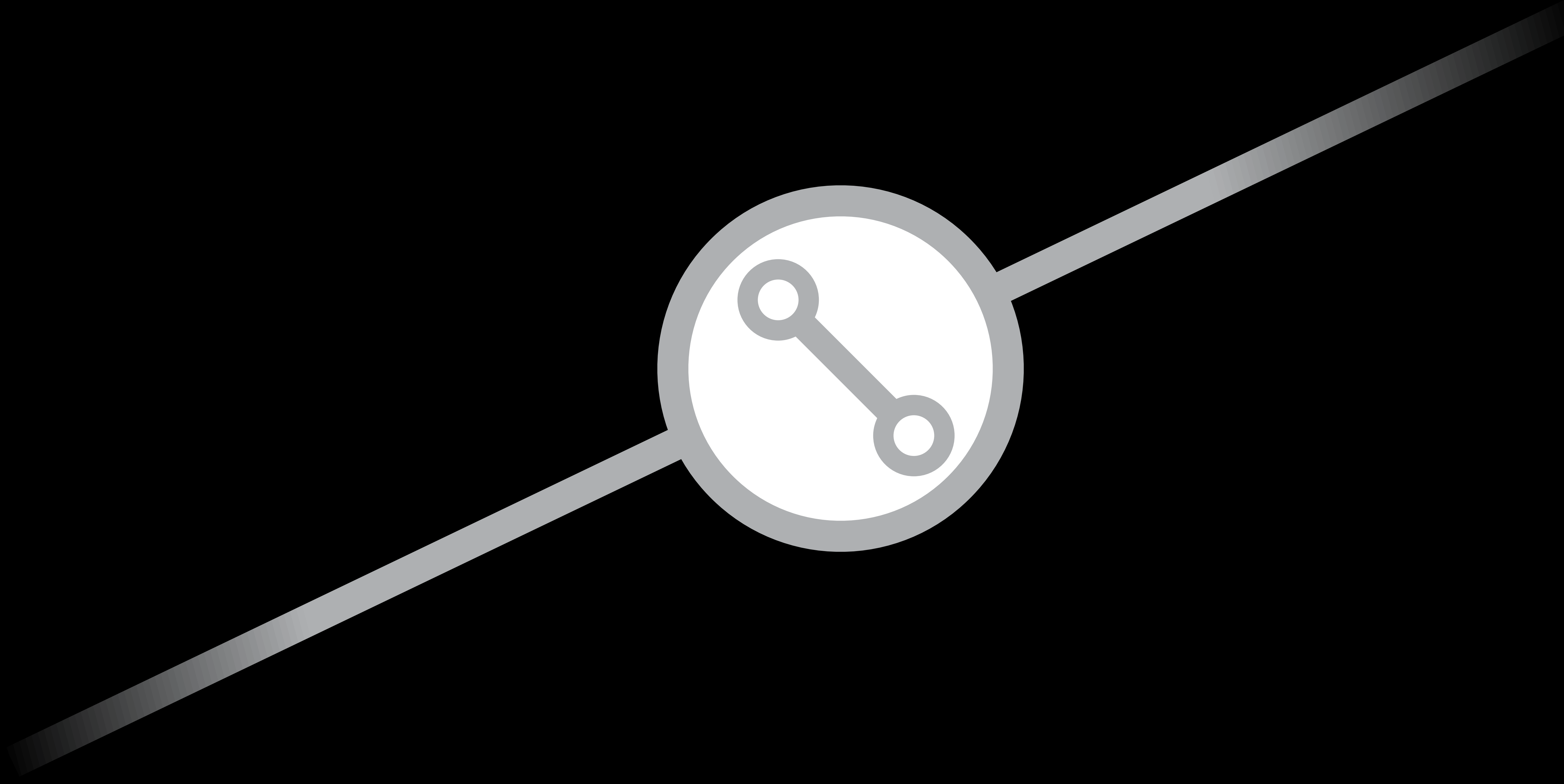


Storyboards on OS X

Segues

Storyboards on OS X

Segues



Storyboards on OS X

Segues

- Containment
    - Window
    - Split
    - Tab

Storyboards on OS X

Segues

- Containment
    - Window
    - Split
    - Tab
- Presentation
    - Modal
    - Sheet
    - Popover

Storyboards on OS X

Segues

- Containment
    - Window
    - Split
    - Tab
- Presentation
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    - Sheet
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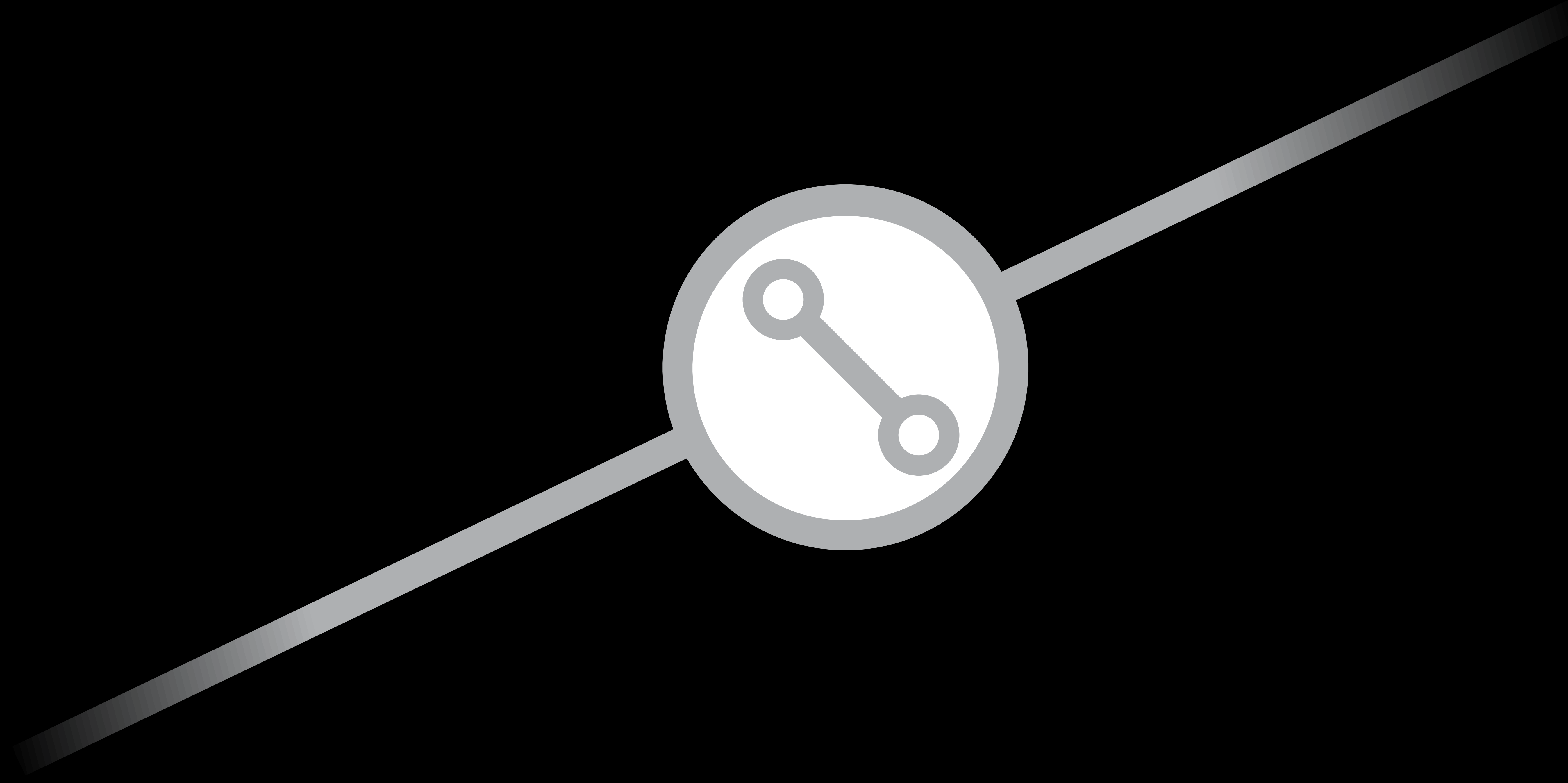
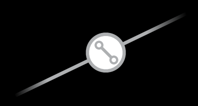


```
- (void)prepareForSegue:(NSStoryboardSegue *)segue
                 sender:(id)sender;
```

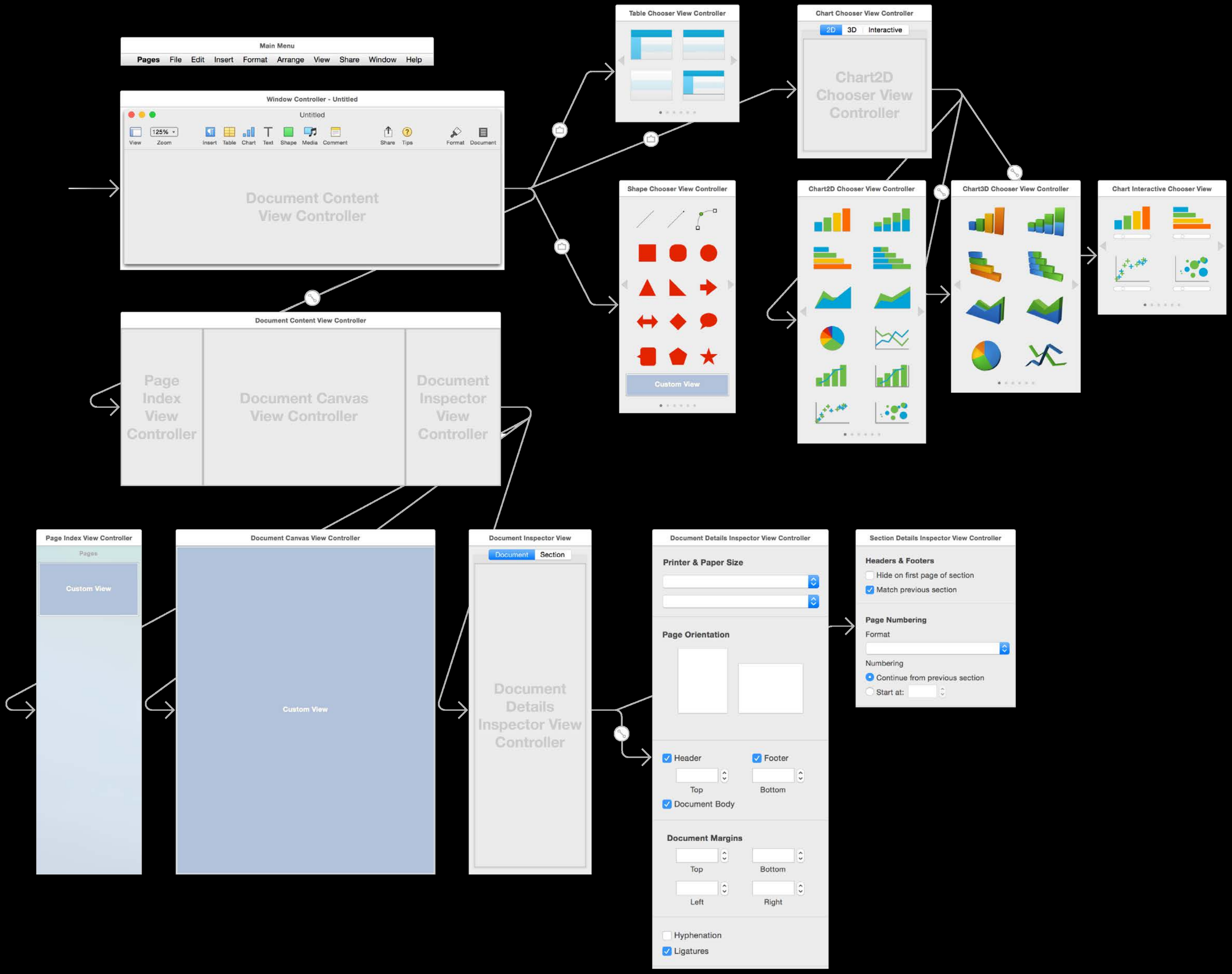
Storyboards on OS X

Build and run time



Storyboards on OS X

Build and run time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Printer & Paper Size

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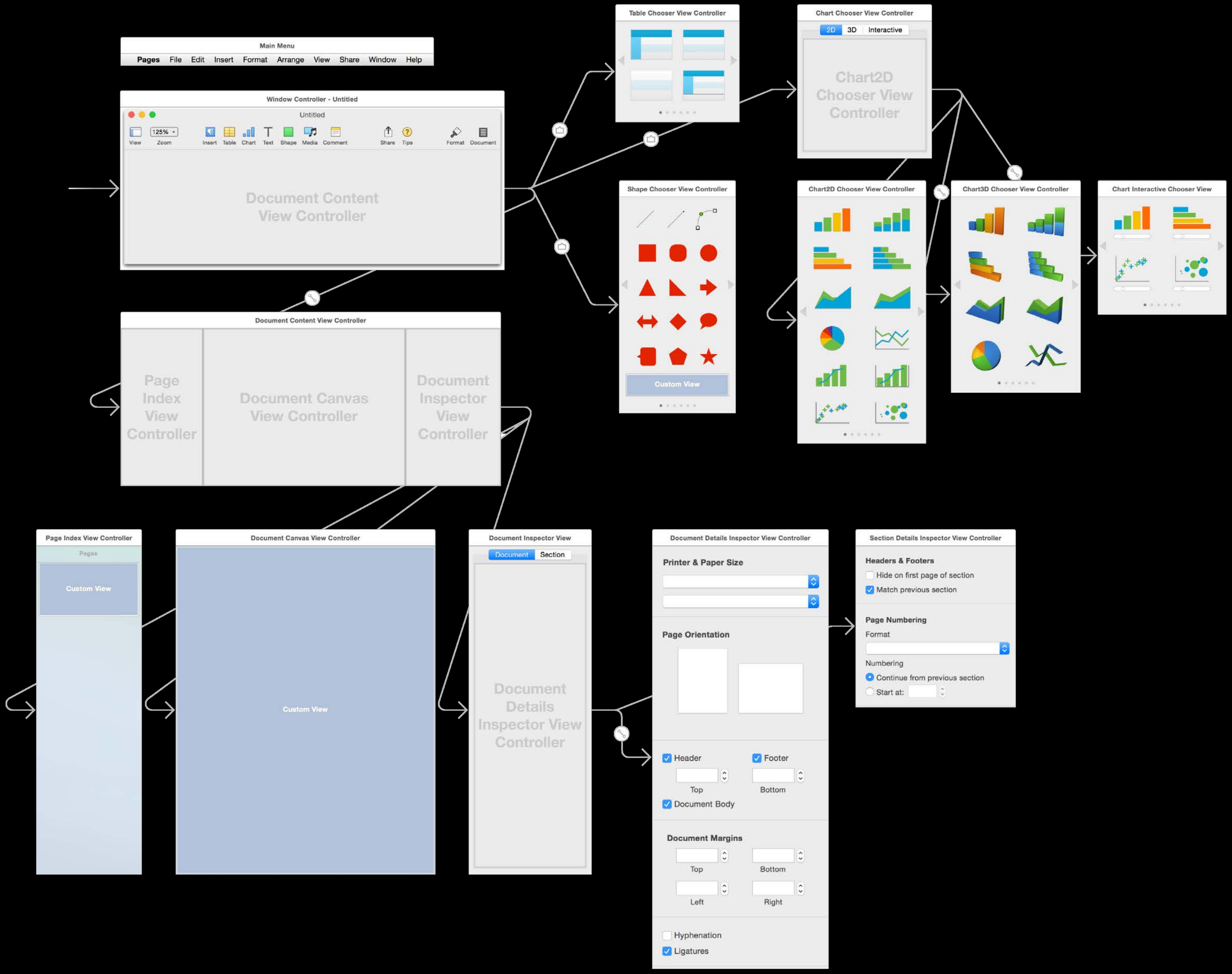
Storyboards on OS X

Build and run time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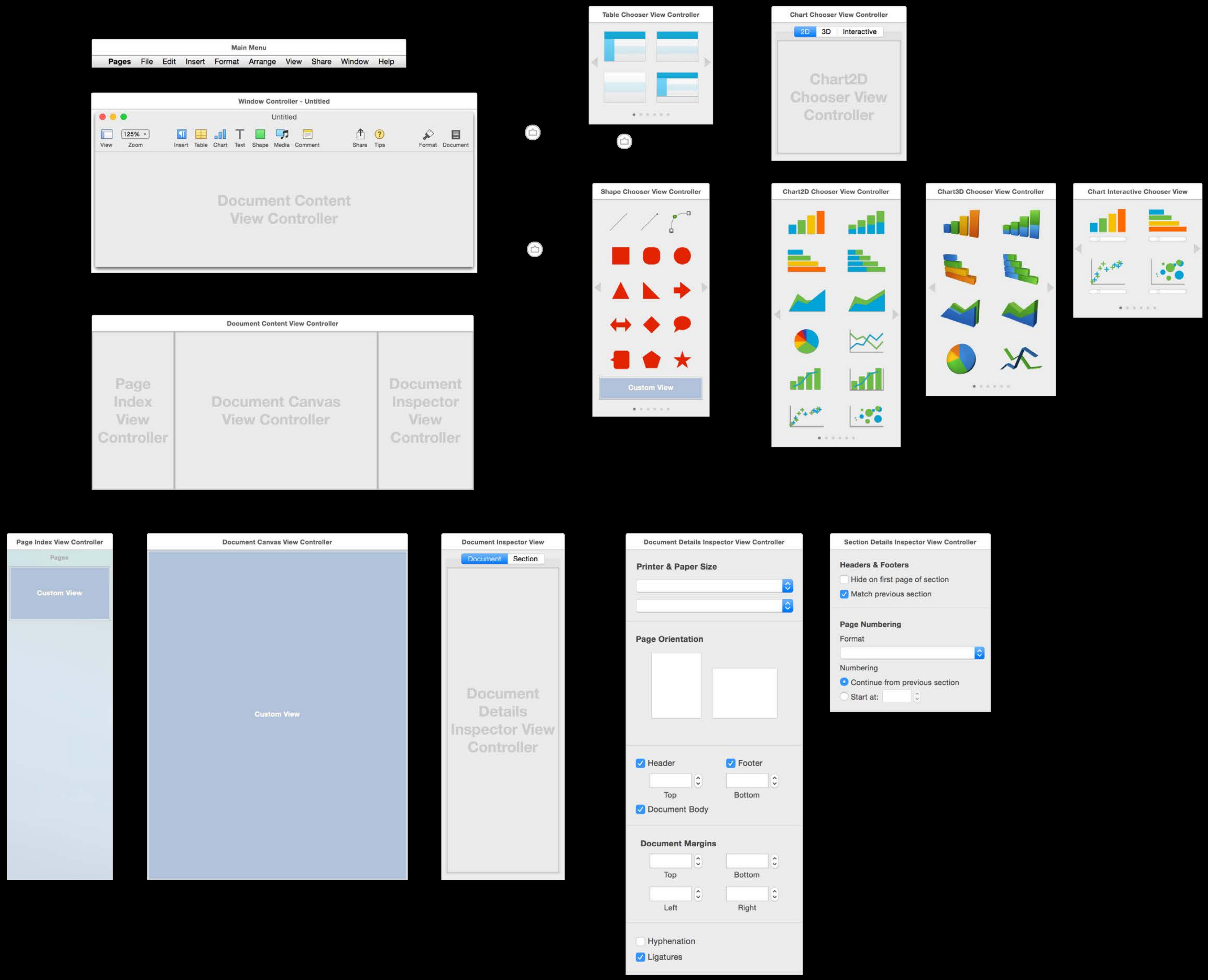
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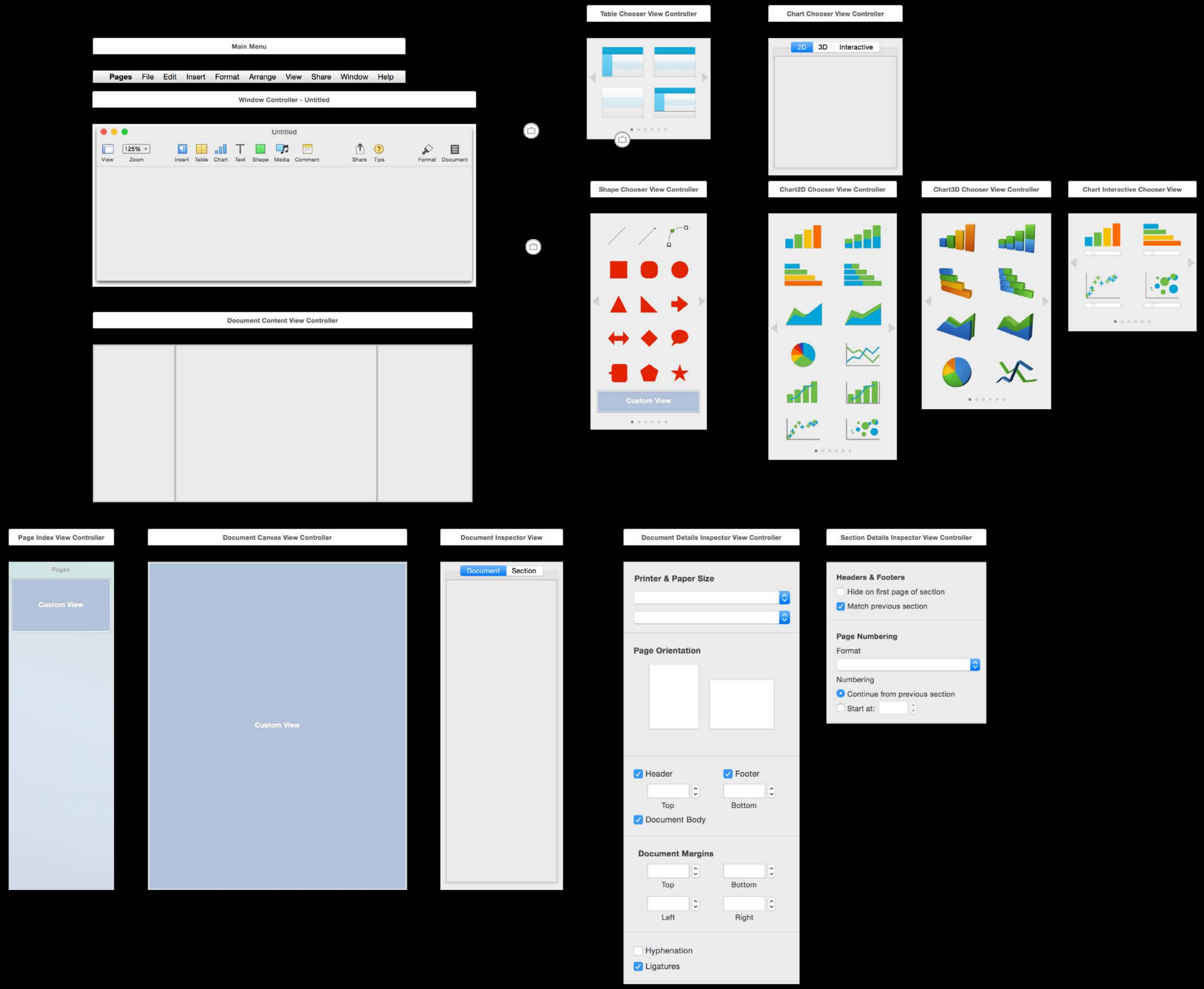
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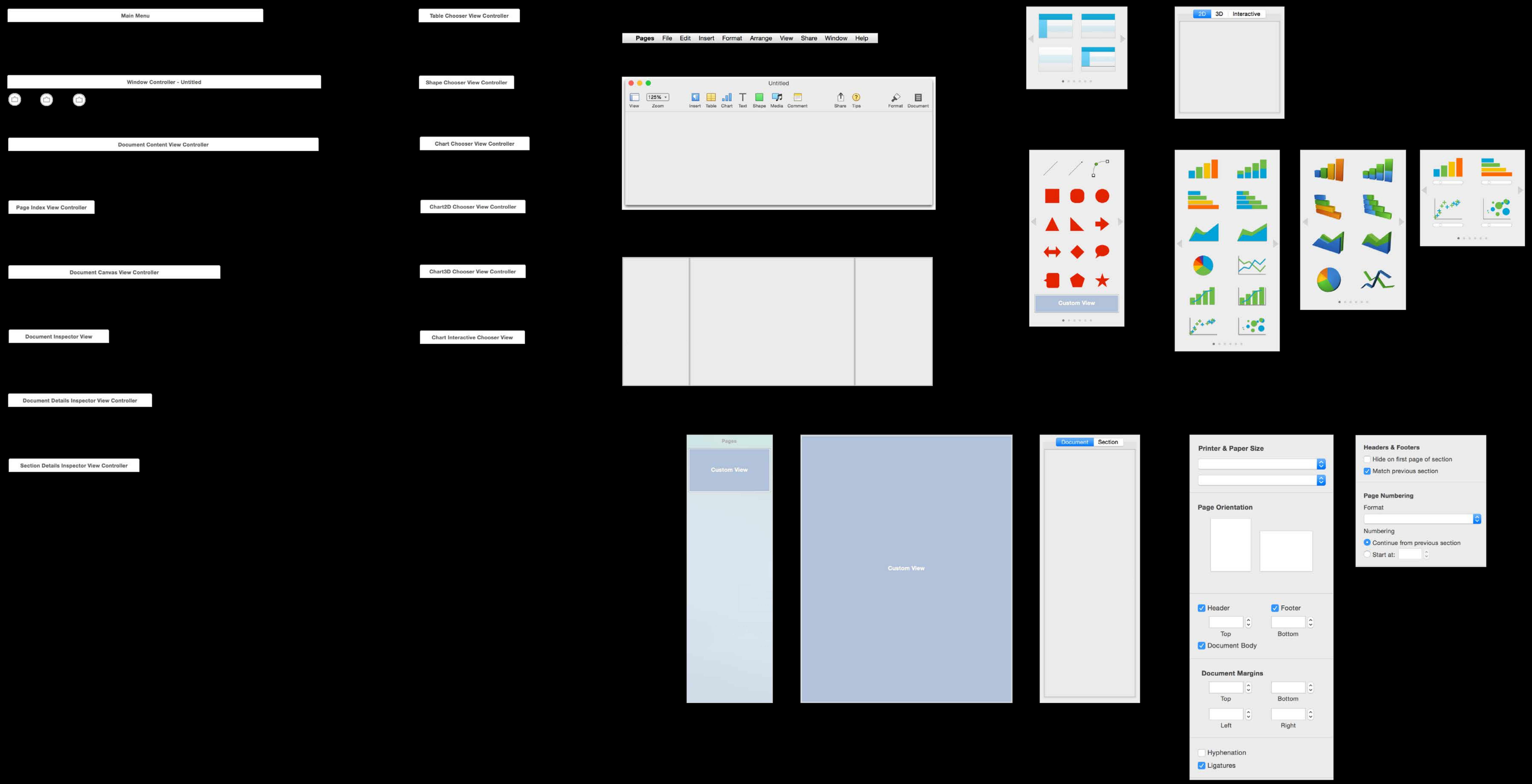
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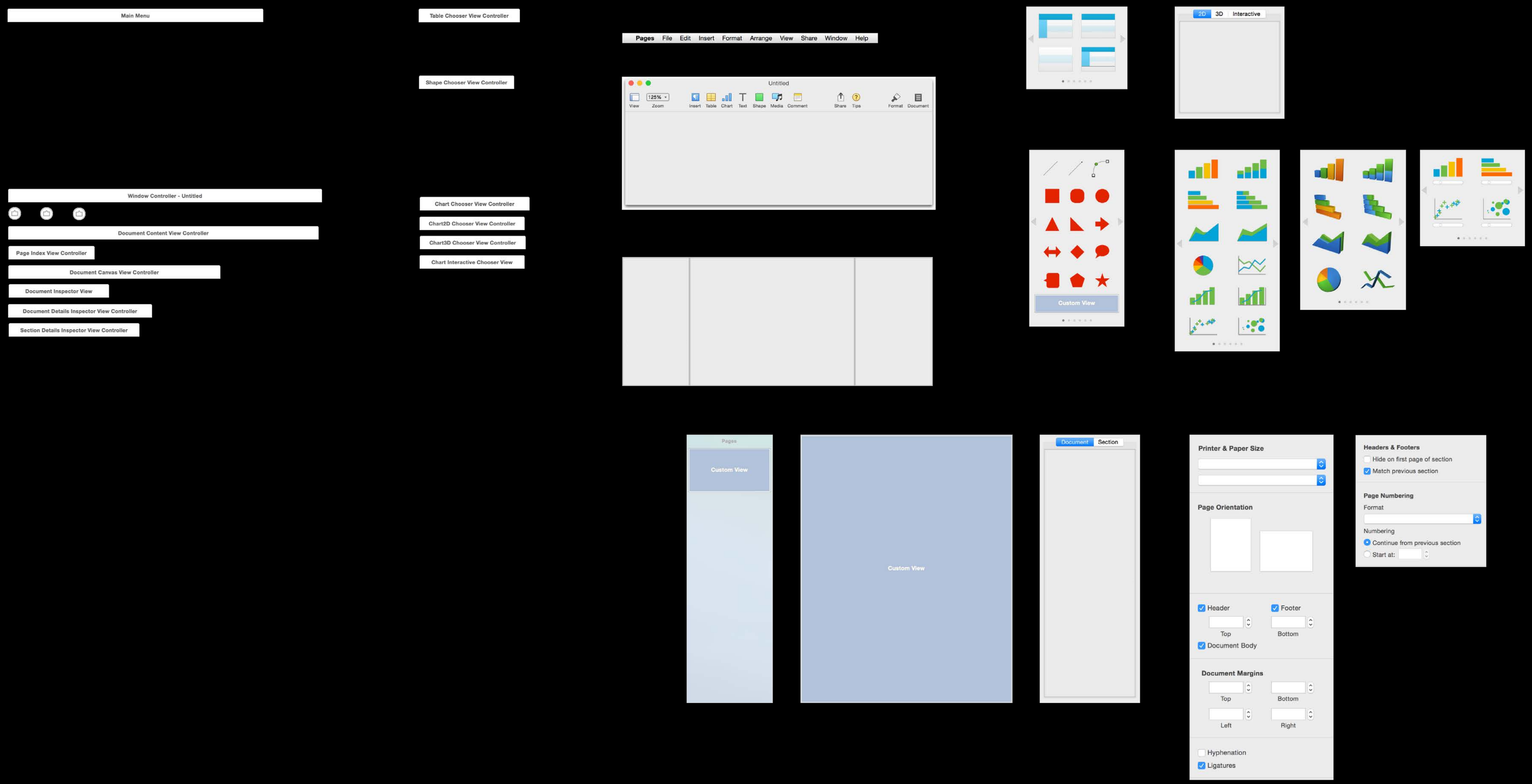
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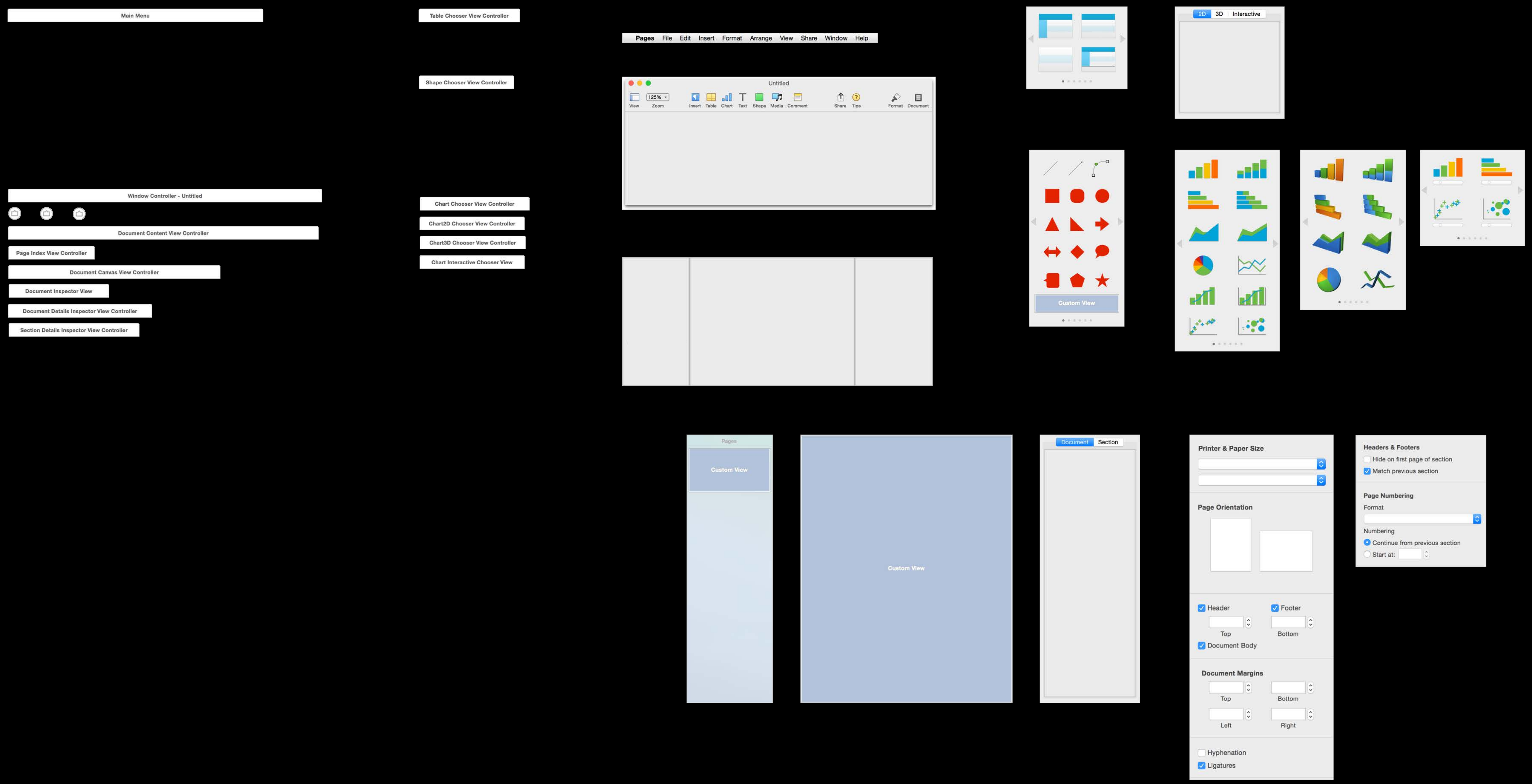
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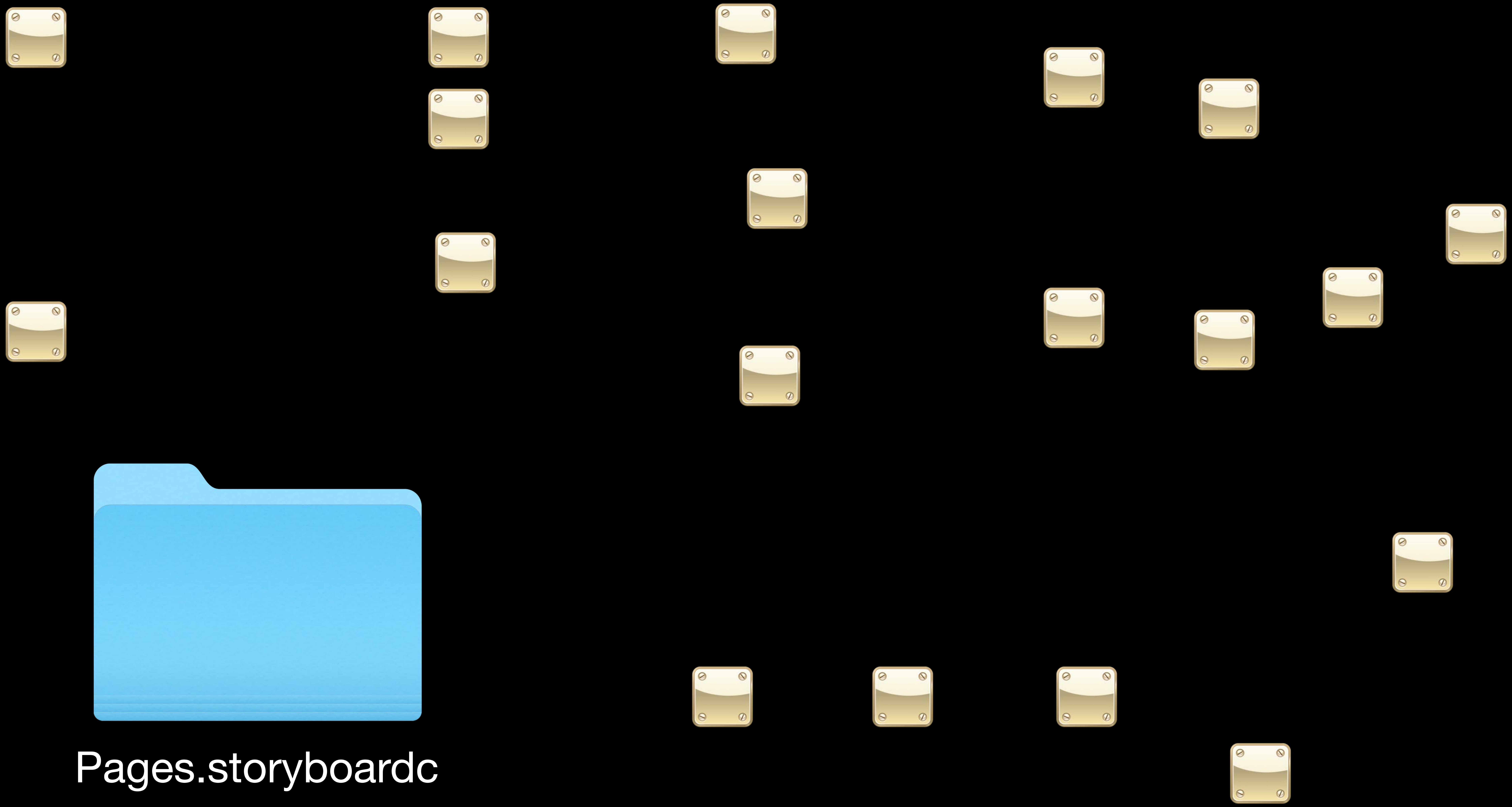
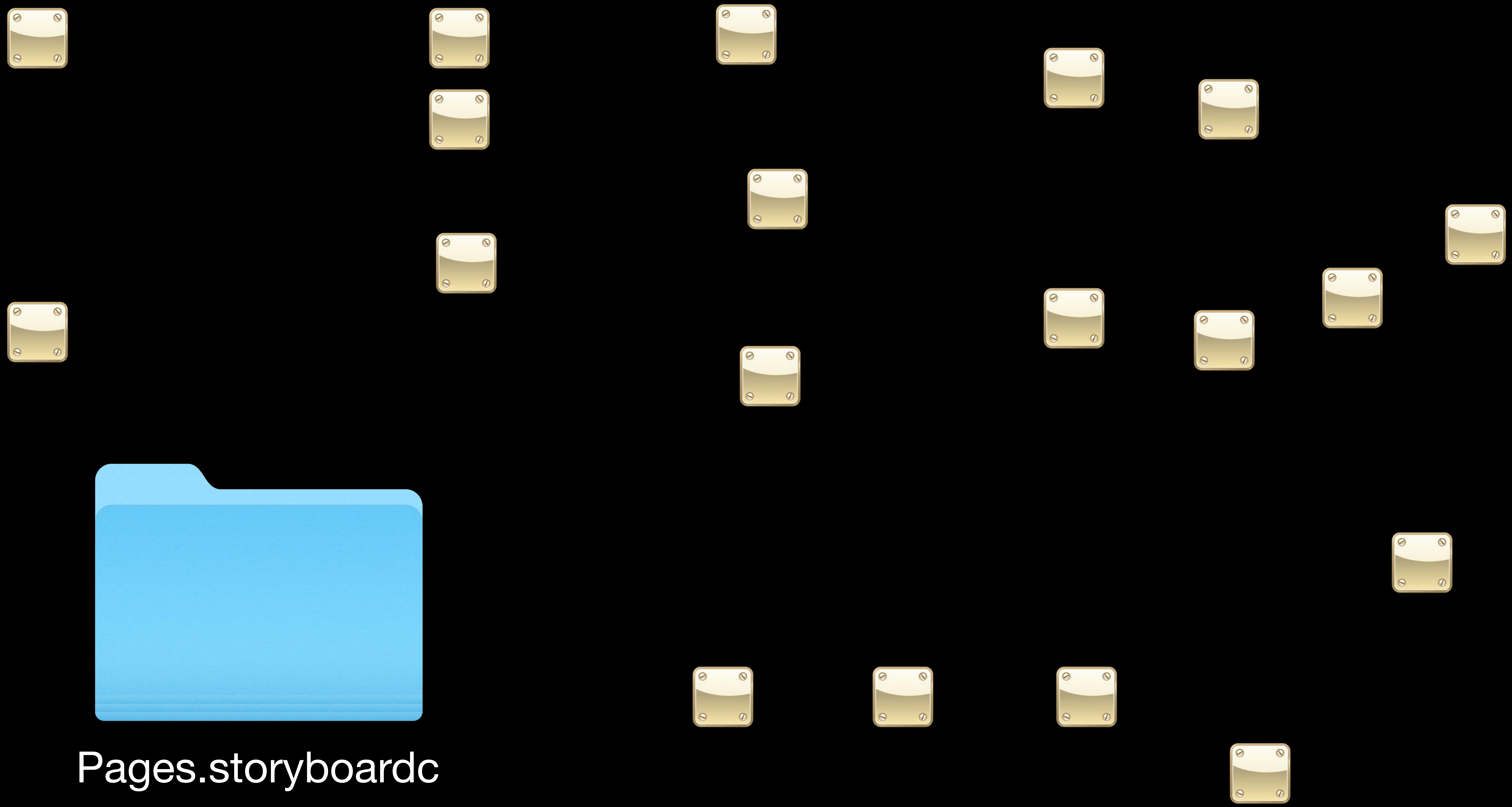


Storyboards on OS X

Build and run time



Pages.storyboardc

Storyboards on OS X

Build and run time

Pages.storyboardc

Storyboards on OS X

Build and run time

Pages.storyboardc

Storyboards on OS X

Build and run time

Pages.app

Storyboards on OS X

Build and run time

Demo

Getting started with Storyboards on OS X

Mike Swingler

API

Looking under the hood

Raleigh Ledet
AppKit Engineer

API

Looking under the hood

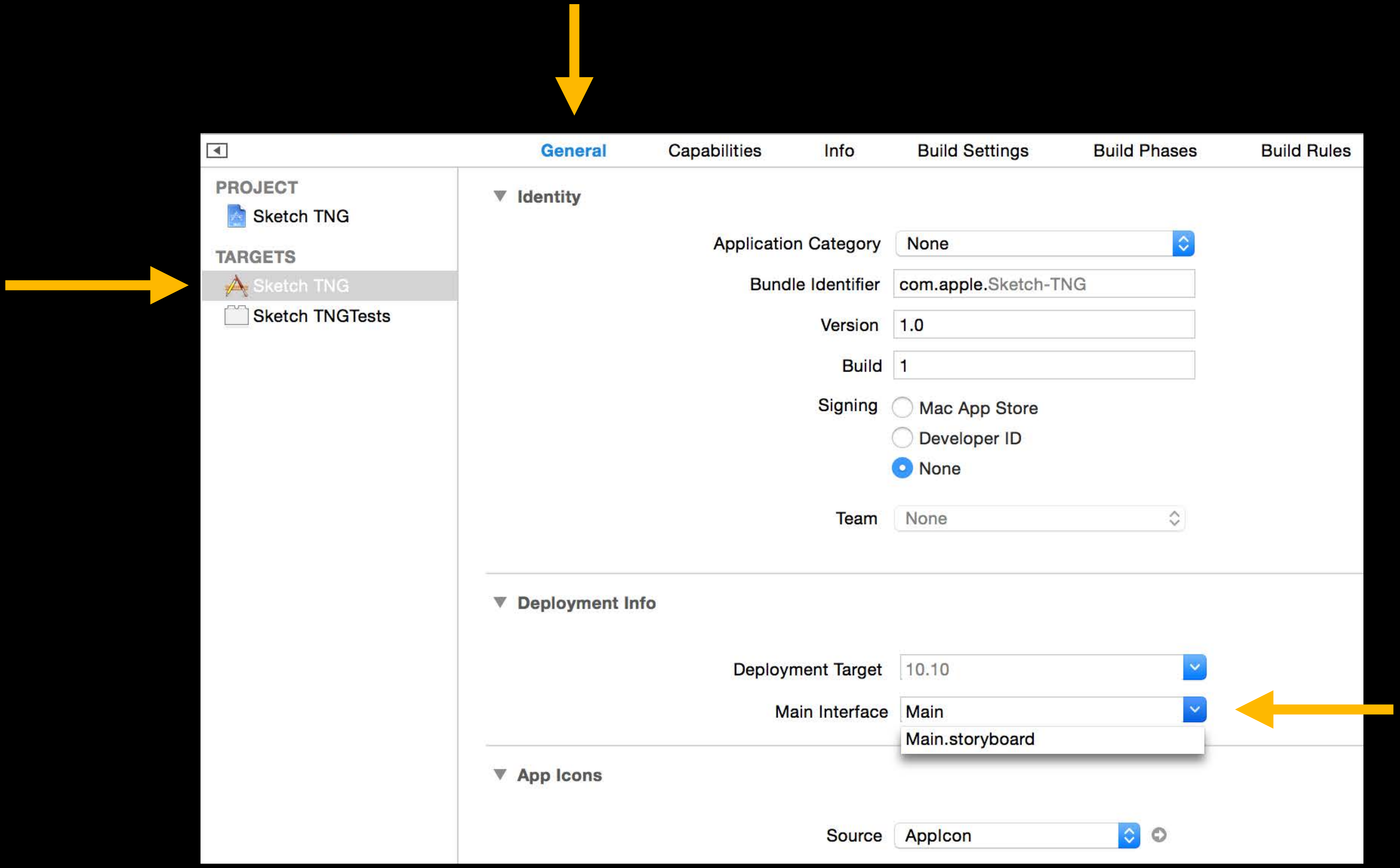
Storyboards

View controllers

Window controllers

Gesture recognizers

Storyboard



▼ Identity

Application Category: None

Bundle Identifier: com.apple.Sketch-TNG

Version: 1.0

Build: 1

Signing: ○ Mac App Store ○ Developer ID ● None

Team: None

▼ Deployment Info

Deployment Target: 10.10

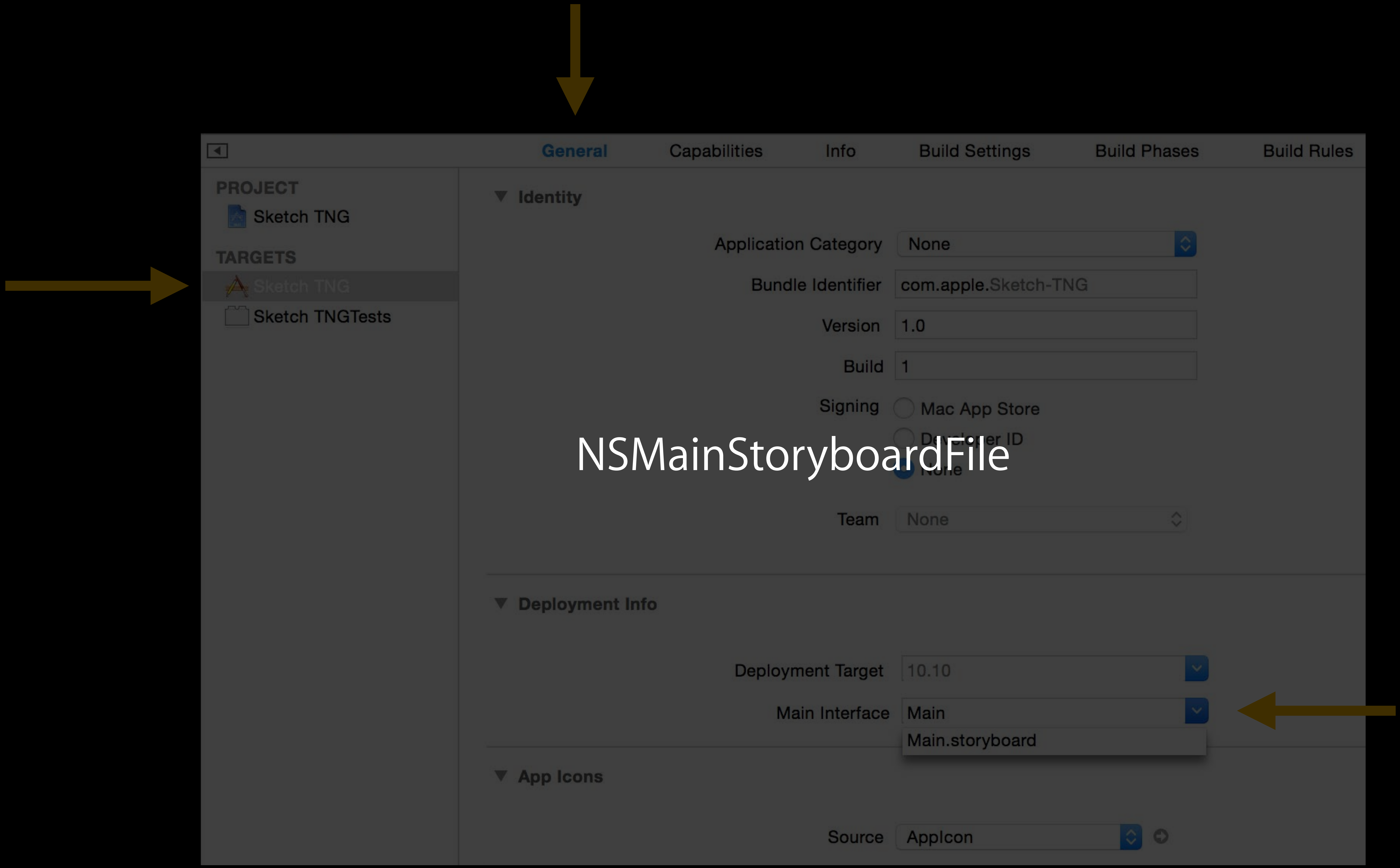
Main Interface: Main

Main.storyboard

▼ App Icons

Source: AppIcon

Storyboard



NSMainStoryboardFile

Application Category: None

Bundle Identifier: com.apple.Sketch-TNG

Version: 1.0

Build: 1

Signing: ○ Mac App Store ○ Developer ID ● None

Team: None

Deployment Target: 10.10

Main Interface: Main

Main.storyboard

Source: AppIcon

Storyboard

```
+ (instancetype)storyboardWithName:(NSString *)name
                            bundle:(NSBundle *)storyboardBundleOrNil;

- (id)instantiateInitialController;

- (id)instantiateControllerWithIdentifier:(NSString *)identifier;
```

Storyboard

```
+ (instancetype)storyboardWithName:(NSString *)name
                            bundle:(NSBundle *)storyboardBundleOrNil;

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Storyboard

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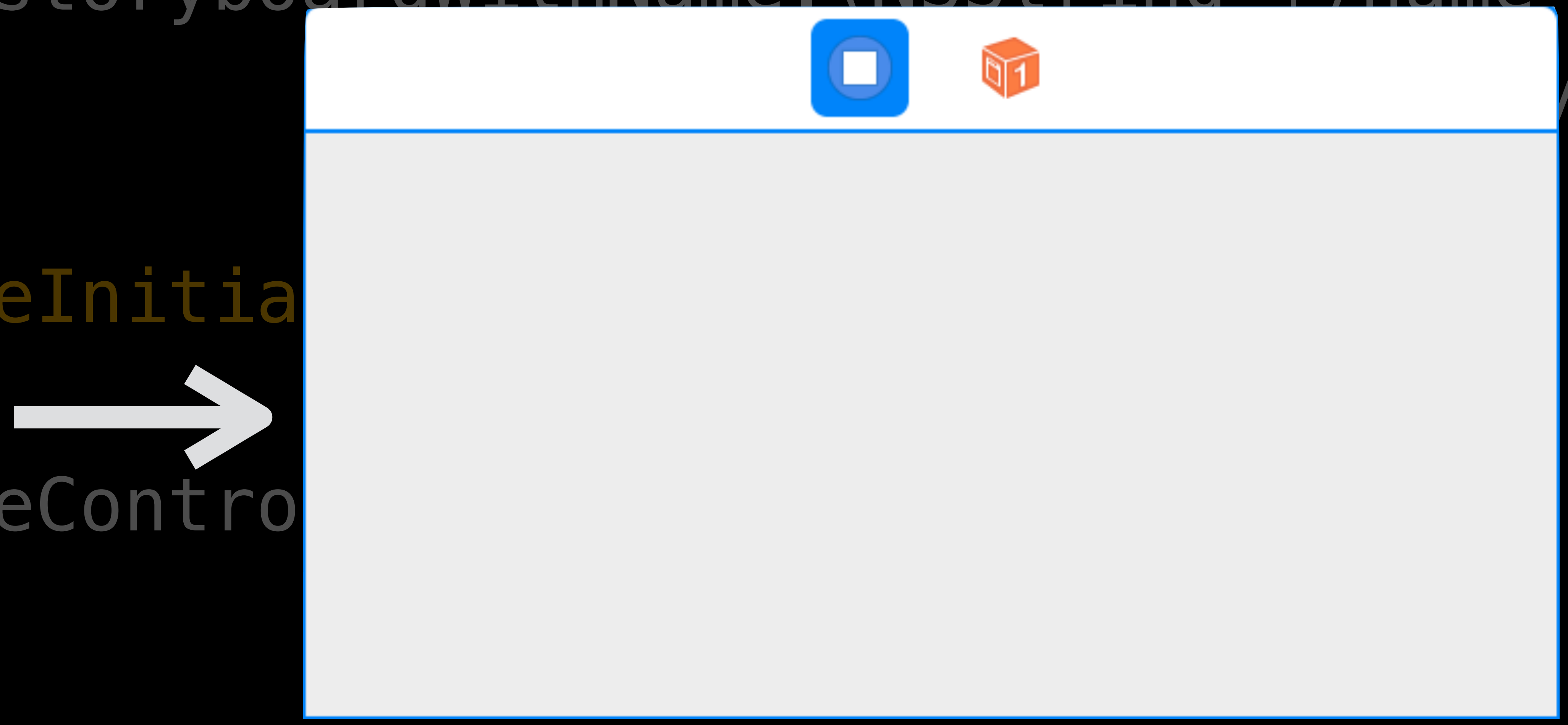


Storyboard

```
+ (instancetype)storyboardWithName:(NSString *)name
                            bundle:(NSBundle *)storyboardBundleOrNil;

- (id)instantiateInitialController;

- (id)instantiateControllerWithIdentifier:(NSString *)identifier;
```

NSViewController

Loading and layout

Containers

Triggered segues

Manual presentation

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded;
- (void)viewDidLoad;
- (void)viewWillAppear;
- (void)viewDidAppear;
- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = NO;
- (void)viewDidLoad;
- (void)viewWillAppear;
- (void)viewDidAppear;
- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```

ViewController

-init

NSViewController

View loading, display, and layout

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = NO;
- (void)viewDidLoad;
- (void)viewWillAppear;
- (void)viewDidAppear;
- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```

ViewController

-loadView

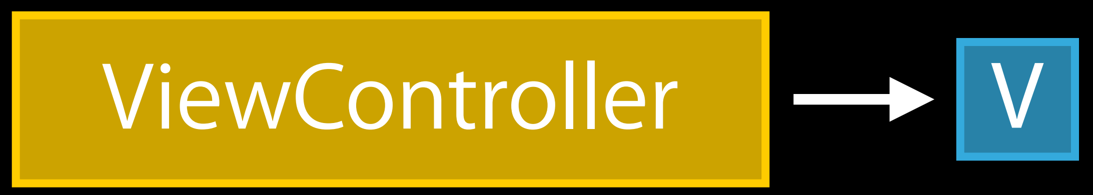
NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
- (void)viewDidLoad;
- (void)viewWillAppear;
- (void)viewDidAppear;
- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```



```
-loadView
-setView:
```

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
- (void)viewDidLoad;
- (void)viewWillAppear;
- (void)viewDidAppear;
- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```

ViewController
V

```
-loadView
-setView:
```

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
- (void)viewDidLoad;
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- (void)updateViewConstraints;
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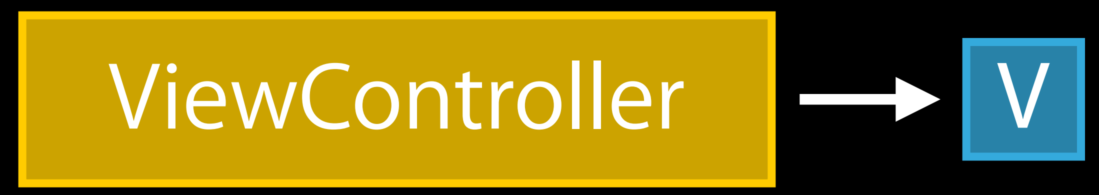

NSViewController

View loading, display, and layout

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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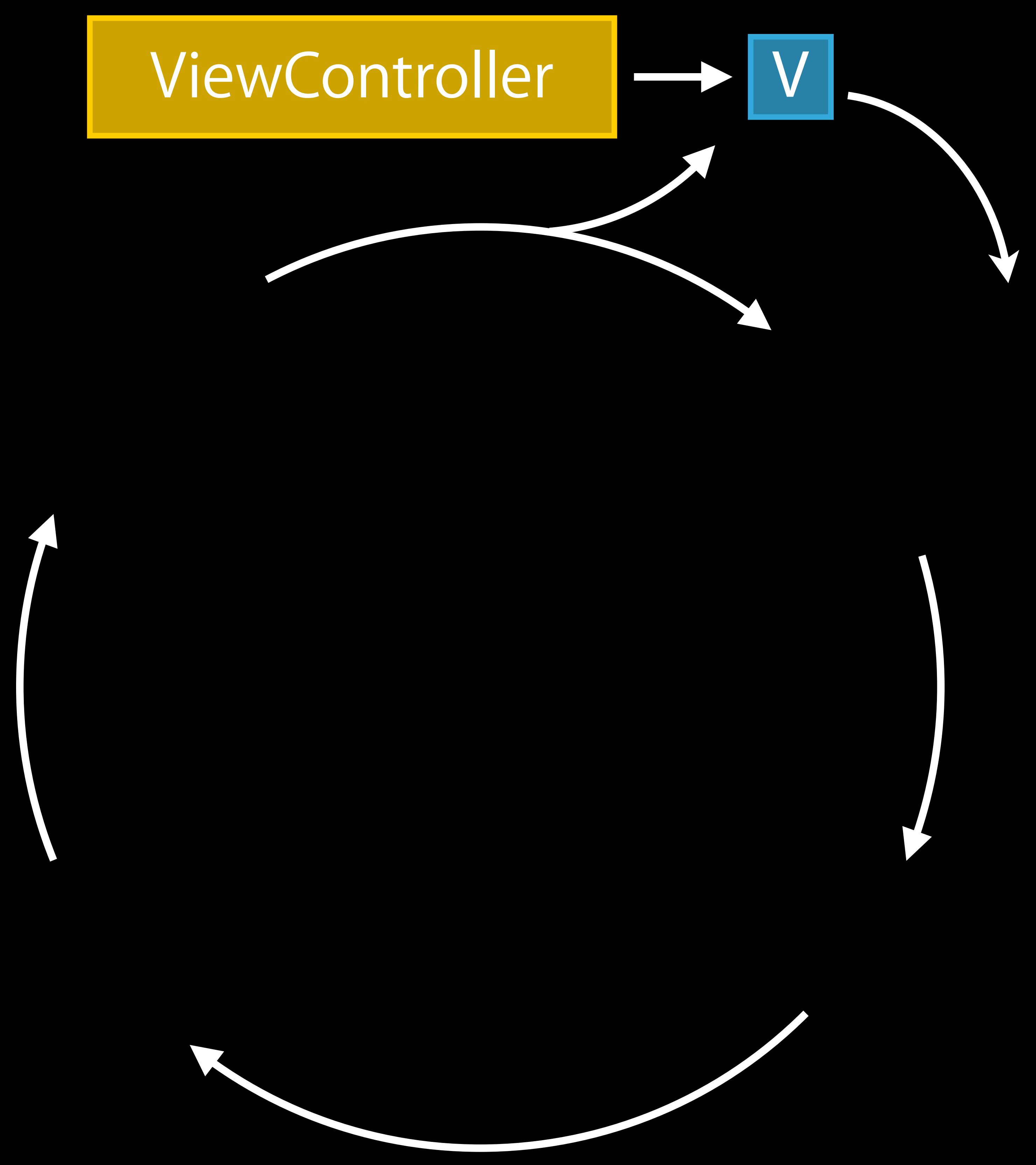

NSViewController

View loading, display, and layout

NEW

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@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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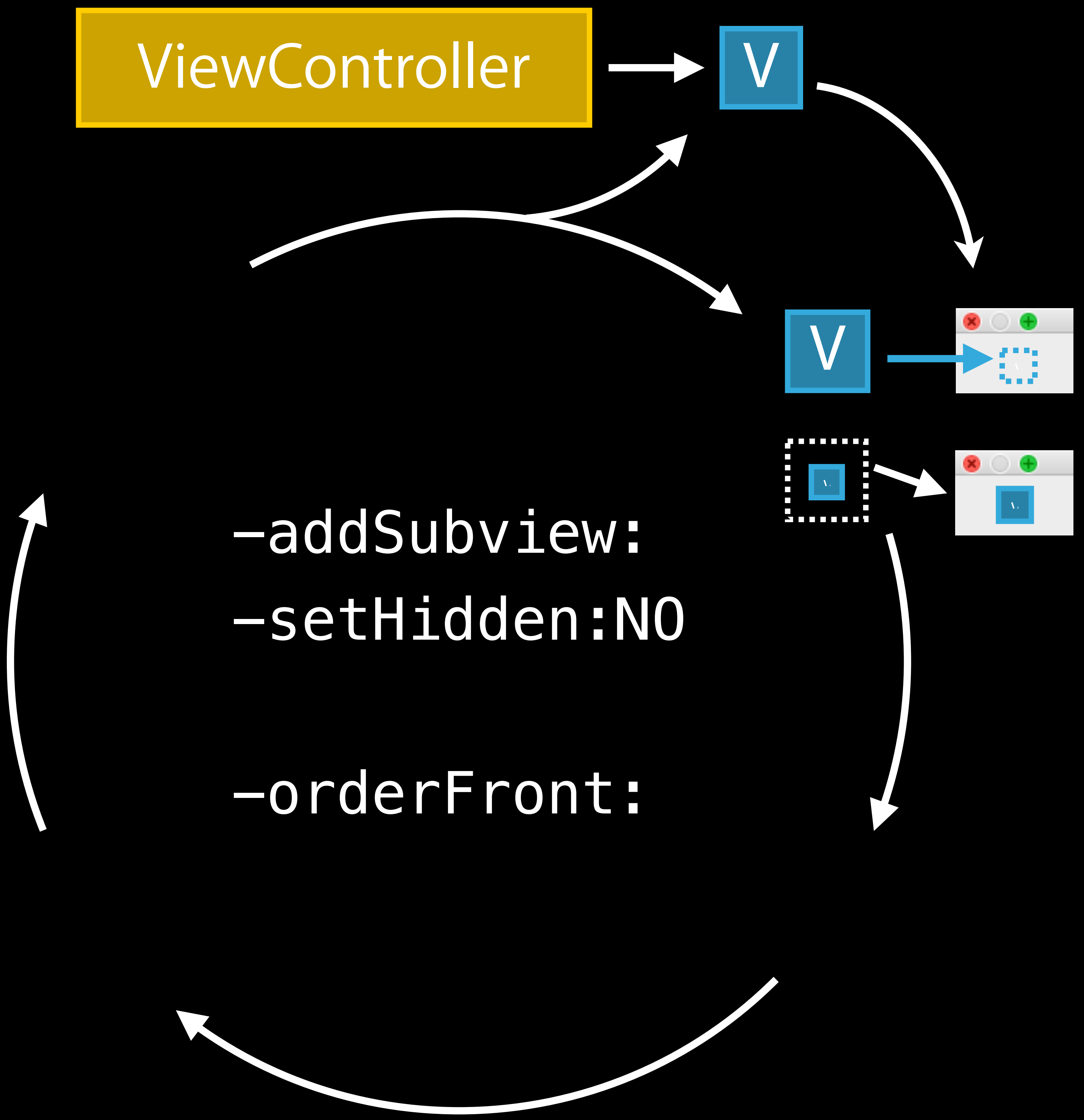

NSViewController

View loading, display, and layout

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@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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```

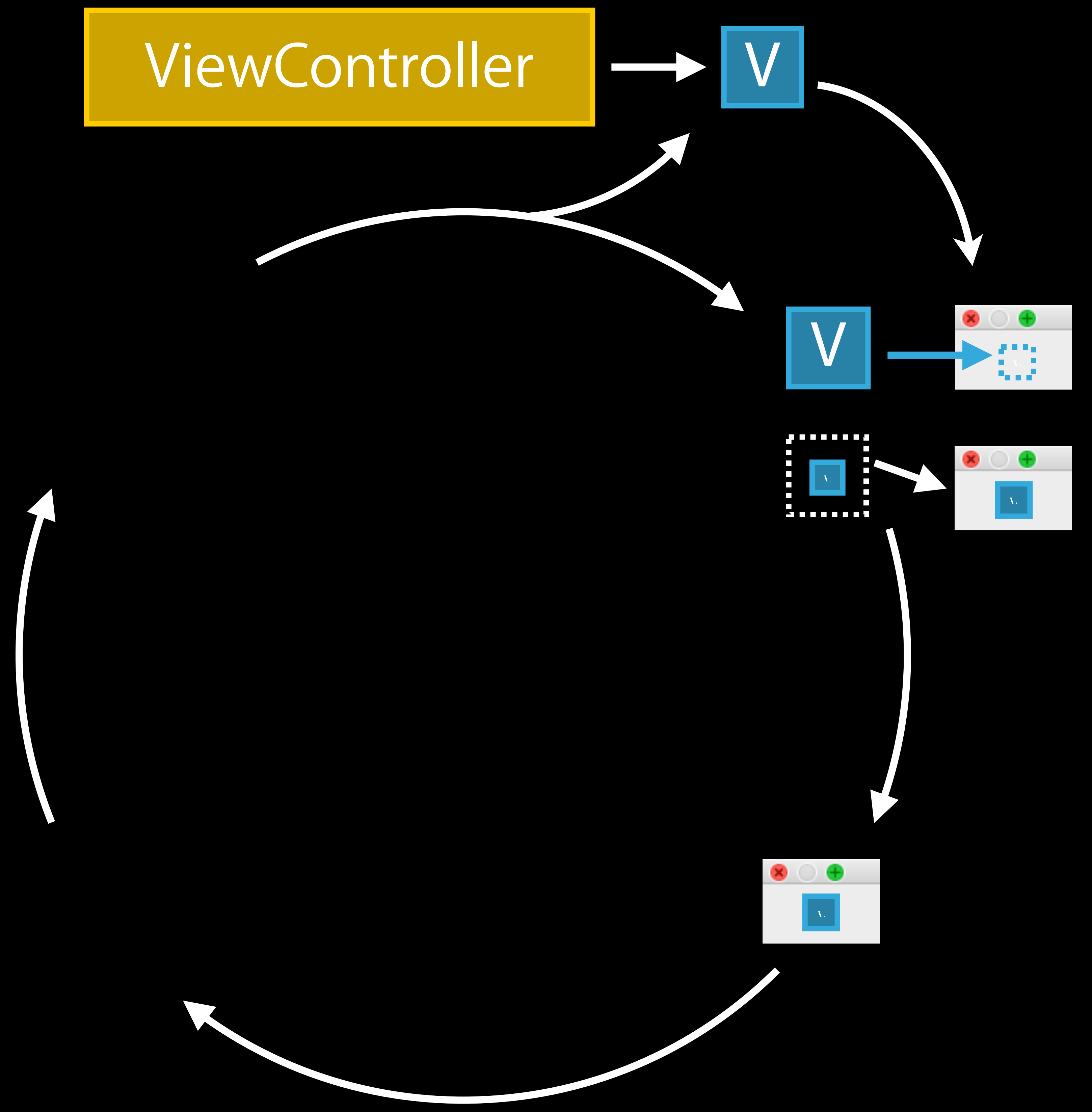

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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```

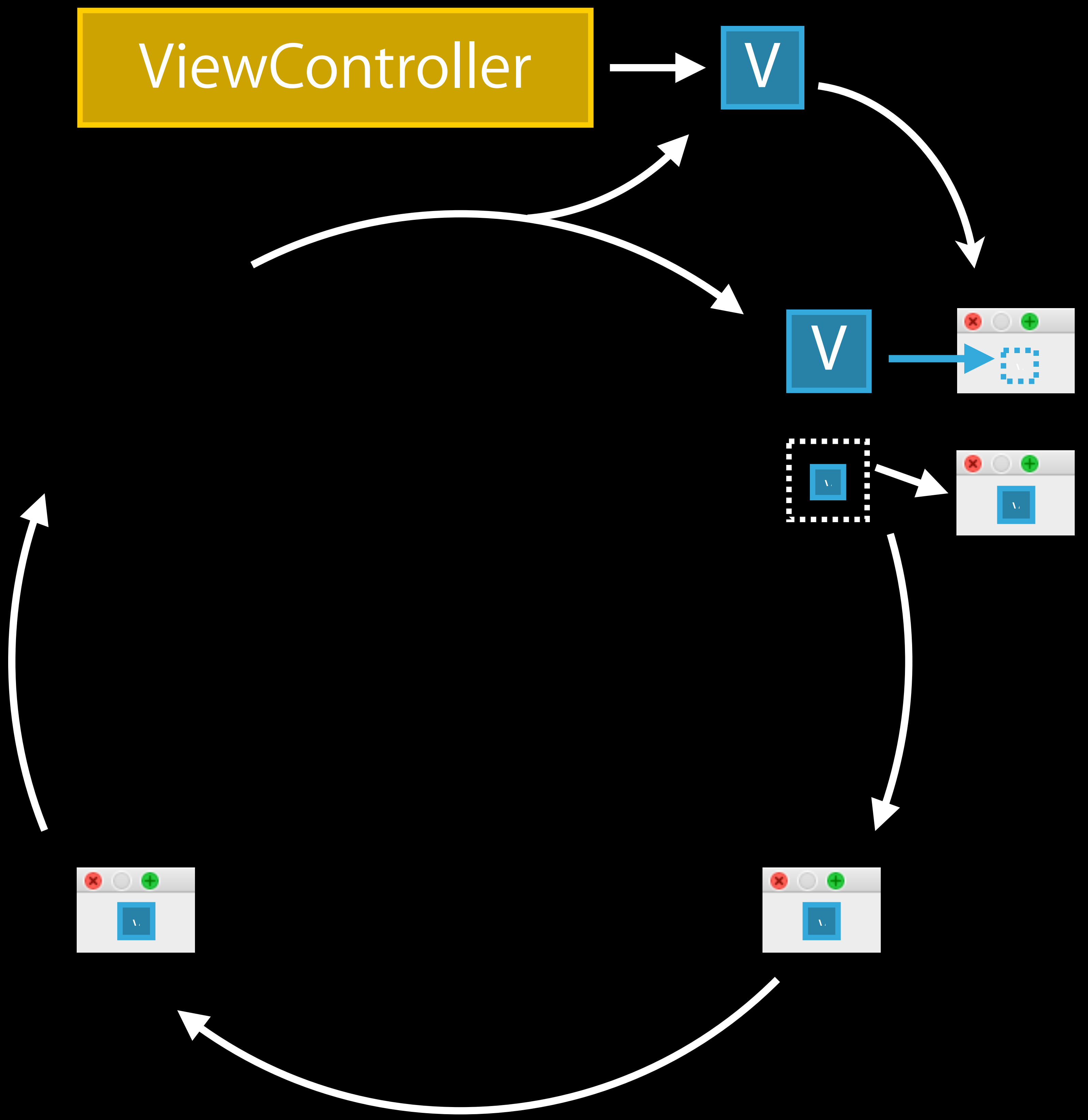

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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```

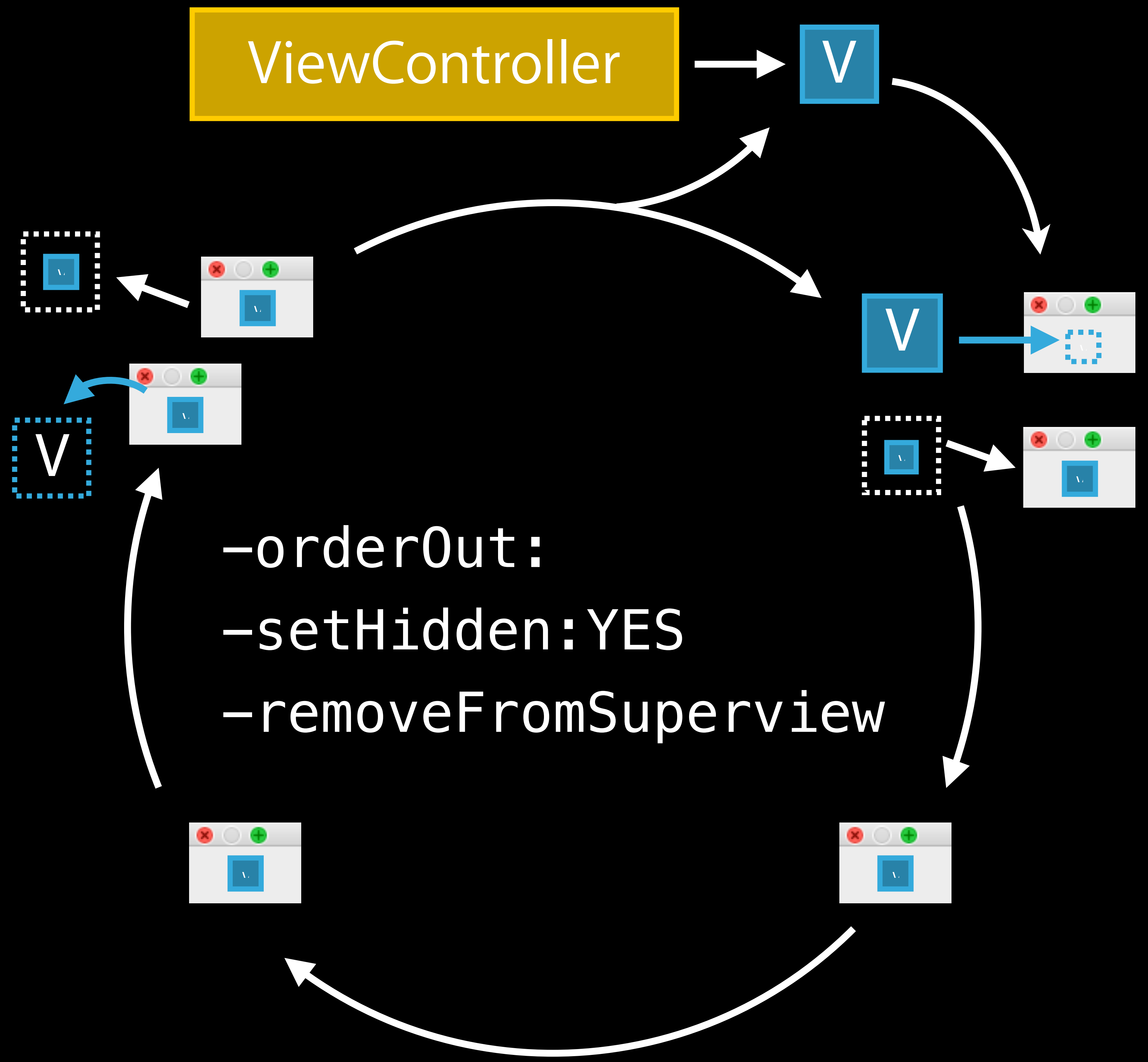

NSViewController

View loading, display, and layout

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@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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- (void)viewWillLayout;
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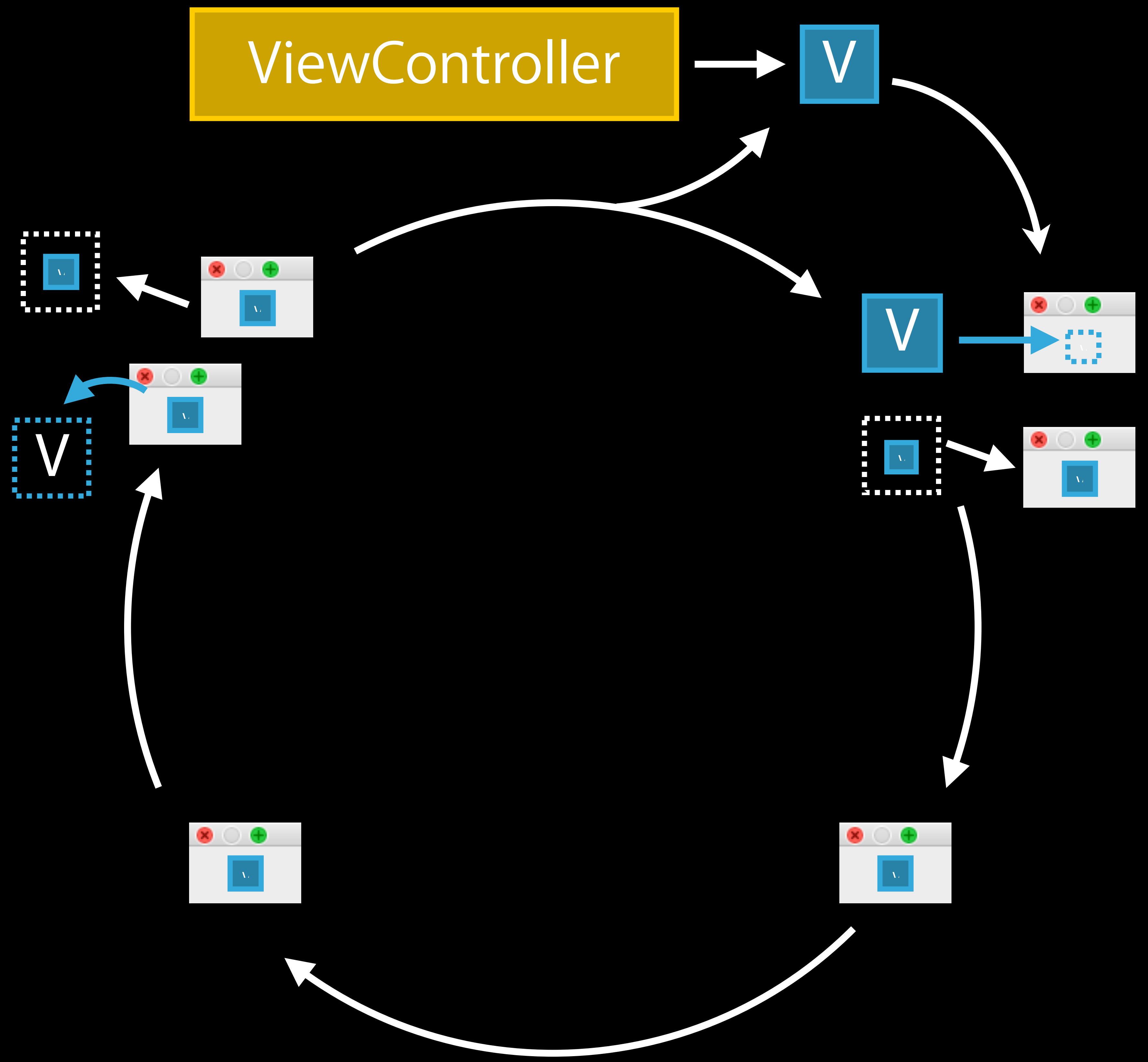

NSViewController

View loading, display, and layout

NEW

```
@property (readonly, getter=isViewLoaded) BOOL viewLoaded = YES;
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- (void)viewWillDisappear;
- (void)viewDidDisappear;

- (void)updateViewConstraints;
- (void)viewWillLayout;
- (void)viewDidLayout;
```
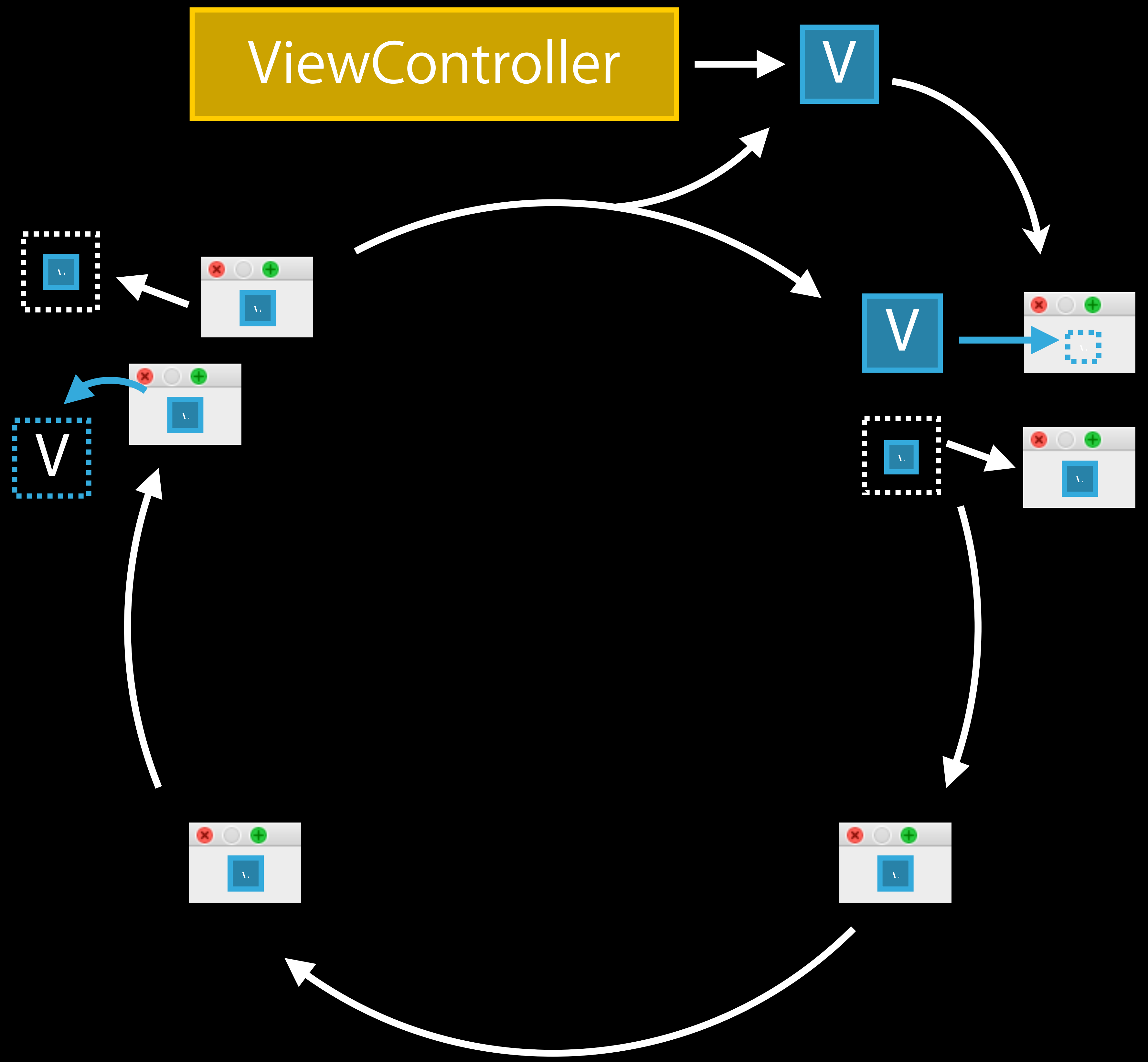



NSViewController

Now in responder chain!

NEW

NSViewController

Now in responder chain!

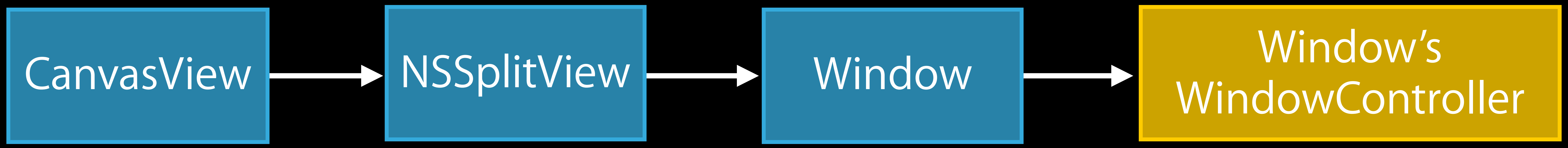
NEW

CanvasView

NSViewController

Now in responder chain!

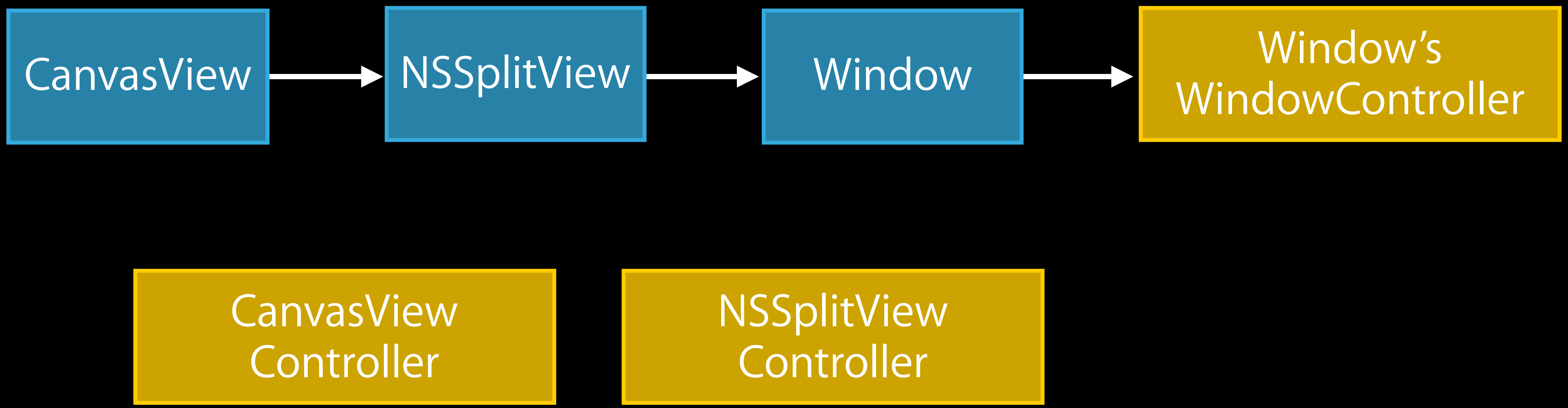
NEW



NSViewController

Now in responder chain!

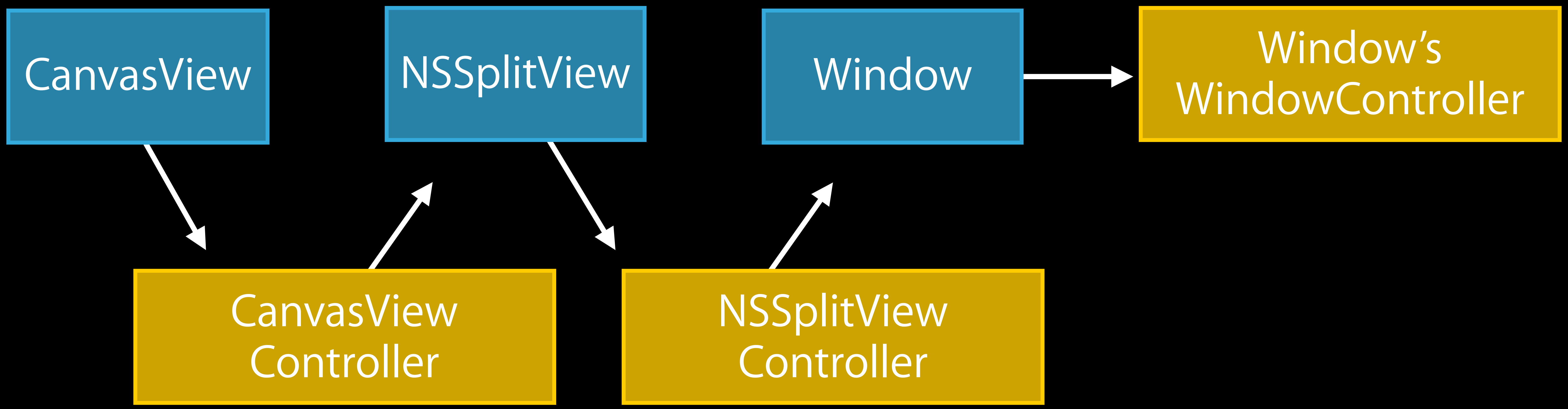
NEW



NSViewController

Now in responder chain!

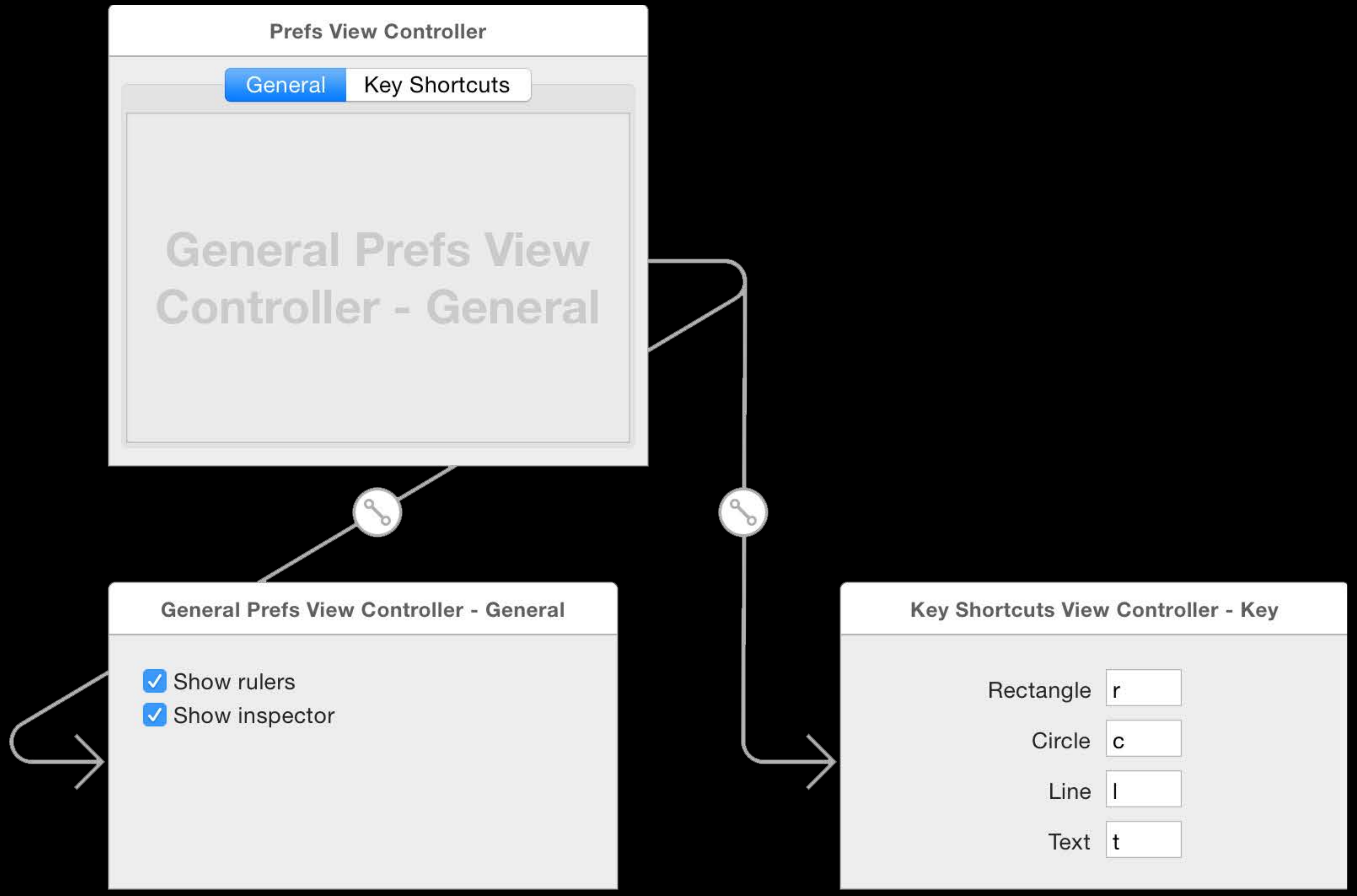
NEW



NSViewController

Containment

NEW



Prefs View Controller

General | Key Shortcuts

General Prefs View Controller - General

General Prefs View Controller - General

☑ Show rulers

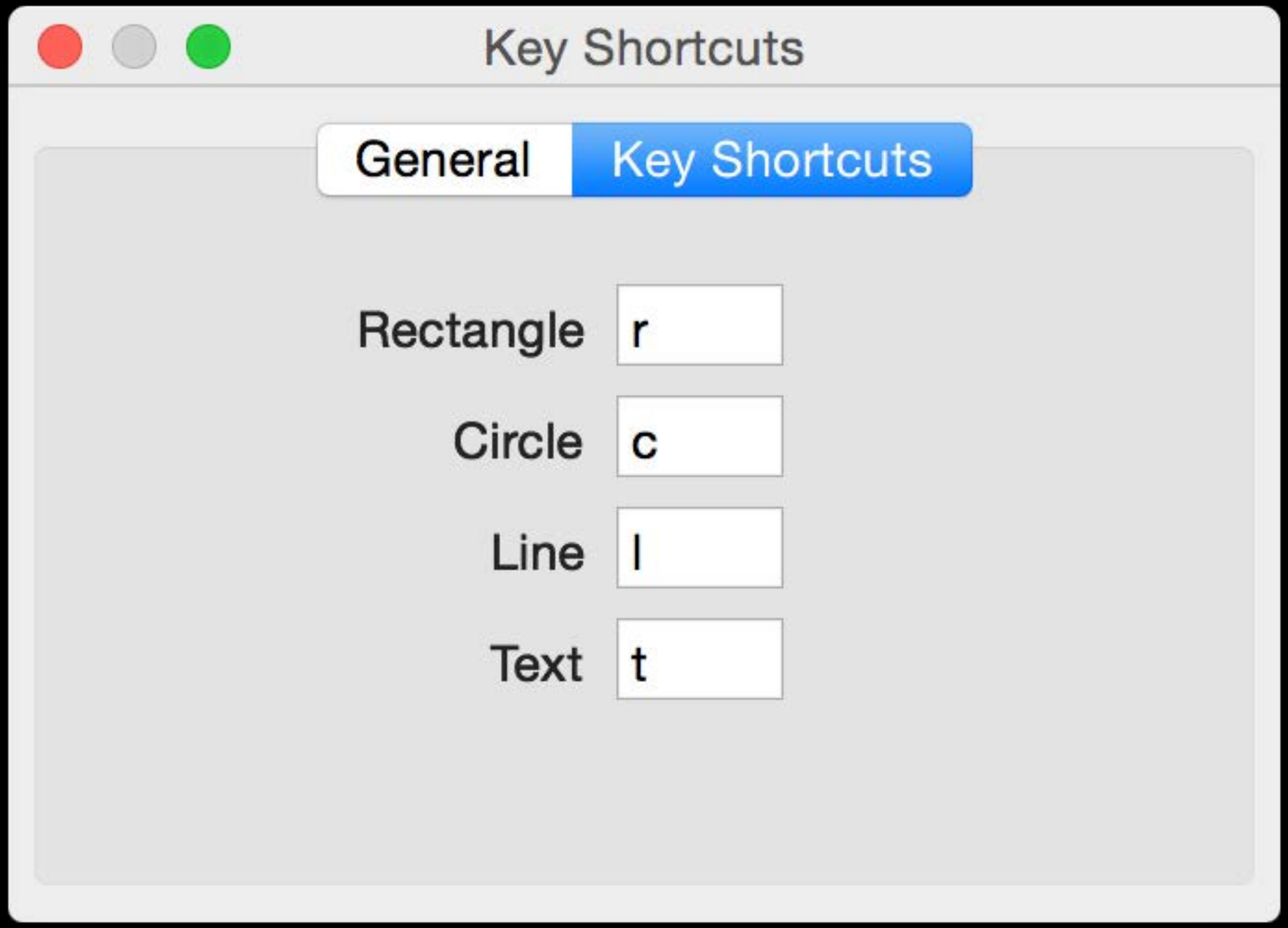
☑ Show inspector

Key Shortcuts View Controller - Key

Rectangle	r
Circle	c
Line	l
Text	t

NSTabViewController

NEW



Key Shortcuts

Rectangle r

Circle c

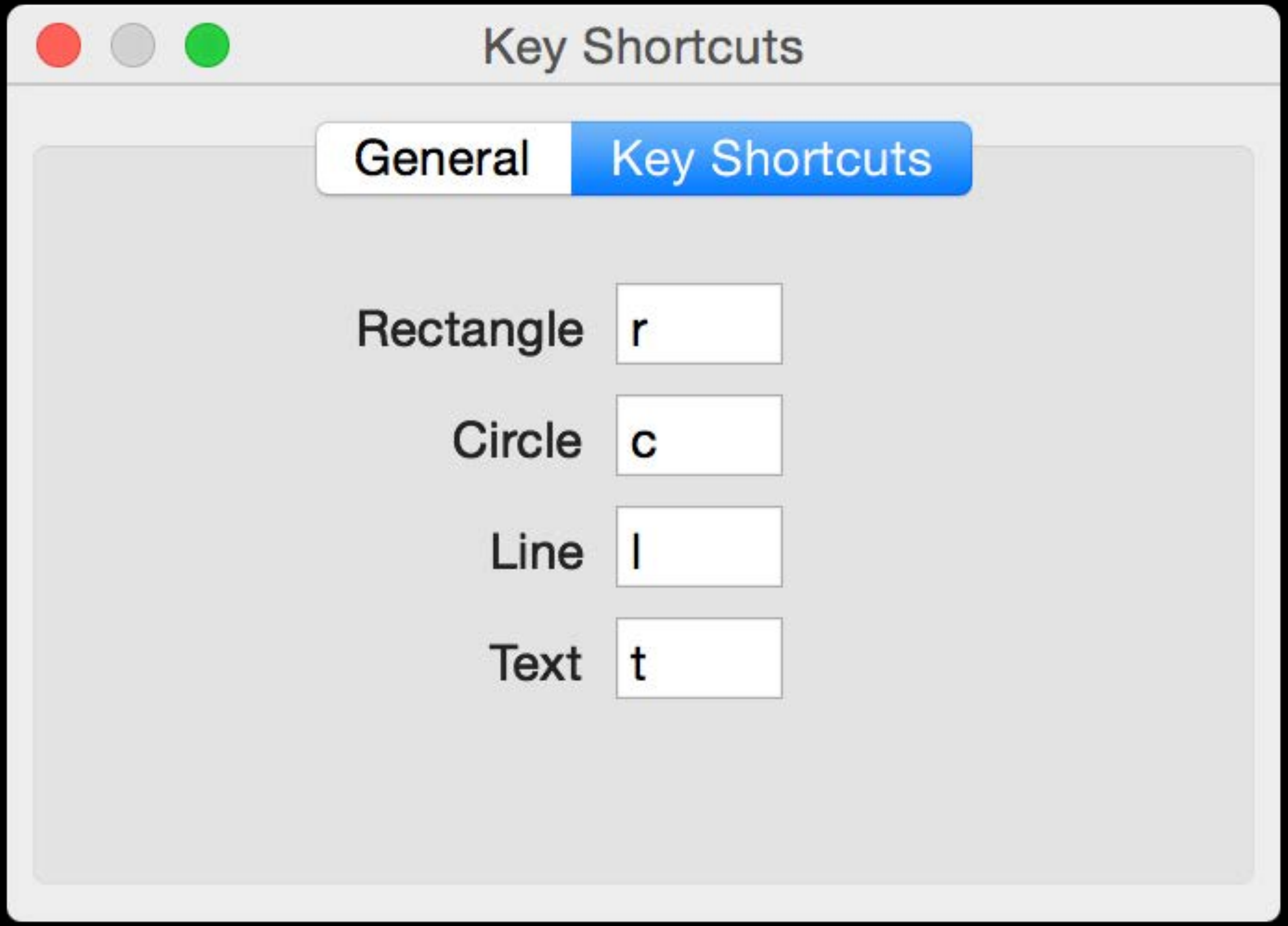
Line l

Text t

NSTabViewController

NEW

Manages an NSTabView



Rectangle r

Circle c

Line l

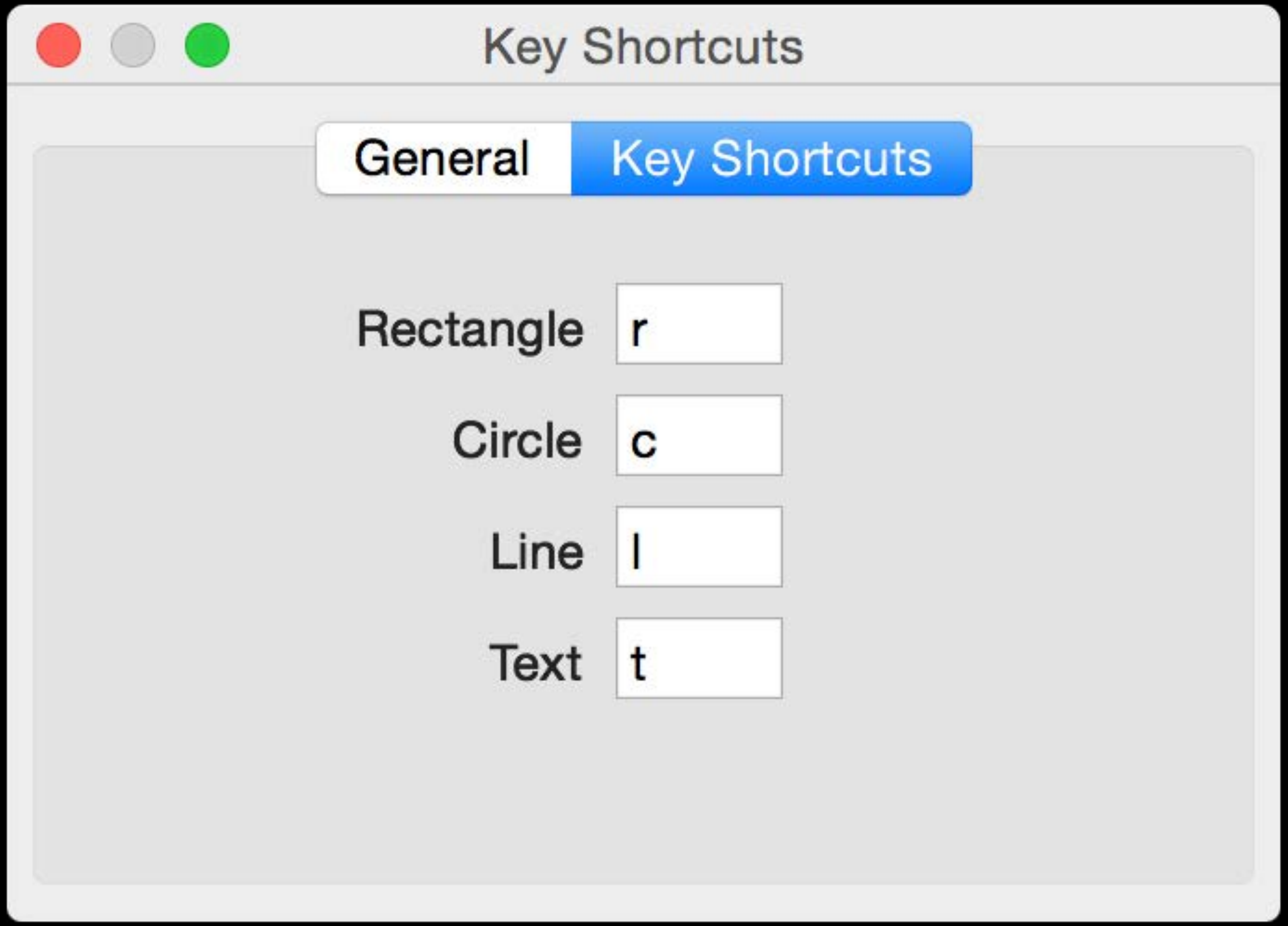
Text t

NSTabViewController

NEW

Manages an NSTabView

Lazily loads tab views



Key Shortcuts

Rectangle r

Circle c

Line l

Text t

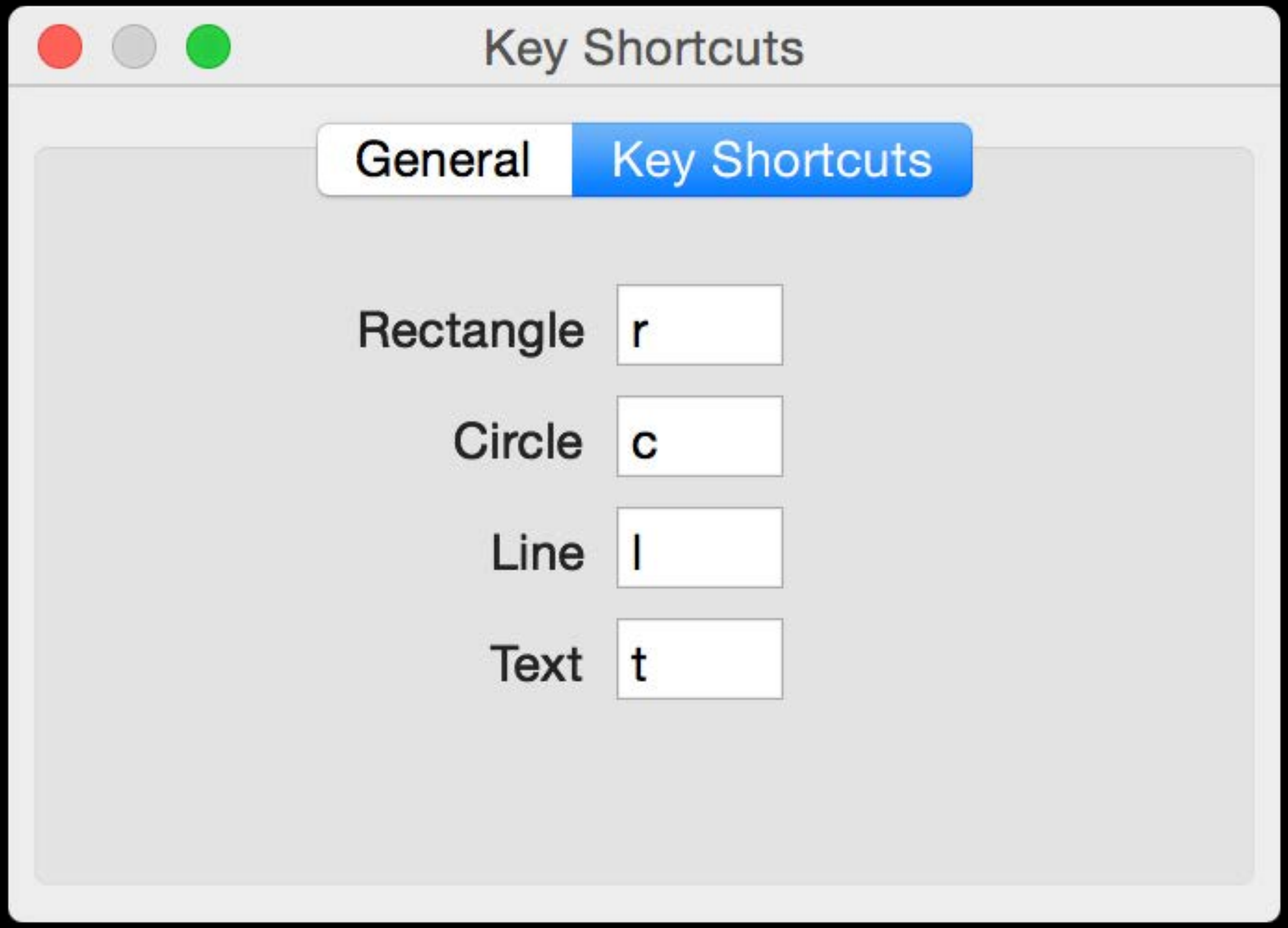
NSTabViewController

NEW

Manages an NSTabView

Lazily loads tab views

Easy tab customization



Rectangle r

Circle c

Line l

Text t

NSTabViewController

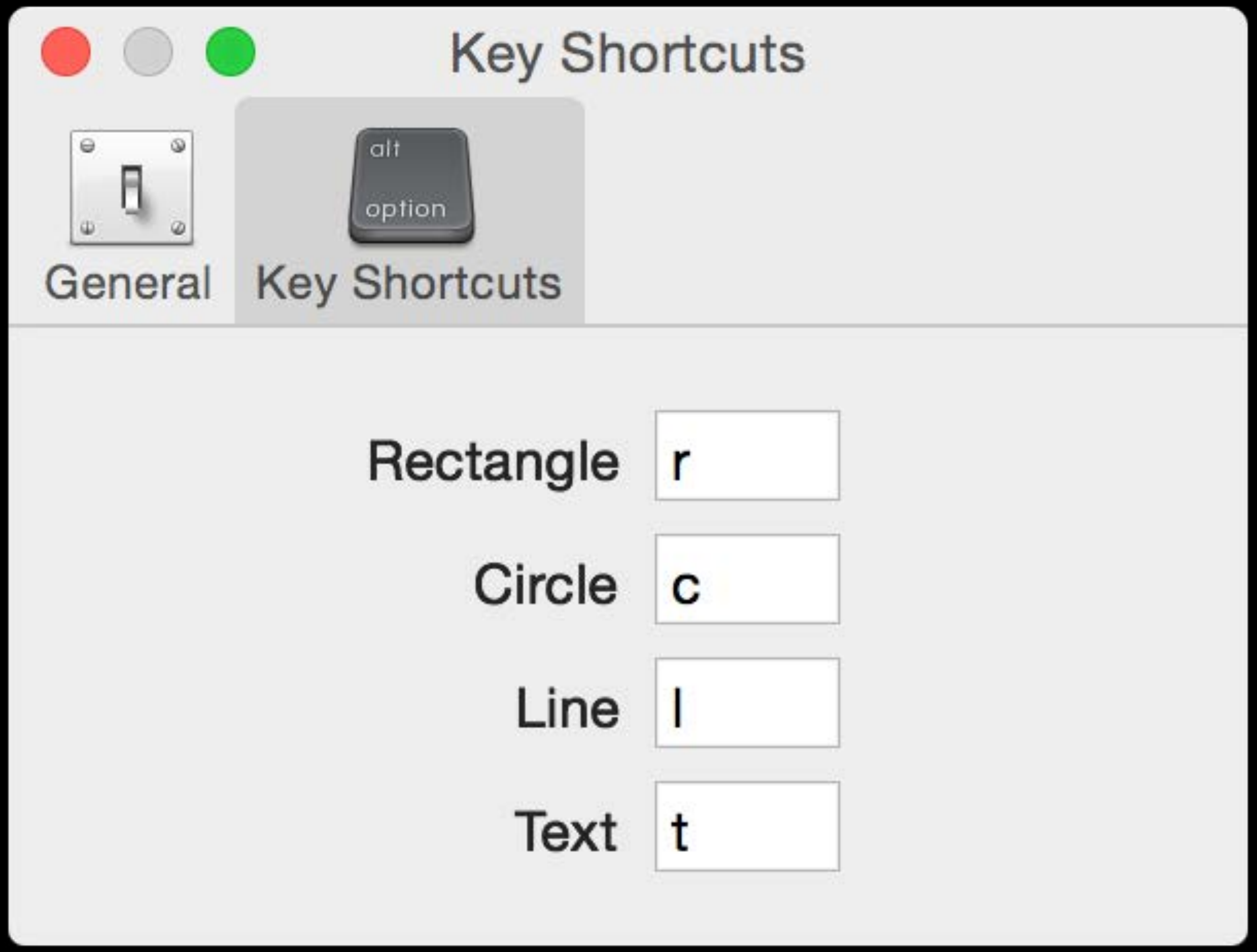
NEW

Manages an NSTabView

Lazily loads tab views

Easy tab customization

Easily use toolbar as tab switcher



Rectangle r

Circle c

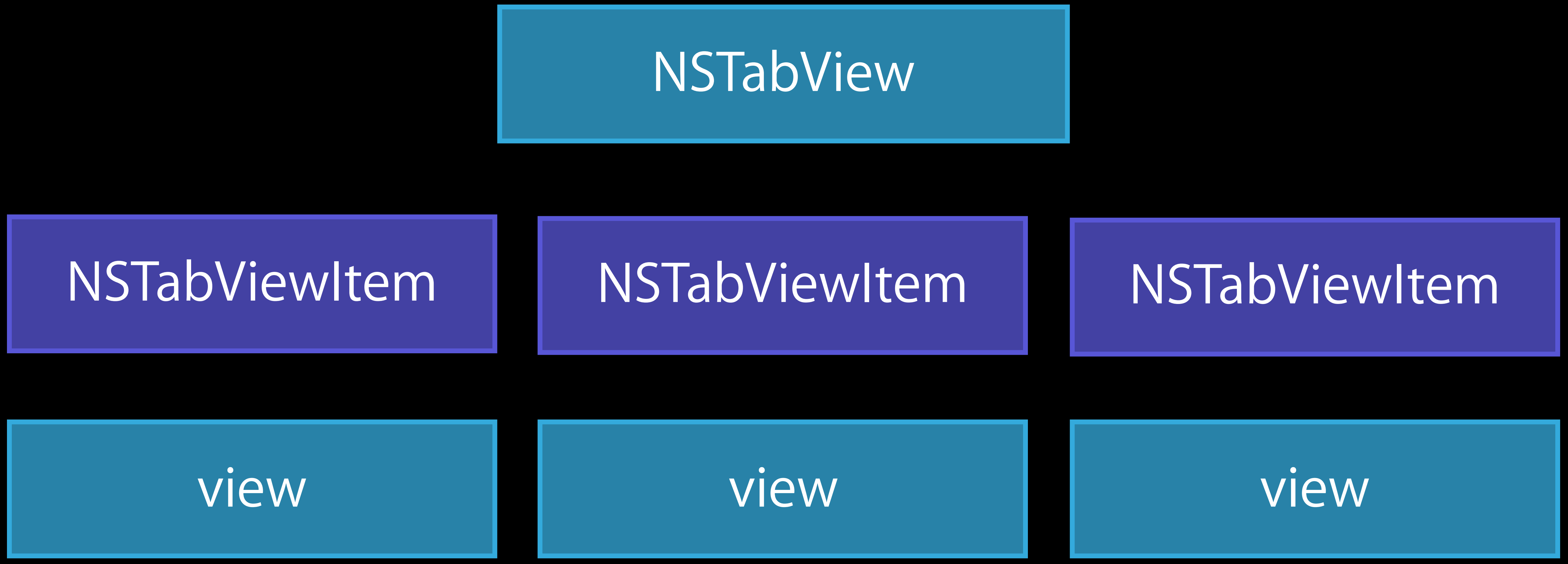
Line l

Text t

NSTabViewController

Containment

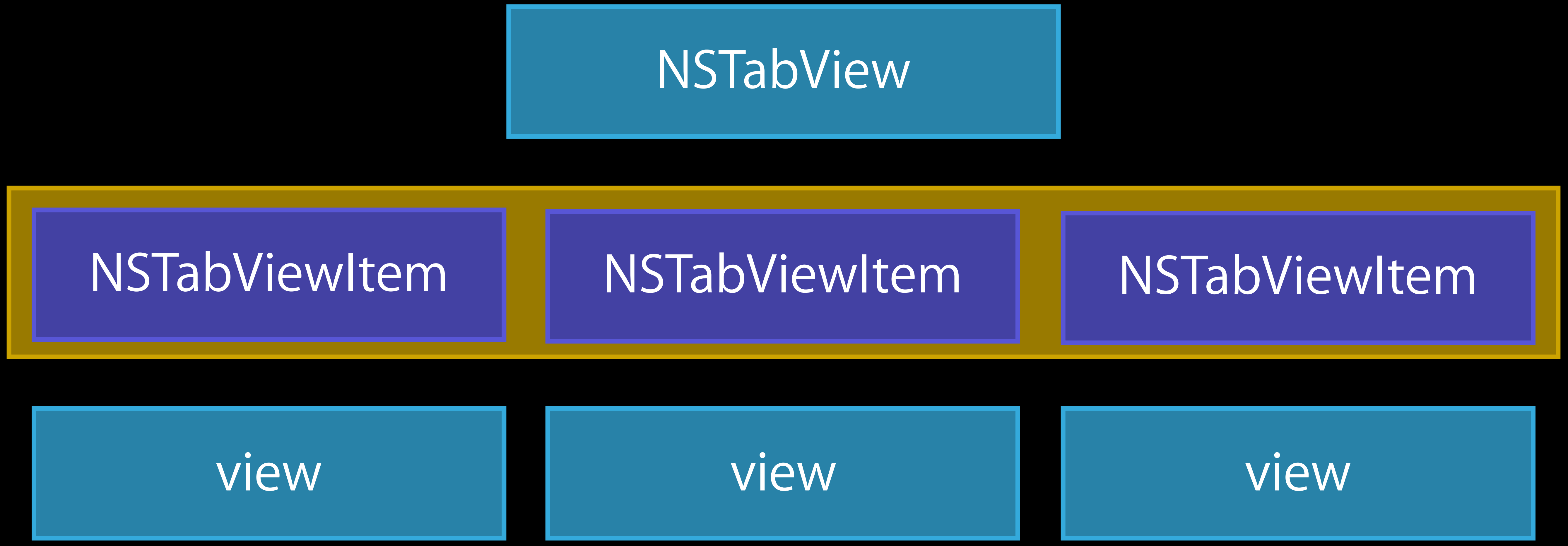
```
Properties of NSTabViewItem

-identifier
-label
-tooltip
```



NSTabViewController

Containment

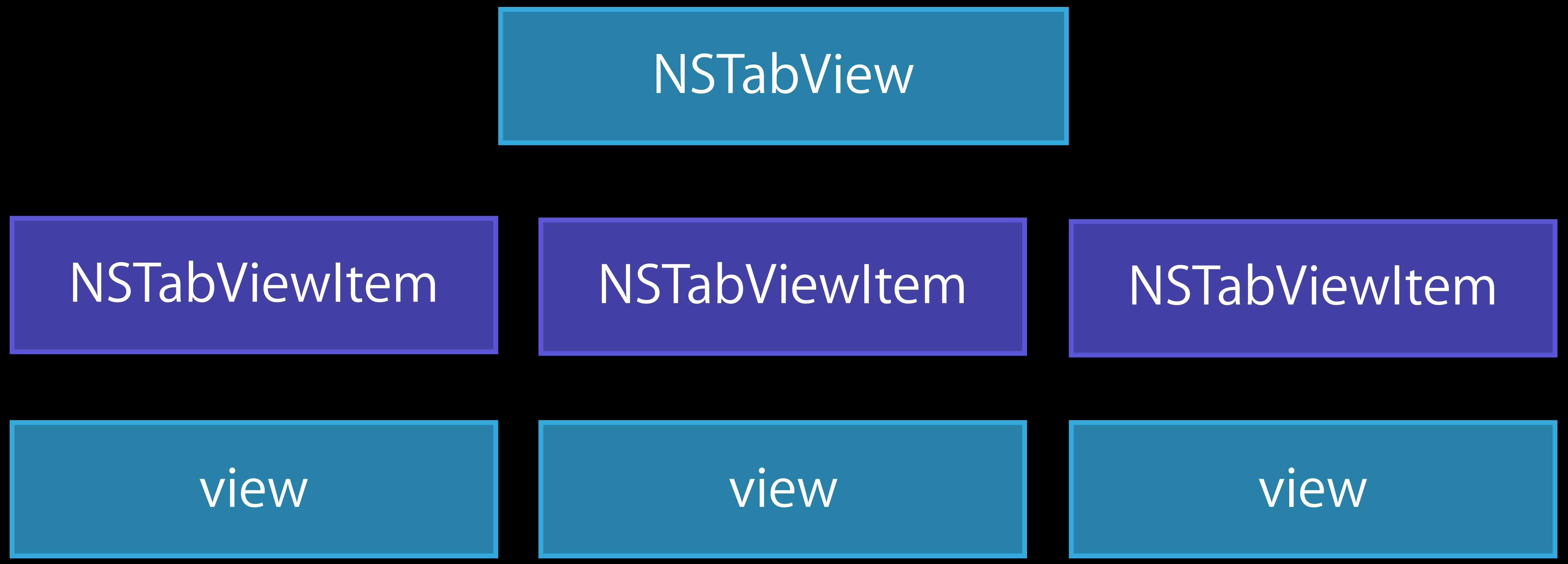
```
Properties of NSTabViewItem

-identifier
-label
-tooltip
```



NSTabViewController

Containment

```
Properties of NSTabViewItem

-identifier
-label
-tooltip
```

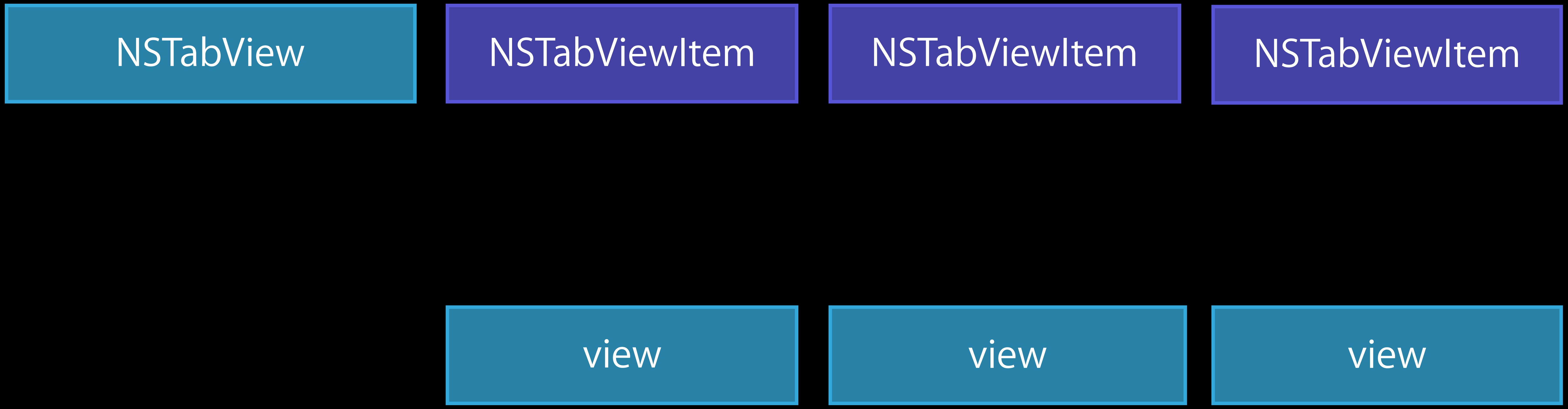


NSTabViewController

Containment

NEW

```
Properties of NSTabViewItem

-identifier
-label
-color
-tooltip
-viewController
-image
```

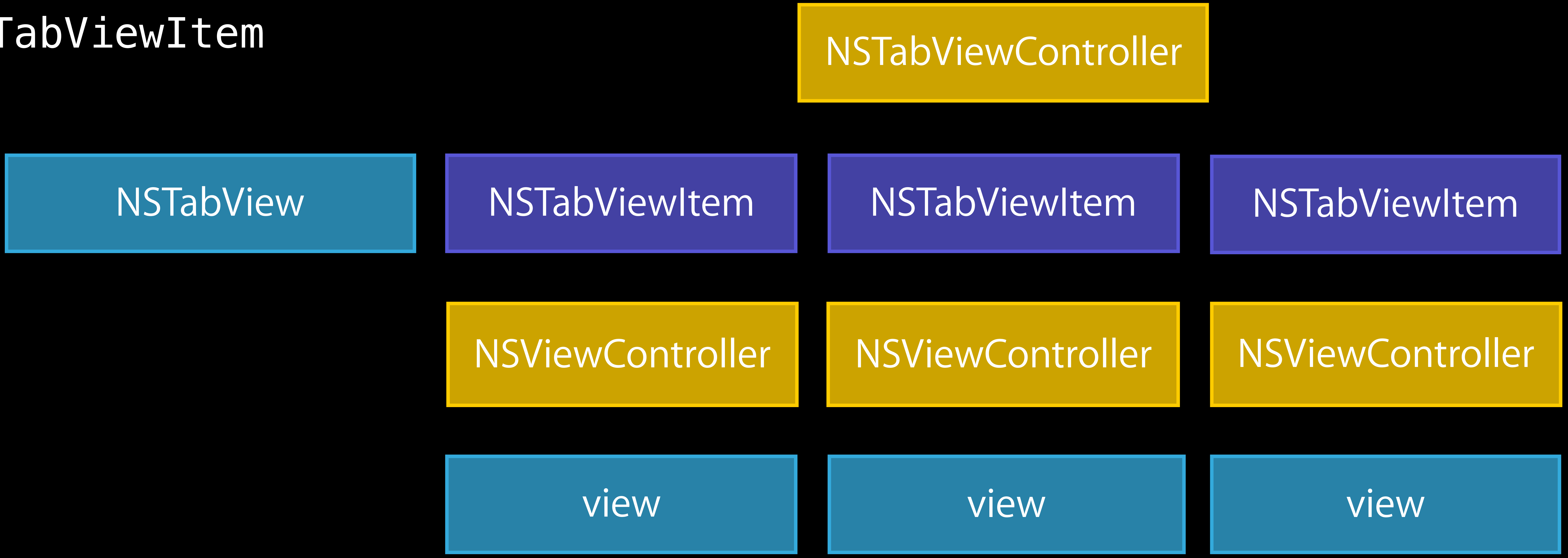


NSTabViewController

Containment

NEW

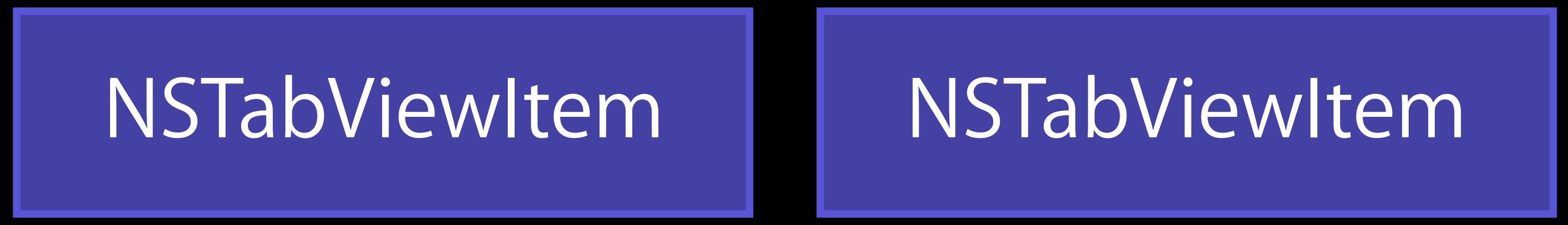
```
Properties of NSTabViewItem

-identifier
-label
-color
-tooltip
-viewController
-image
```



NSTabViewController

Containment

NEW



NSTabViewItem

NSTabViewItem

```
@property (copy) NSArray *tabViewItems;
@property NSInteger selectedTabViewItemIndex;

- (void)addTabViewItem:(NSTabViewItem *)tabViewItem;
- (void)insertTabViewItem:(NSTabViewItem *)tabViewItem
                 atIndex:(NSInteger)index;
- (void)removeTabViewItem:(NSTabViewItem *)tabViewItem;

- (NSTabViewItem *)tabViewItemForViewController:(NSViewController *)vc;
```

NSTabViewController

Containment

NEW

```
@property (copy) NSArray *tabViewItems;
@property NSInteger selectedTabViewItemIndex;

- (void)addTabViewItem:(NSTabViewItem *)tabViewItem;
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NSTabViewItem NSTabViewItem

NSTabViewController

Containment

NEW

NSTabViewItem NSTabViewItem

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- (NSTabViewItem *)tabViewItemForViewController:(NSViewController *)vc;
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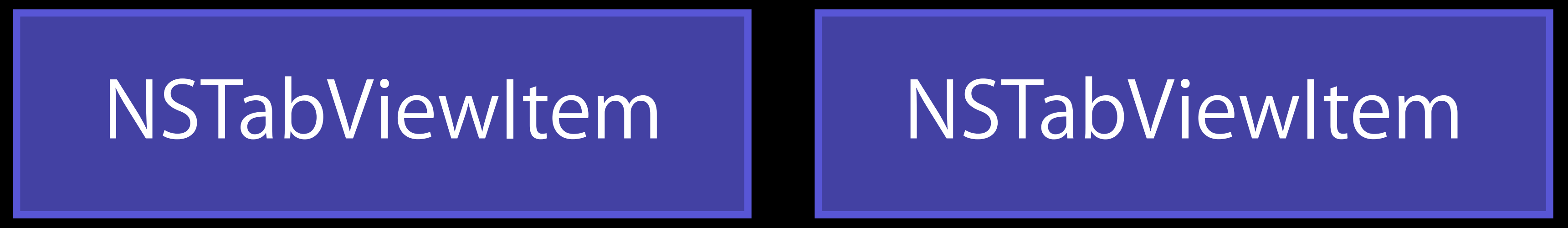
NSTabViewController

Containment


NSTabViewItem
NSTabViewItem

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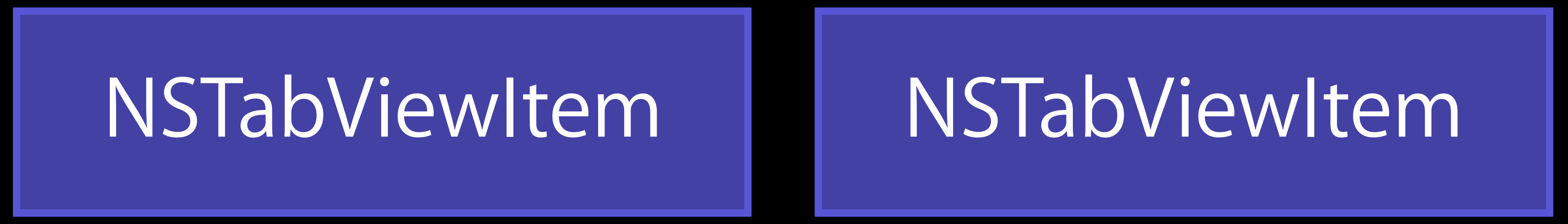
NSTabViewController

Containment



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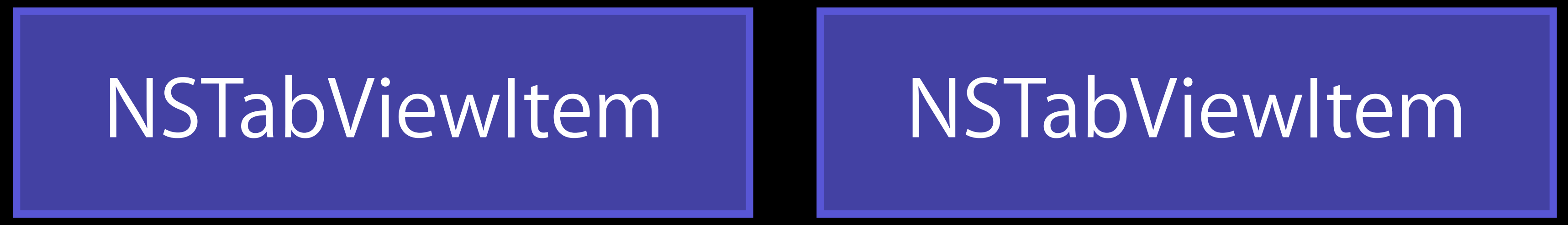
NSTabViewController

Containment



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- (NSTabViewItem *)tabViewItemForViewController:(NSViewController *)vc;

@interface NSTabViewItem
+ (instancetype)tabViewItemWithViewController:(NSViewController *)vc;
```

NSTabViewController

Properties

NEW

```
@property NSTabViewControllerTabStyle tabStyle;
@property (strong) NSSegmentedControl *segmentedControl;
@property NSViewControllerTransitionOptions transitionOptions;
@property (strong) NSTabView *tabView;
```

NSTabViewController

Properties

NEW

```
@property NSTabViewControllerTabStyle tabStyle;
@property (strong) NSSegmentedControl *segmentedControl;
@property NSViewControllerTransitionOptions transitionOptions;
@property (strong) NSTabView *tabView;
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NSTabViewController

Properties

NEW

```
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@property (strong) NSSegmentedControl *segmentedControl;
@property NSViewControllerTransitionOptions transitionOptions;
@property (strong) NSTabView *tabView;
```

```
NSTabViewControllerTabStyleSegmentedControlOnTop
NSTabViewControllerTabStyleSegmentedControlOnBottom
NSTabViewControllerTabStyleToolbar
NSTabViewControllerTabStyleUnspecified
```

NSTabViewController

Properties

NEW

```
@property NSTabViewControllerTabStyle tabStyle;
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@property NSViewControllerTransitionOptions transitionOptions;
@property (strong) NSTabView *tabView;
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NSTabViewController

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NSTabViewController

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NSTabViewController

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```

```
NSViewControllerTransitionNone
NSViewControllerTransitionCrossfade

NSViewControllerTransitionSlideUp
NSViewControllerTransitionSlideDown
NSViewControllerTransitionSlideLeft
NSViewControllerTransitionSlideRight
NSViewControllerTransitionSlideForward
NSViewControllerTransitionSlideBackward
```

NSTabViewController

Properties

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NSTabViewController

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@property NSTabViewControllerTabStyle tabStyle;
@property (strong) NSSegmentedControl *segmentedControl;
@property NSViewControllerTransitionOptions transitionOptions;
@property (strong) NSTabView *tabView;
```

NSTabViewController

NSToolbarDelegate

```
- (NSToolbarItem *)toolbar:(NSToolbar *)tb
      itemForItemIdentifier:(NSString *)itemIdentifier
      willBeInsertedIntoToolbar:(BOOL)flag NS_REQUIRES_SUPER;

- (NSArray *)toolbarDefaultItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
- (NSArray *)toolbarAllowedItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
- (NSArray *)toolbarSelectableItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
```

NSTabViewController

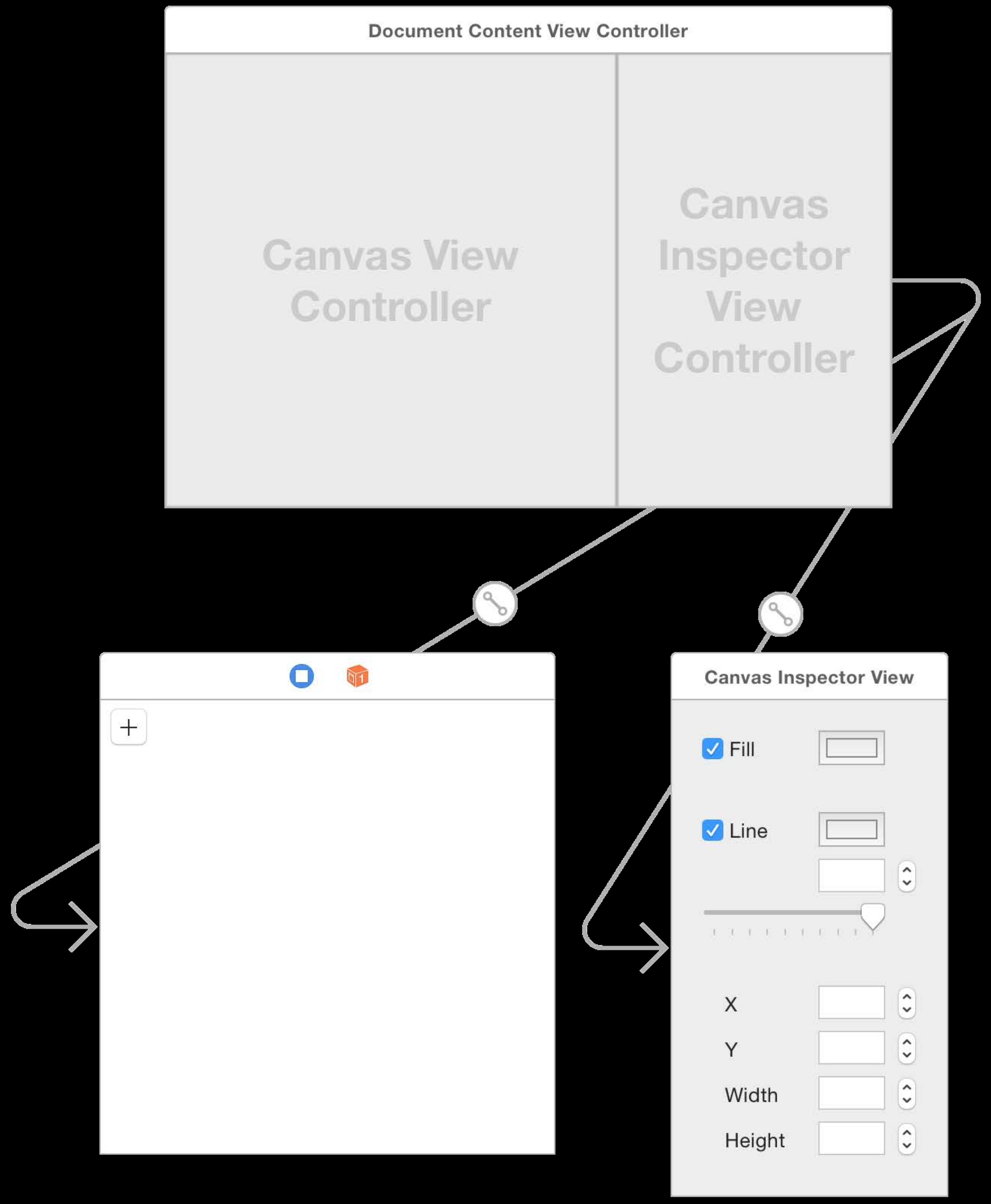
NSToolbarDelegate

NEW

```
- (NSToolbarItem *)toolbar:(NSToolbar *)tb
    itemForItemIdentifier:(NSString *)itemIdentifier
    willBeInsertedIntoToolbar:(BOOL)flag NS_REQUIRES_SUPER;

- (NSArray *)toolbarDefaultItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
- (NSArray *)toolbarAllowedItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
- (NSArray *)toolbarSelectableItemIdentifiers:(NSToolbar *)tb NS_REQUIRES_SUPER;
```

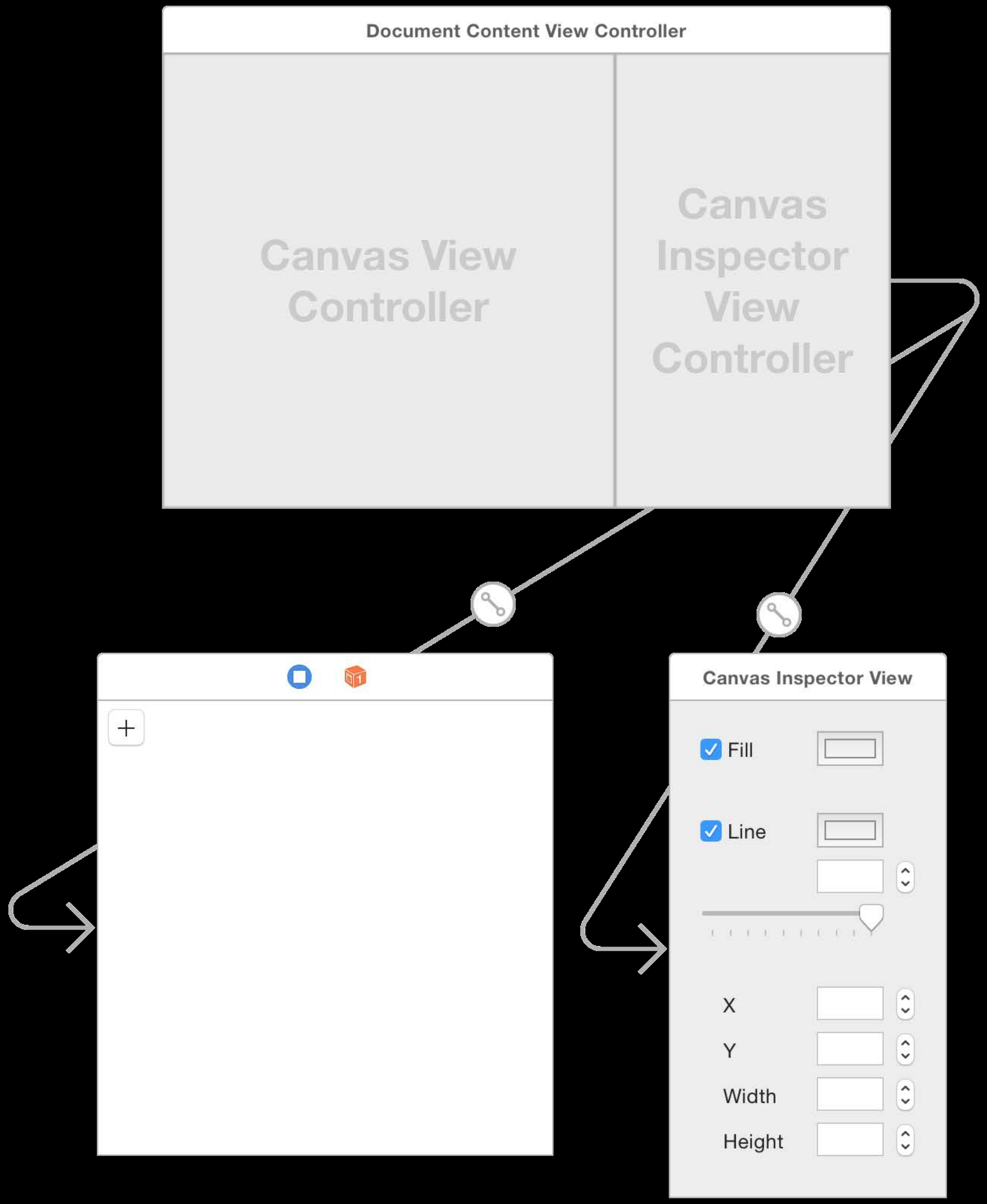
NSSplitViewController

NEW



NSSplitViewController

Manages an NSSplitView

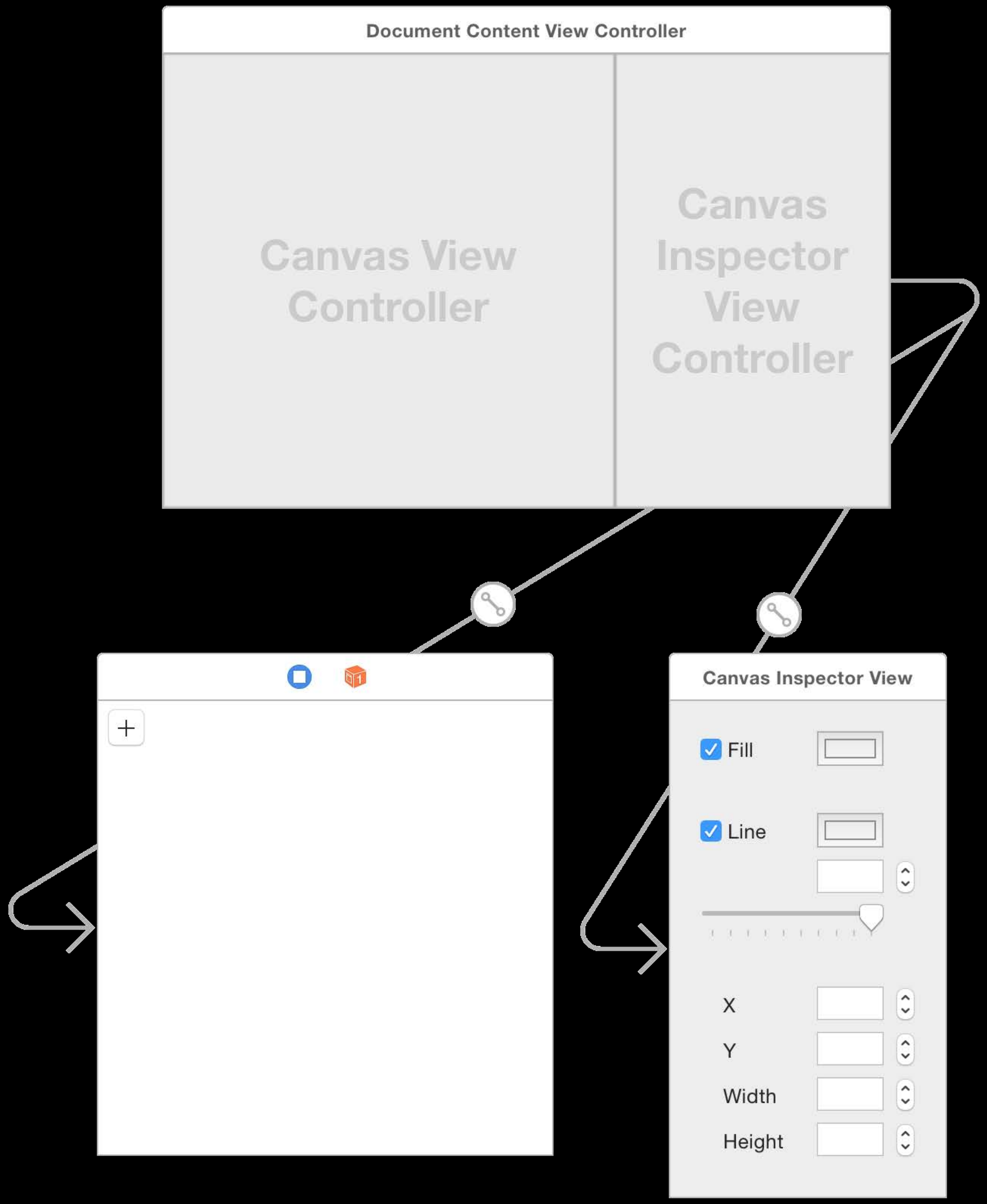

Document Content View Controller
Canvas View Controller
Canvas Inspector View Controller
Canvas Inspector View
Fill
Line
X
Y
Width
Height

NSSplitViewController

NEW

Manages an NSSplitView

Lazy loading of views



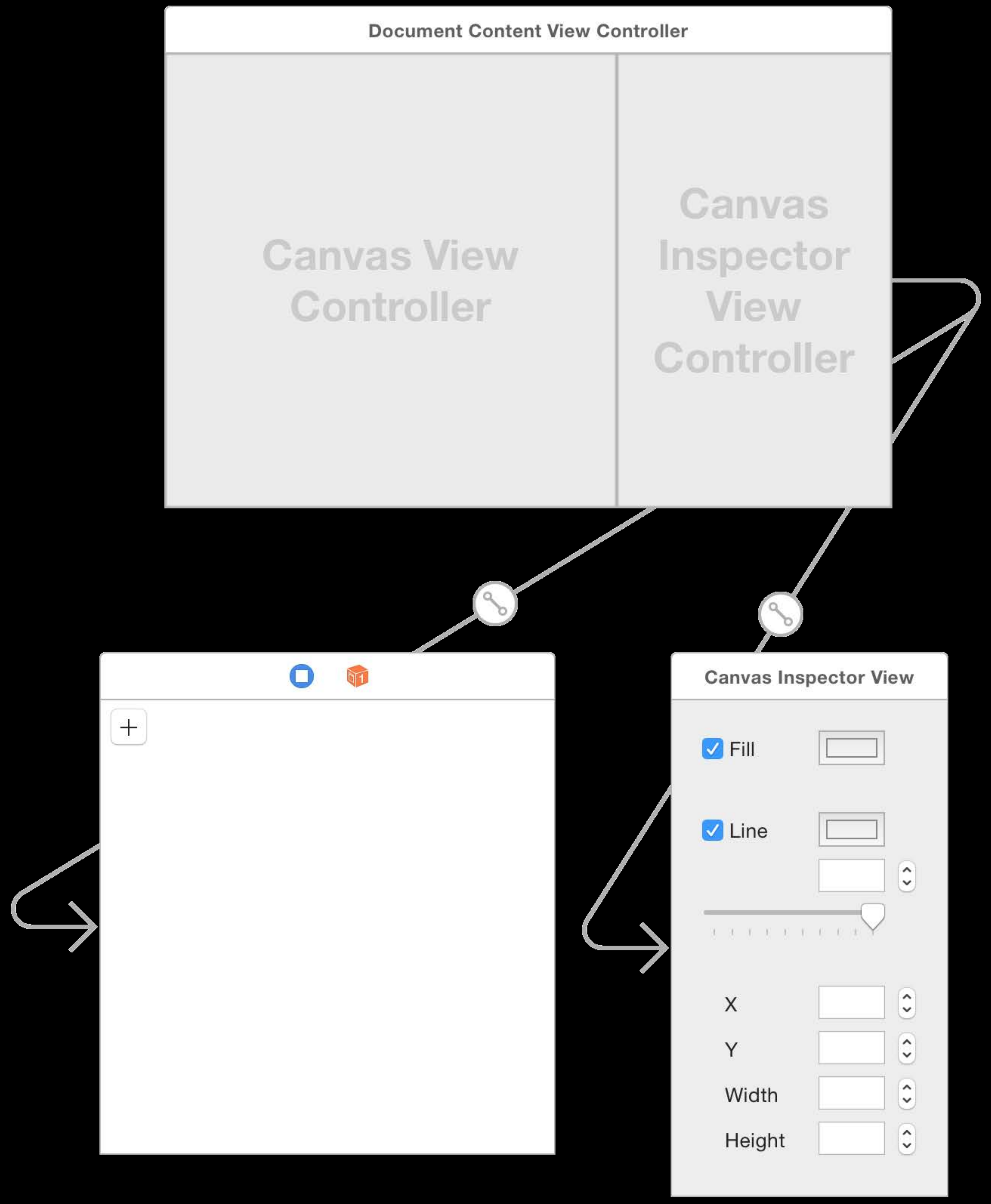
NSSplitViewController

NEW

Manages an NSSplitView

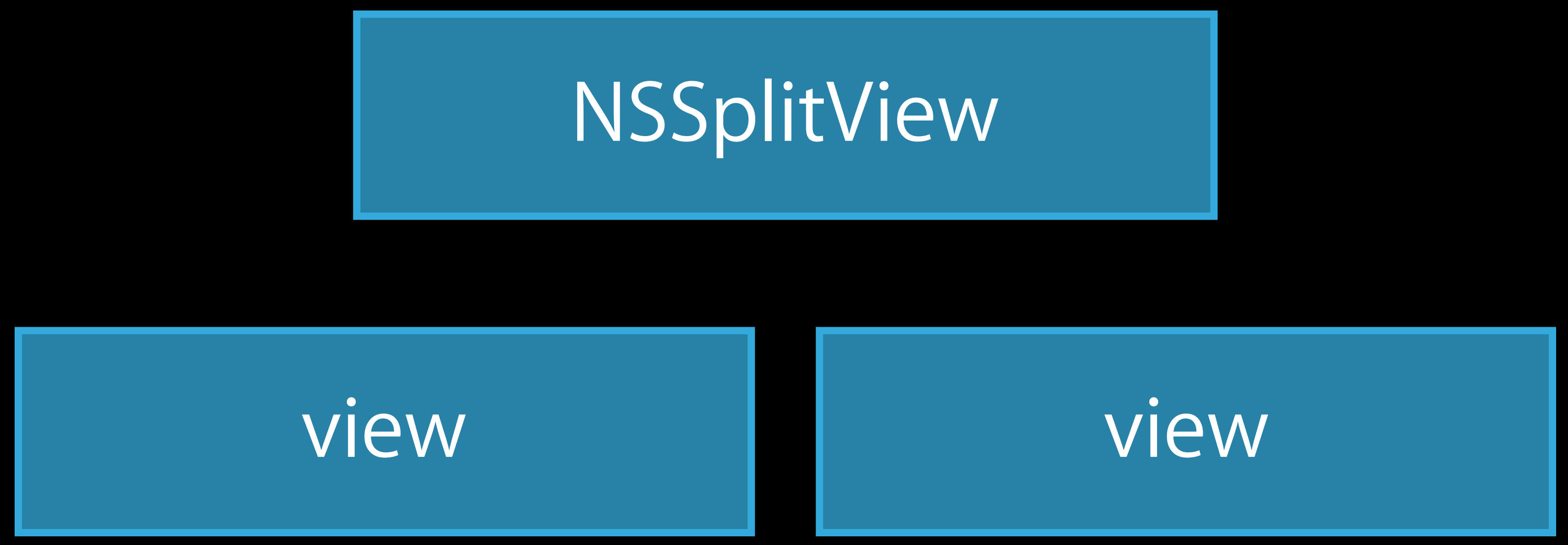
Lazy loading of views

Requires Auto Layout



NSSplitViewController

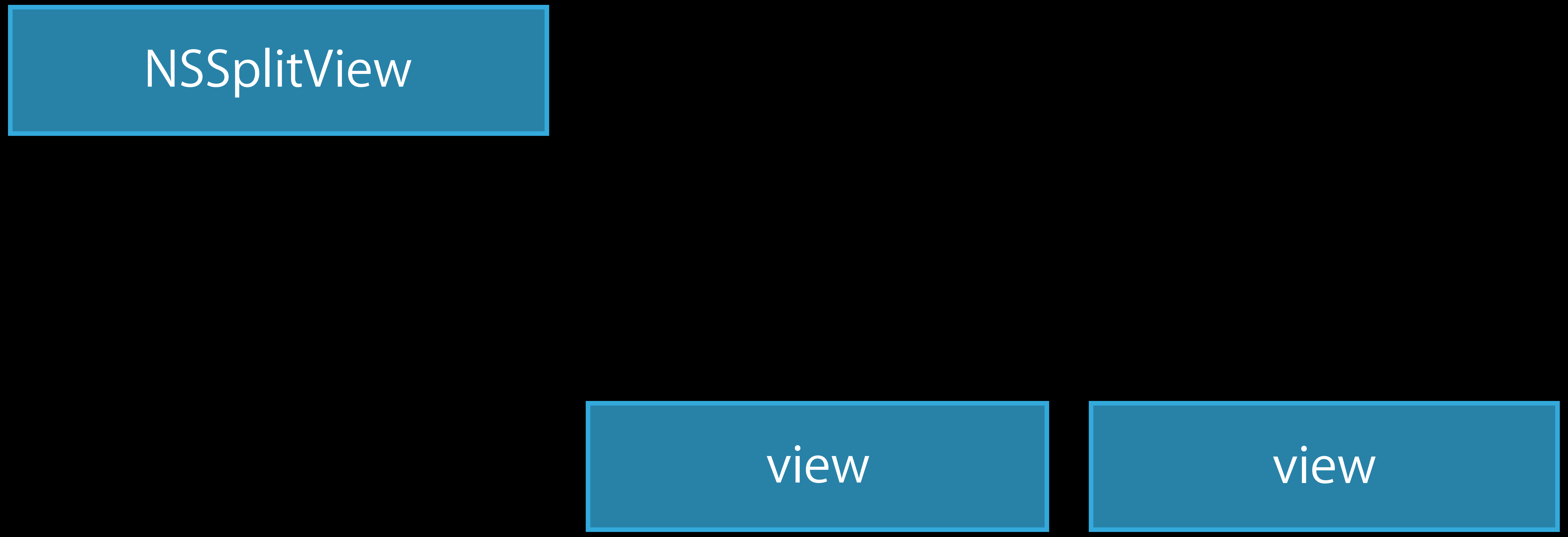
Containment



NSSplitViewController

Containment

NEW


NSSplitView

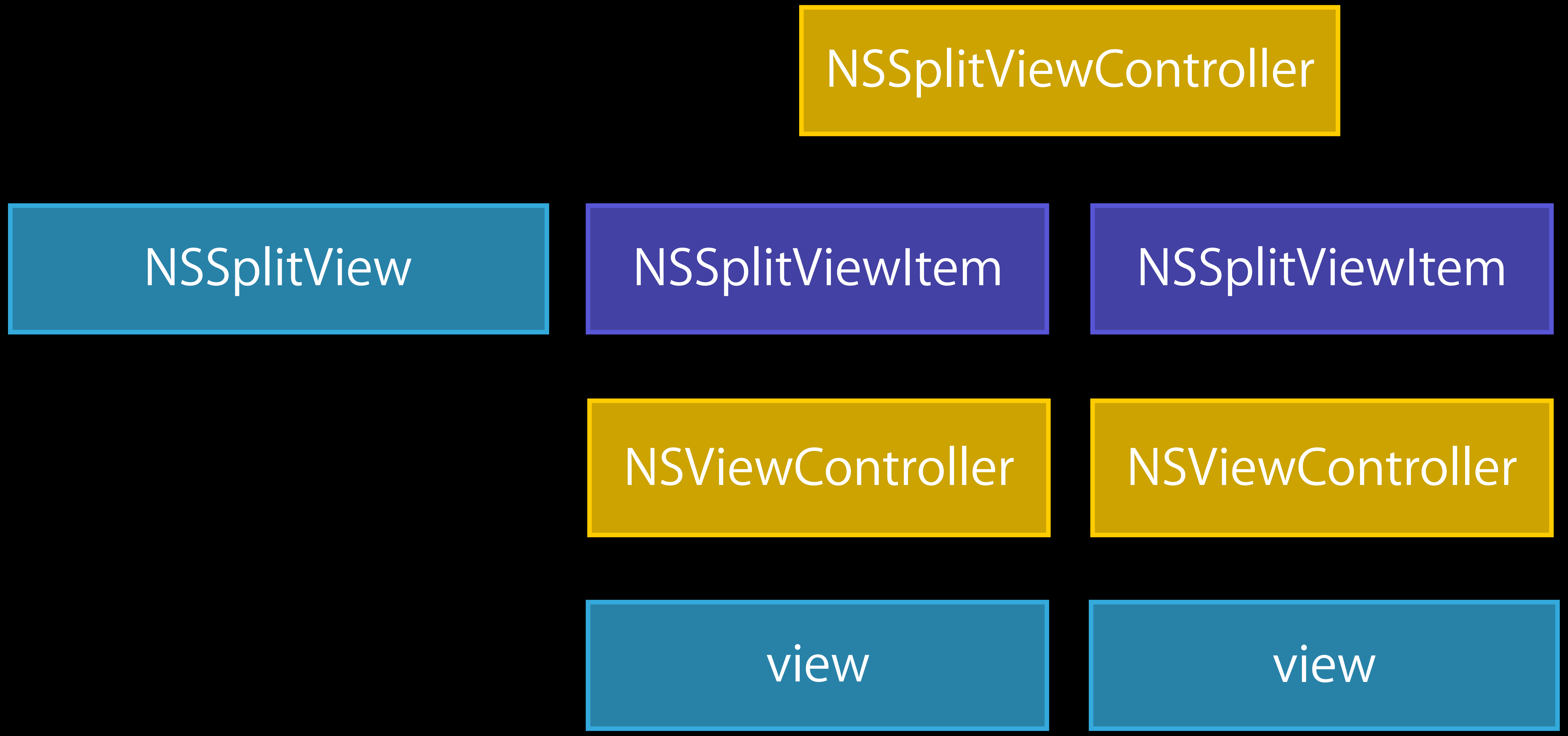
view

view

NSSplitViewController

Containment

NEW

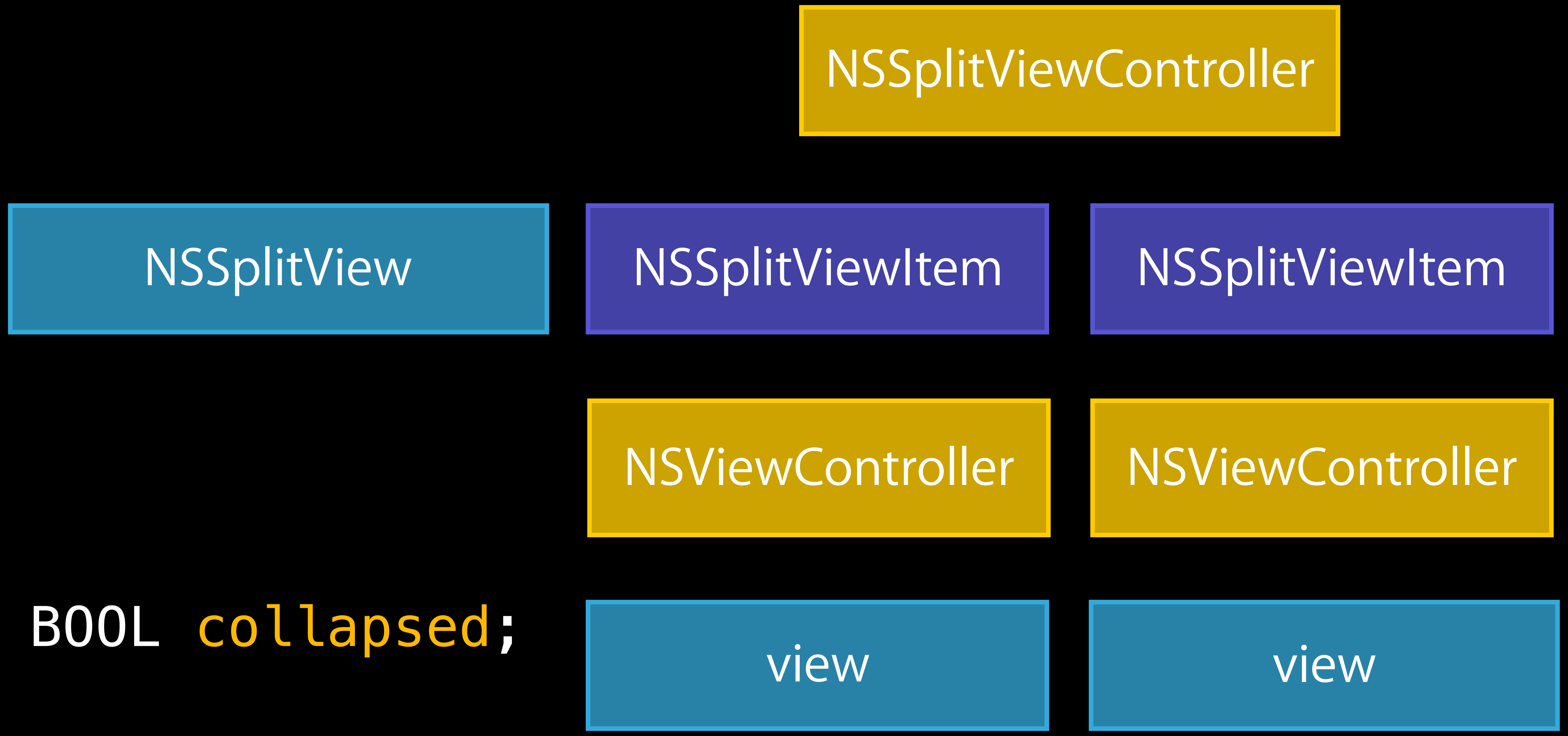


NSSplitViewController

Containment

NEW

Properties of NSSplitViewItem



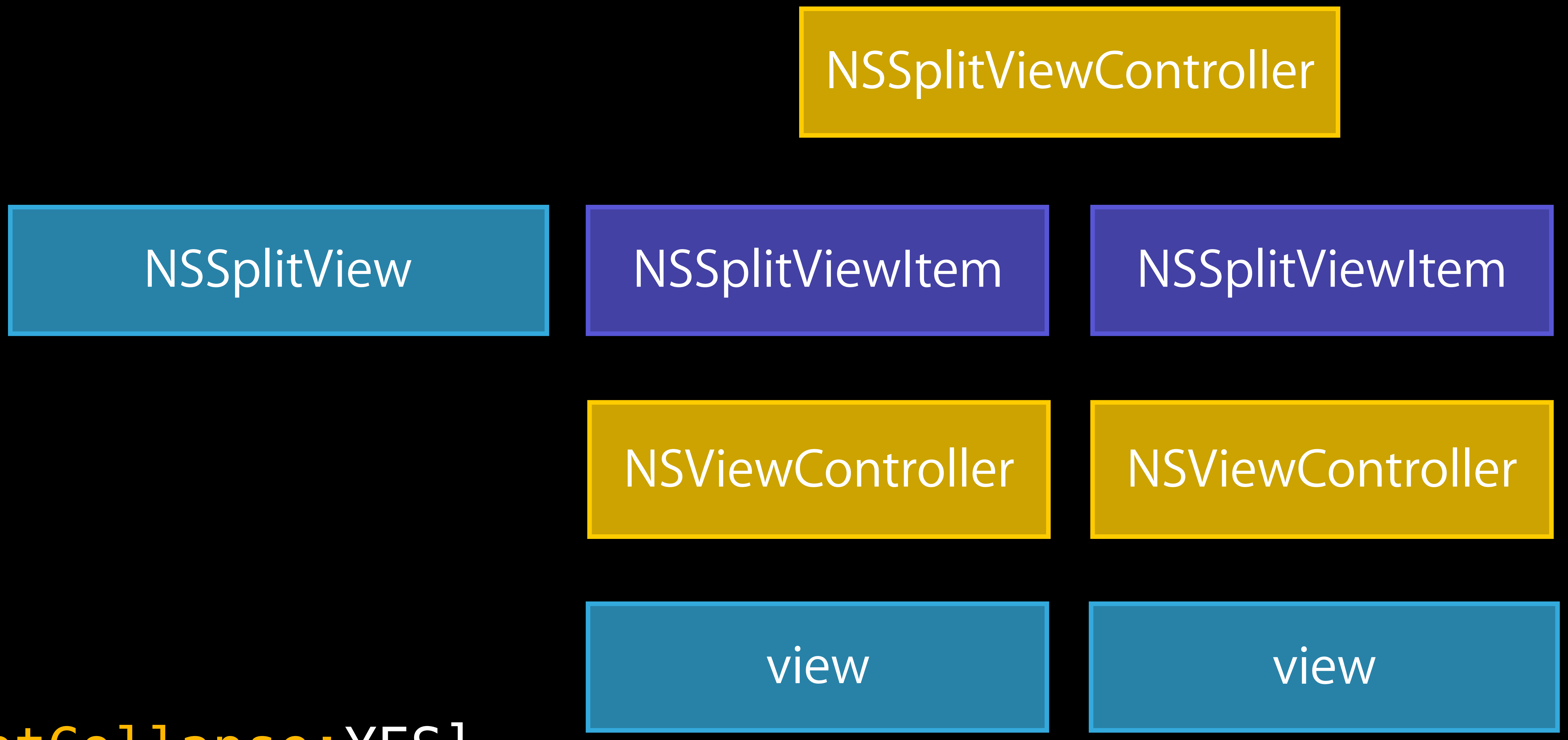
```
@property (getter=isCollapsed) BOOL collapsed;
@property BOOL canCollapse;
@property NSLayoutPriority holdingPriority;
@property (strong) NSViewController *viewController;
+ (instancetype)splitViewItemWithViewController:(NSViewController *)vc;
```

NSSplitViewController

Containment

NEW

Properties of NSSplitViewItem



```
[[splitViewItem animator] setCollapse:YES]
```

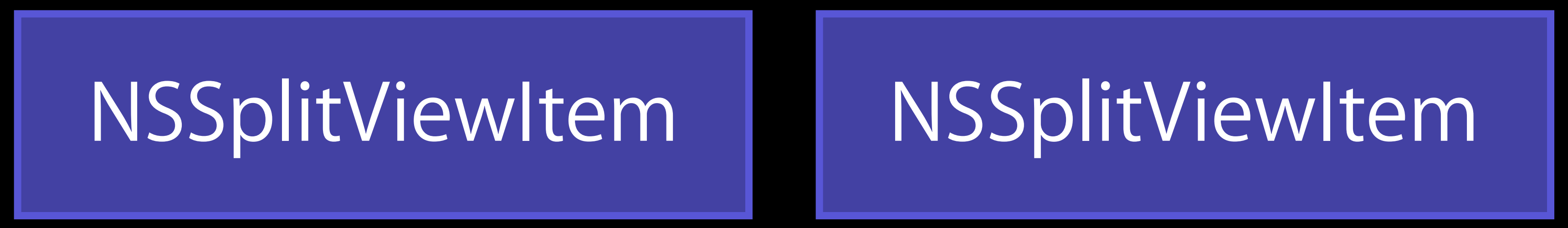
```
ler;
(NSViewController *)vc;
```

NSSplitViewController

Containment

NEW

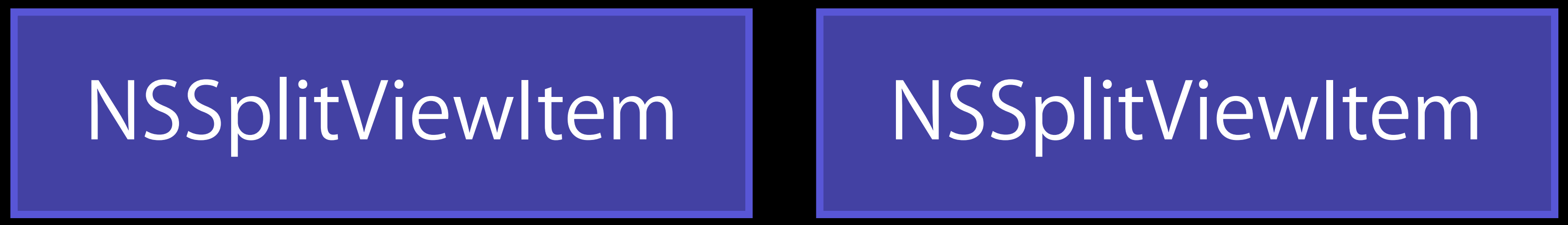
```
@property (copy) NSArray ∗splitViewItems;

– (void)addSplitViewItem:(NSSplitViewItem ∗)splitViewItem;
– (void)insertSplitViewItem:(NSSplitViewItem ∗)splitViewItem
                    atIndex:(NSInteger)index;
– (void)removeSplitViewItem:(NSSplitViewItem ∗)splitViewItem;

– (NSSplitViewItem ∗)splitViewItemForViewController:(NSViewController ∗)vc;
```



NSSplitViewController

Containment

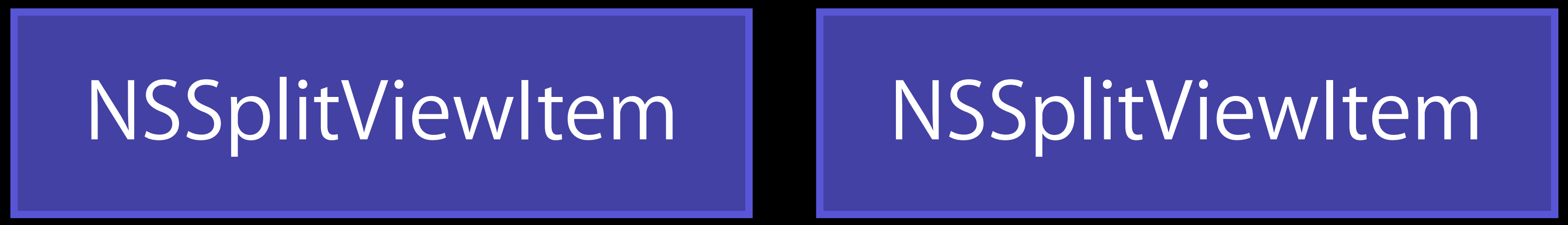
NEW



```
@property (copy) NSArray *splitViewItems;

- (void)addSplitViewItem:(NSSplitViewItem *)splitViewItem;
- (void)insertSplitViewItem:(NSSplitViewItem *)splitViewItem
                    atIndex:(NSInteger)index;
- (void)removeSplitViewItem:(NSSplitViewItem *)splitViewItem;

- (NSSplitViewItem *)splitViewItemForViewController:(NSViewController *)vc;
```

NSSplitViewController

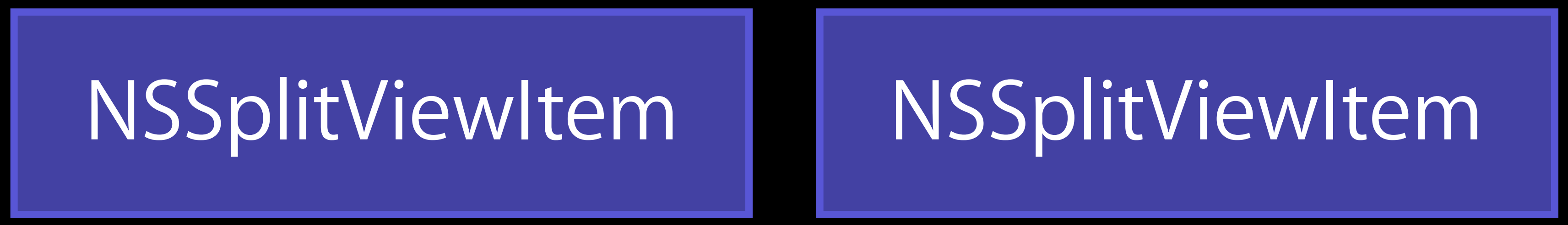
Containment



```
@property (copy) NSArray *splitViewItems;

- (void)addSplitViewItem:(NSSplitViewItem *)splitViewItem;
- (void)insertSplitViewItem:(NSSplitViewItem *)splitViewItem
                    atIndex:(NSInteger)index;
- (void)removeSplitViewItem:(NSSplitViewItem *)splitViewItem;

- (NSSplitViewItem *)splitViewItemForViewController:(NSViewController *)vc;
```

NSSplitViewController

Containment

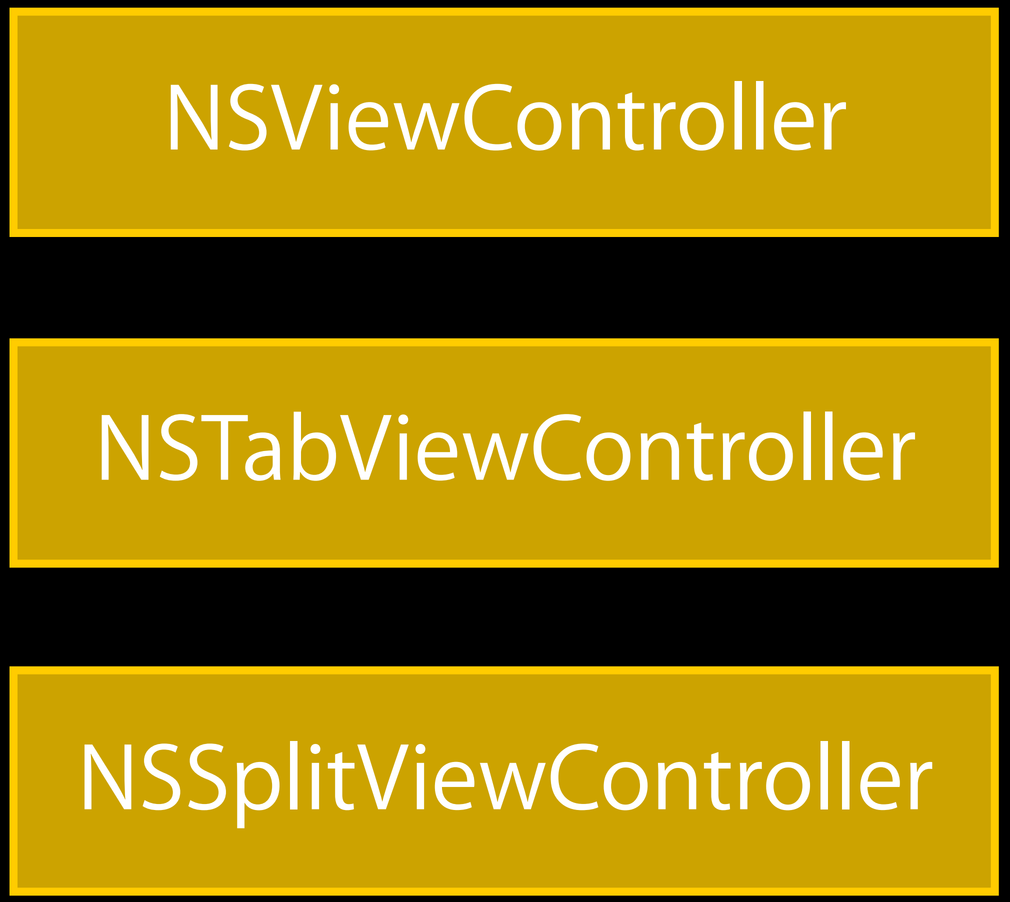


```
@property (copy) NSArray *splitViewItems;

– (void)addSplitViewItem:(NSSplitViewItem *)splitViewItem;
– (void)insertSplitViewItem:(NSSplitViewItem *)splitViewItem
                    atIndex:(NSInteger)index;
– (void)removeSplitViewItem:(NSSplitViewItem *)splitViewItem;

– (NSSplitViewItem *)splitViewItemForViewController:(NSViewController *)vc;
```

NSViewController

Containment

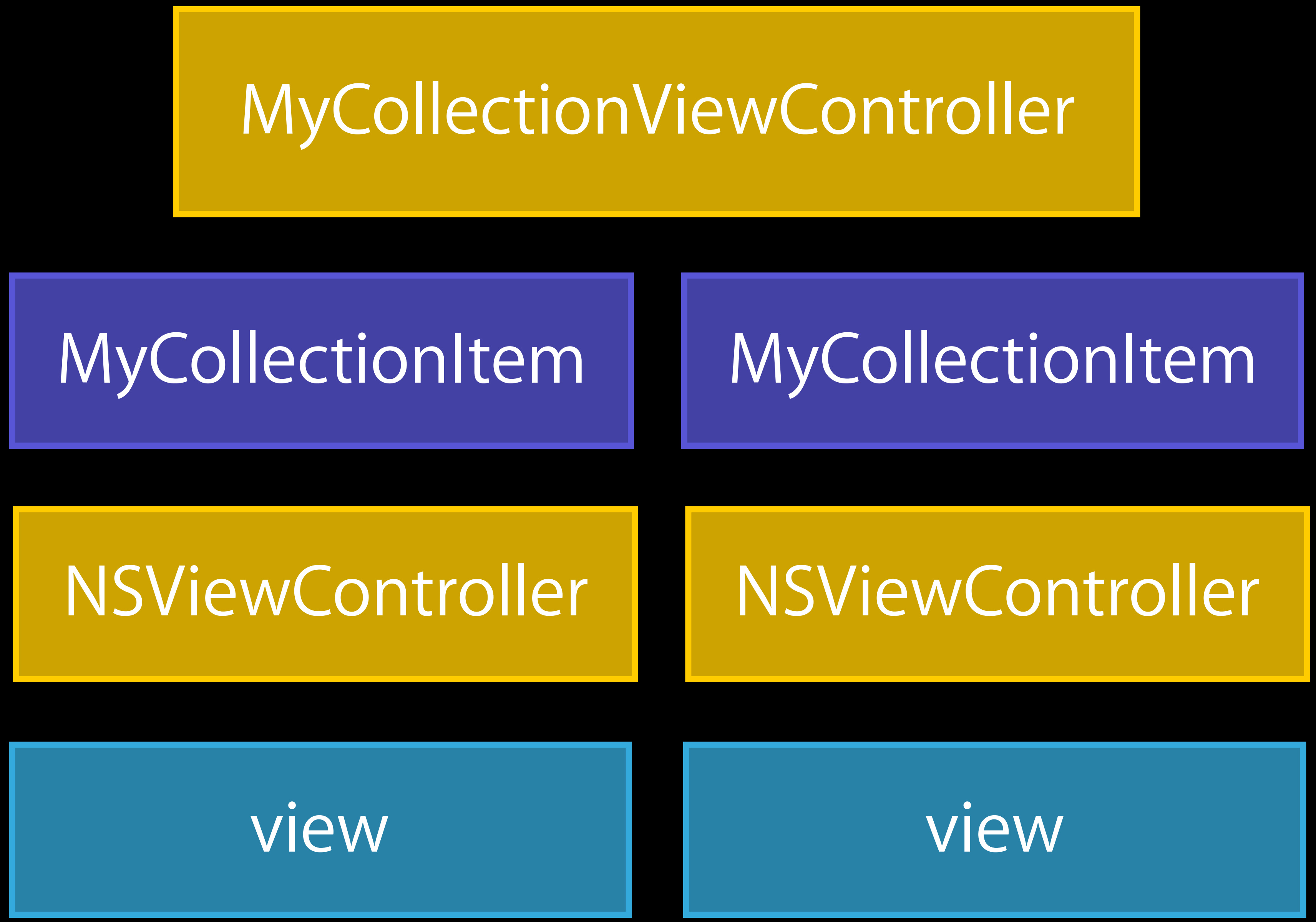
NEW



NSViewController

NSTabViewController

NSSplitViewController



MyCollectionViewController

MyCollectionItem

MyCollectionItem

NSViewController

NSViewController

view

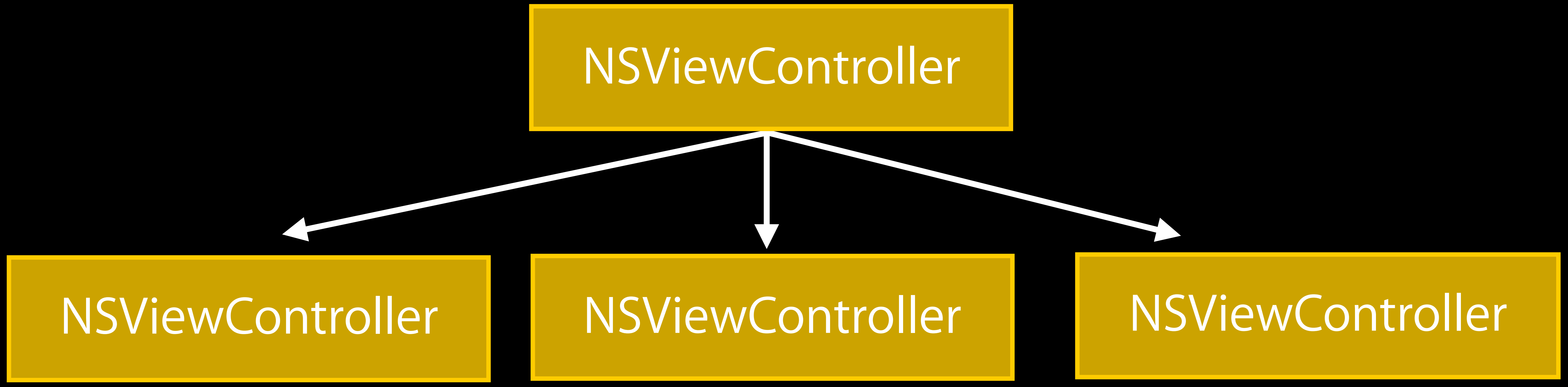
view

NSViewController

Containment

NEW

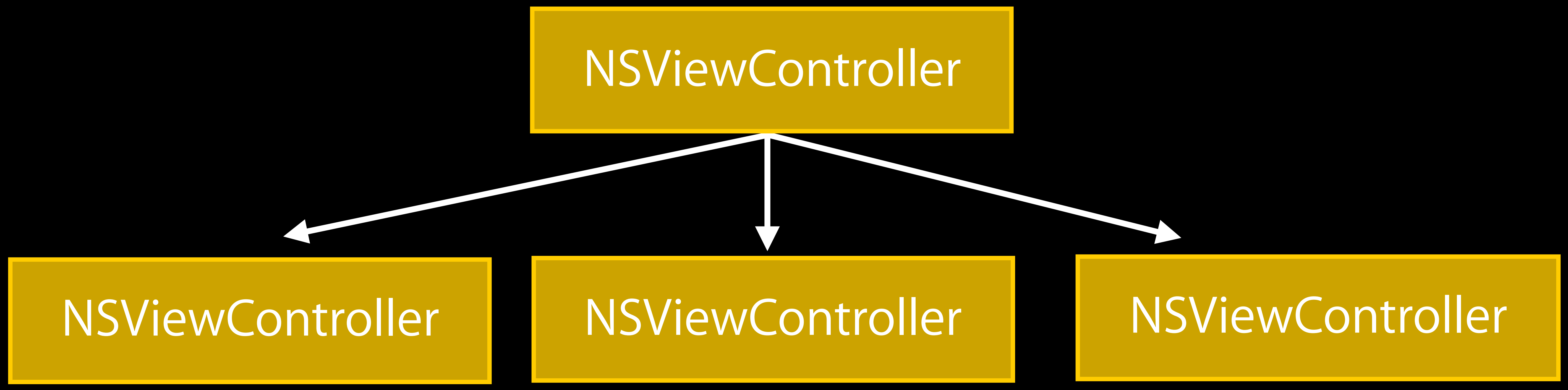
```
@property (copy) NSArray *childViewControllers;
- (void)addChildViewController:(NSViewController *)childViewController;
- (void)insertChildViewController:(NSViewController *)childViewController
                          atIndex:(NSInteger)index;
- (void)removeChildViewControllerAtIndex:(NSInteger)index;

@property (readonly) NSViewController *parentViewController;
- (void)removeFromParentViewController;
```



NSViewController

Containment

```
@property (copy) NSArray *childViewControllers;
- (void)addChildViewController:(NSViewController *)childViewController;
- (void)insertChildViewController:(NSViewController *)childViewController
                        atIndex:(NSInteger)index;
- (void)removeChildViewControllerAtIndex:(NSInteger)index;

@property (readonly) NSViewController *parentViewController;
- (void)removeFromParentViewController;
```



NSViewController

Containment

```
@property (copy) NSArray *childViewControllers;
- (void)addChildViewController:(NSViewController *)childViewController;
- (void)insertChildViewController:(NSViewController *)childViewController
                          atIndex:(NSInteger)index;
- (void)removeChildViewControllerAtIndex:(NSInteger)index;

@property (readonly) NSViewController *parentViewController;
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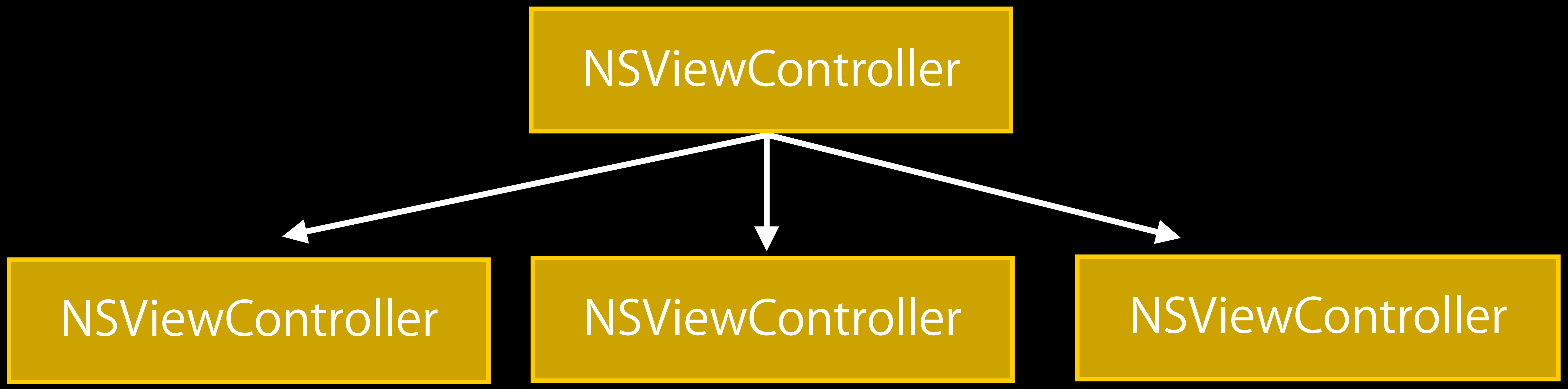


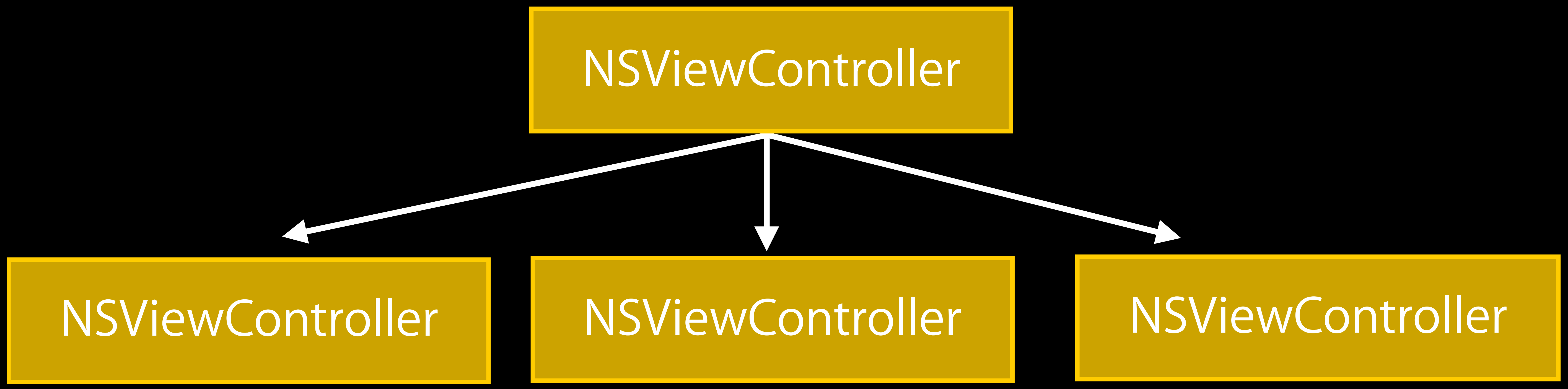
NSViewController

Containment

NEW

```
@property (copy) NSArray *childViewControllers;
- (void)addChildViewController:(NSViewController *)childViewController;
- (void)insertChildViewController:(NSViewController *)childViewController
                         atIndex:(NSInteger)index;
- (void)removeChildViewControllerAtIndex:(NSInteger)index;

@property (readonly) NSViewController *parentViewController;
- (void)removeFromParentViewController;
```



NSViewController

Containment

NEW

```
- (void)transitionFromViewController:(NSViewController *)fromViewController
          toViewController:(NSViewController *)toViewController
          options:(NSViewControllerTransitionOptions)options
          completionHandler:(void (^)(void))completion;
```

NSViewController

Containment

NEW

```
- (void)transitionFromViewController:(NSViewController *)fromViewController
          toViewController:(NSViewController *)toViewController
          options:(NSViewControllerTransitionOptions)options
          completionHandler:(void (^)(void))completion;
```

```
NSViewControllerTransitionNone
NSViewControllerTransitionCrossfade

NSViewControllerTransitionSlideUp
NSViewControllerTransitionSlideDown
NSViewControllerTransitionSlideLeft
NSViewControllerTransitionSlideRight
NSViewControllerTransitionSlideForward
NSViewControllerTransitionSlideBackward
```

NSViewController

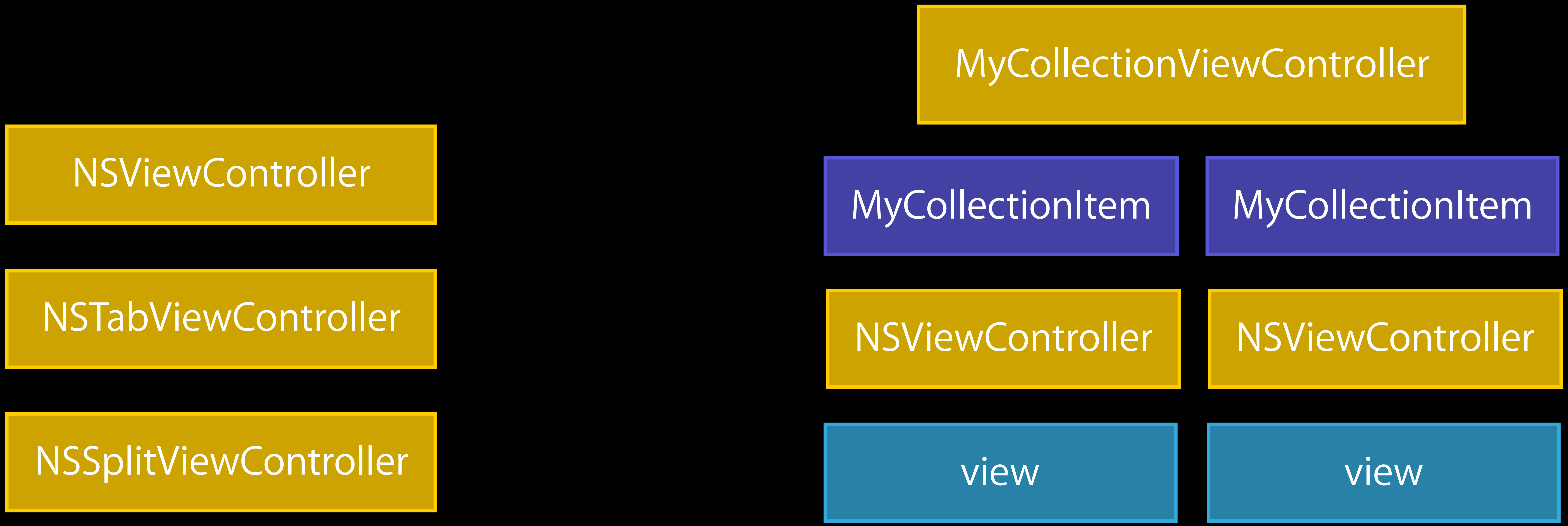
Containment

NEW

```
- (void)transitionFromViewController:(NSViewController *)fromViewController
          toViewController:(NSViewController *)toViewController
          options:(NSViewControllerTransitionOptions)options
          completionHandler:(void (^)(void))completion;
```

NSViewController

Containment



NSViewController

NEW

Loading and layout

Containers

Triggered segues

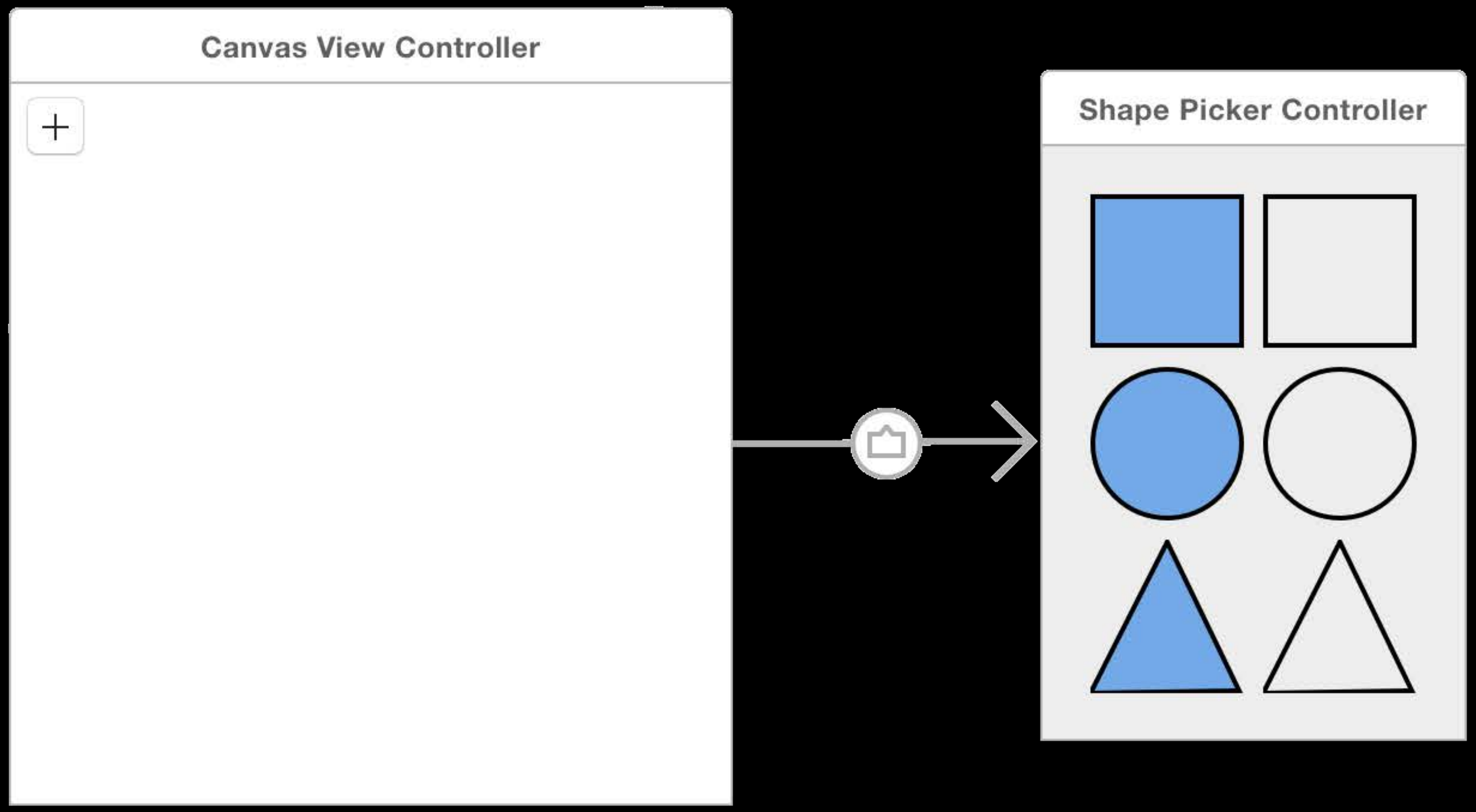
Manual presentation

NSViewController

Triggered segues

NEW

Presentation

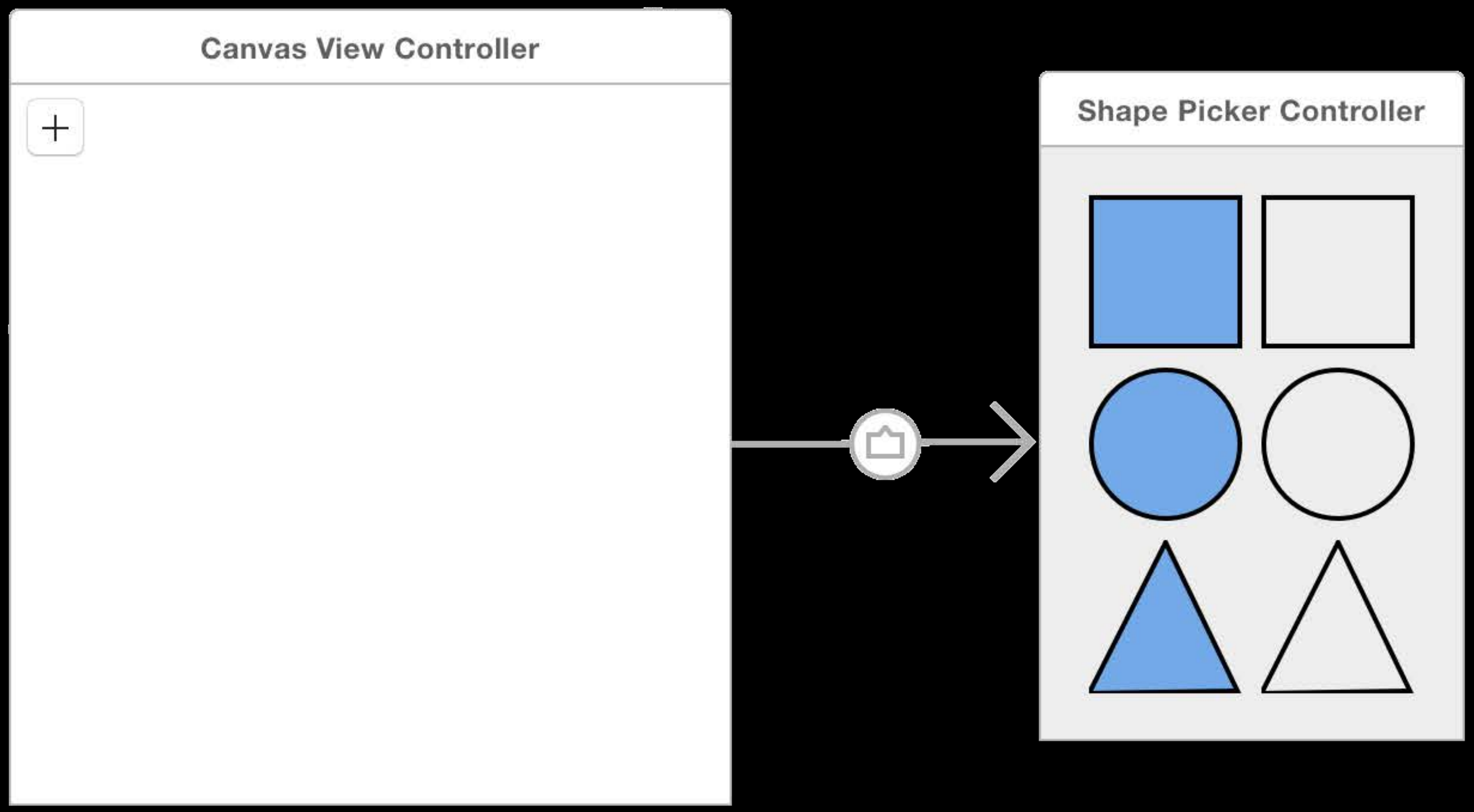


NSViewController

Triggered segues

Presentation

- Identifier



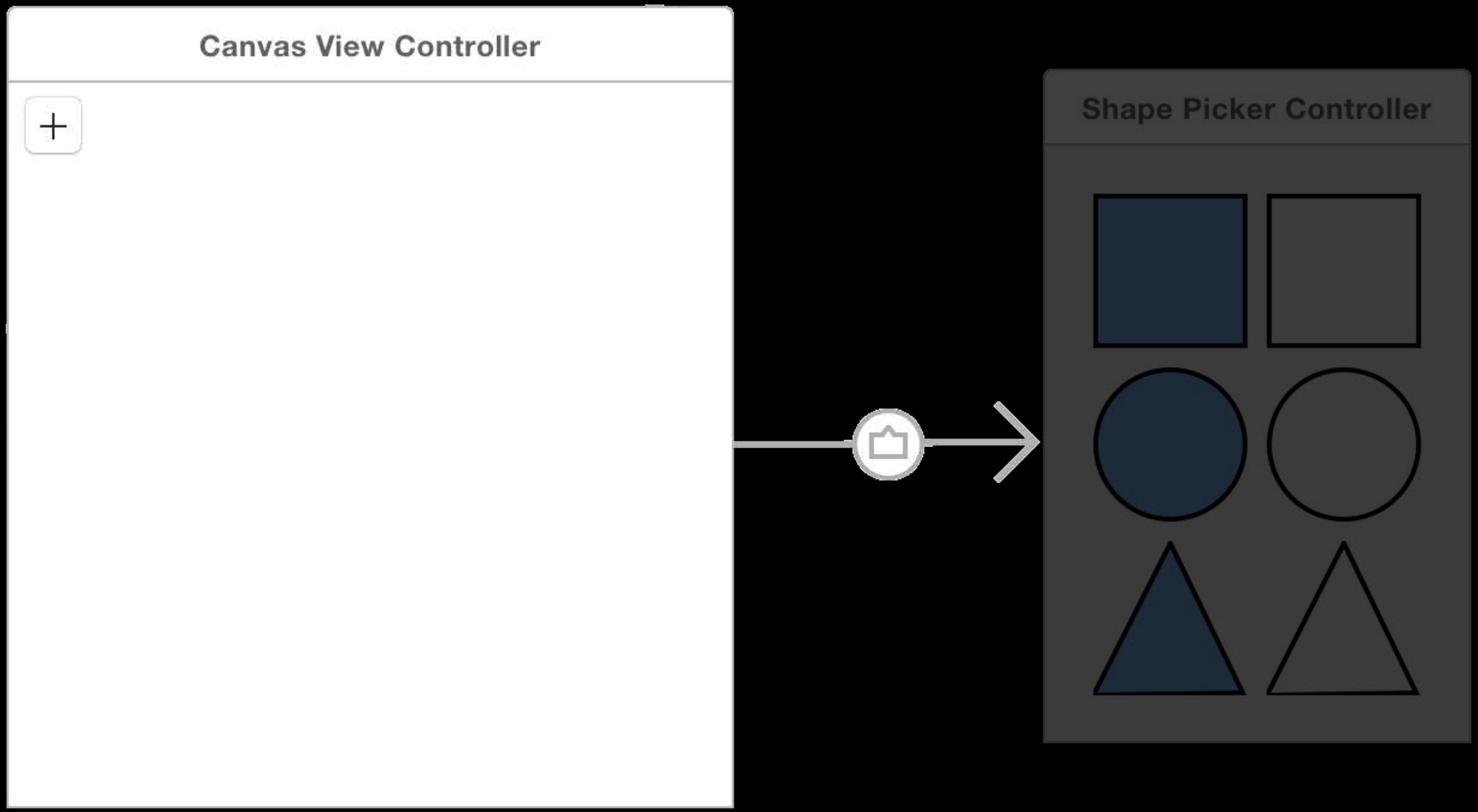
NSViewController

Triggered segues

NEW

Presentation

- Identifier
- Source view controller



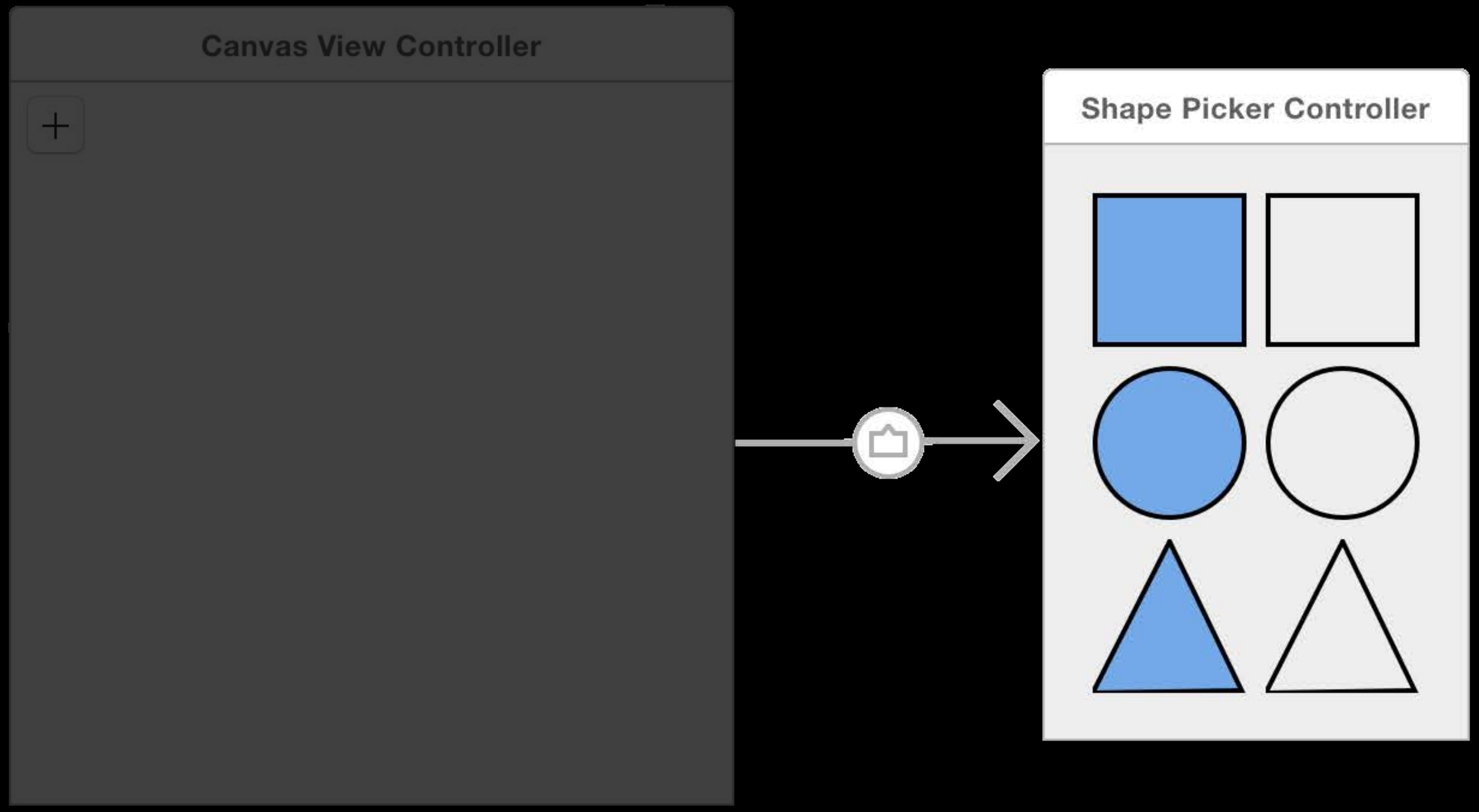
NSViewController

Triggered segues

NEW

Presentation

- Identifier
- Source view controller
- Destination controller



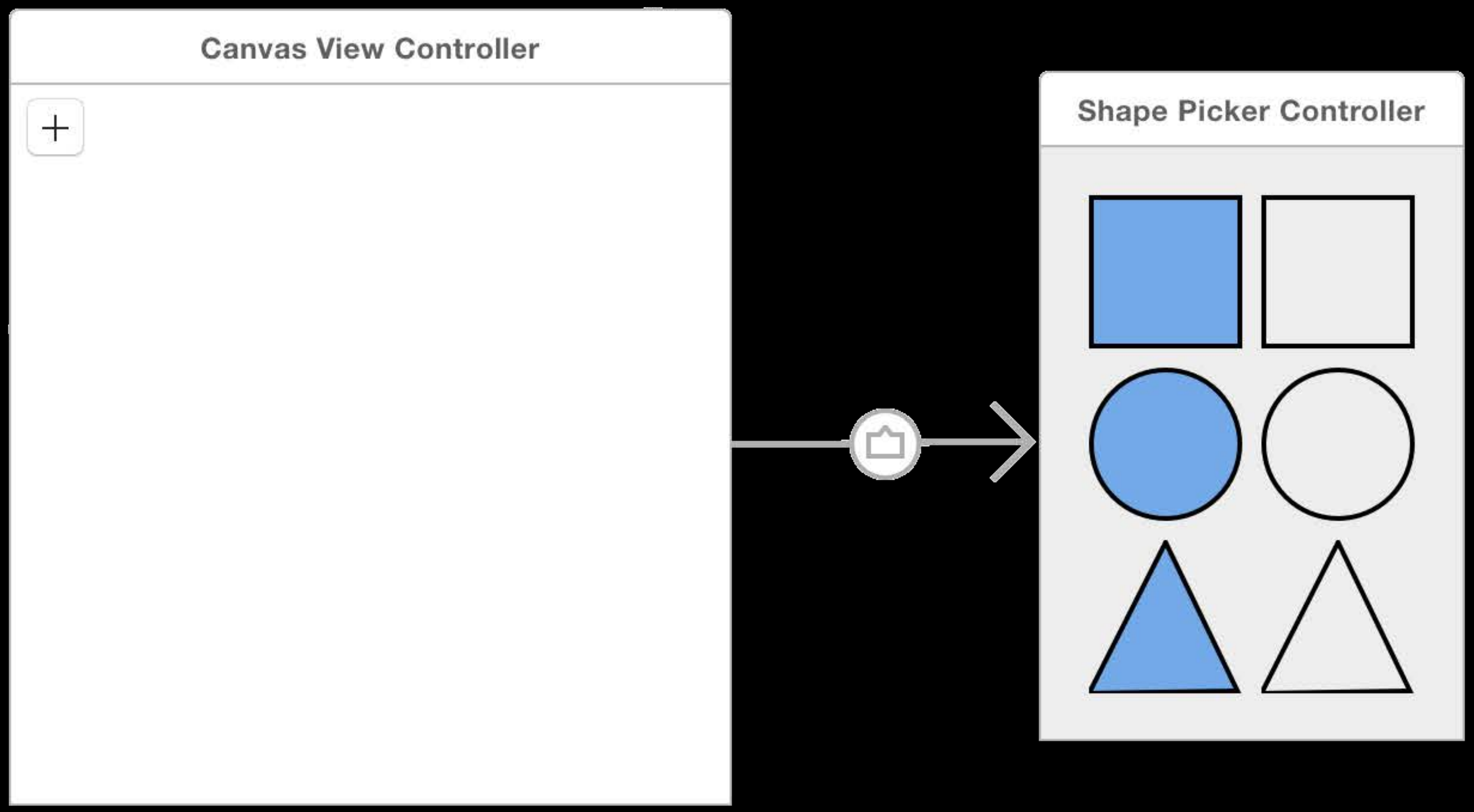
NSViewController

Triggered segues

NEW

Presentation

- Identifier
- Source view controller
- Destination controller
- Style



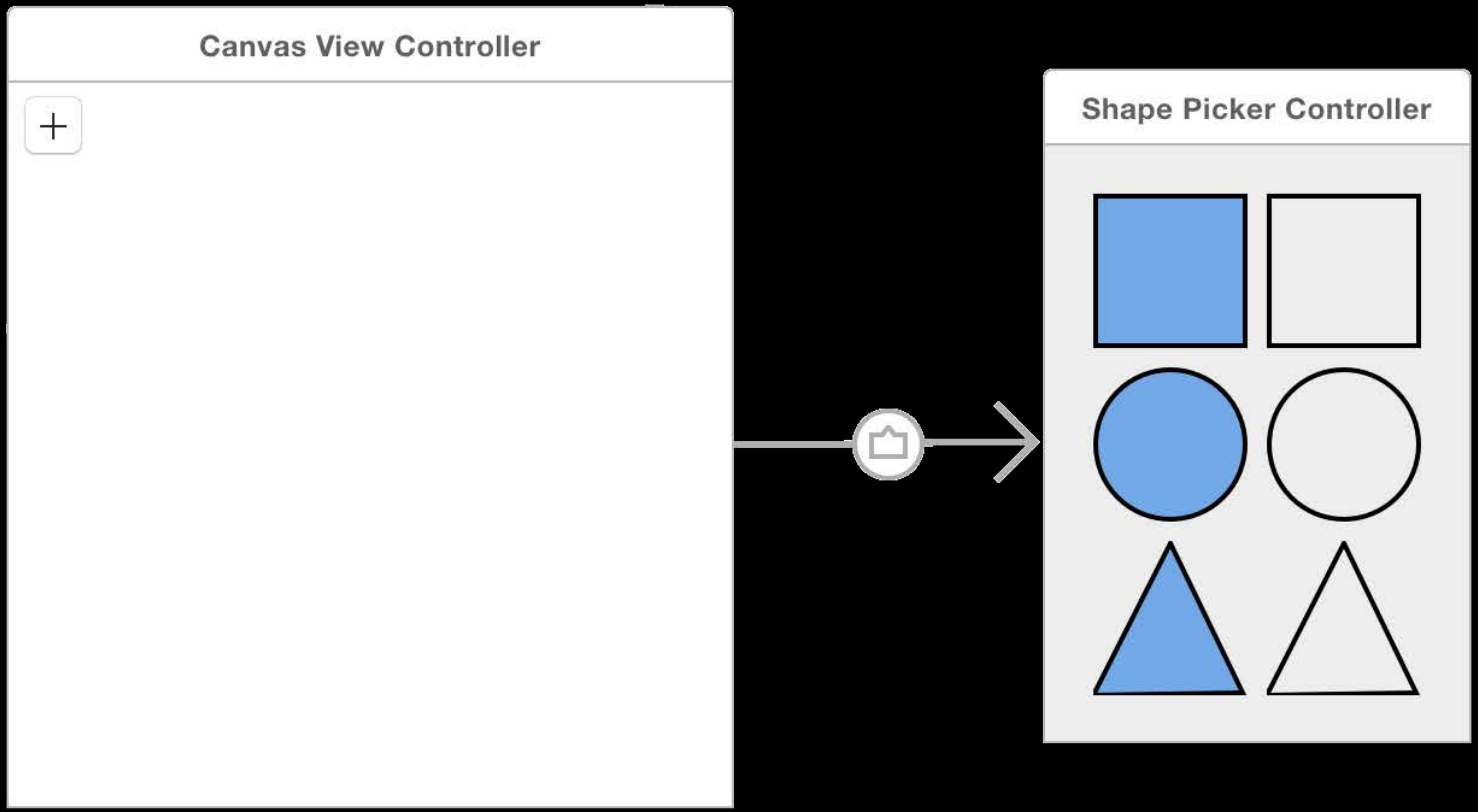
NSViewController

Triggered segues

NEW

Presentation

- Identifier
- Source view controller
- Destination controller
- Style
- Other attributes



NSViewController

Triggered segues

NEW

```
- (void)prepareForSegue:(NSStoryboardSegue *)segue sender:(id)sender;
```

NSViewController

Triggered segues

NEW

```
- (void)prepareForSegue:(NSStoryboardSegue *)segue sender:(id)sender;

@interface NSStoryboardSegue
   @property (readonly, copy) NSString *identifier;
   @property (readonly, strong) id sourceController;
   @property (readonly, strong) id destinationController;
```

NSViewController

Triggered segues

NEW

```
- (void)prepareForSegue:(NSStoryboardSegue *)segue sender:(id)sender;

- (BOOL)shouldPerformSegueWithIdentifier:(NSString *)identifier
                                  sender:(id)sender;
```

NSViewController

Triggered segues

NEW

```
- (void)prepareForSegue:(NSStoryboardSegue *)segue sender:(id)sender;

- (BOOL)shouldPerformSegueWithIdentifier:(NSString *)identifier
                                  sender:(id)sender;

- (void)performSegueWithIdentifier:(NSString *)identifier sender:(id)sender;
```

NSViewController

Triggered segues

NEW

NSViewController

Triggered segues

NEW

```
- (void)prepareForSegue:(NSStoryboardSegue *)segue
                 sender:(id)sender;
```

NSViewController

Manual presentation

NEW

NSViewController

Manual presentation

NEW

```
- (void)presentViewControllerAsSheet:(NSViewController *)vc;

- (void)presentViewControllerAsModalWindow:(NSViewController *)vc;

- (void)presentViewController:(NSViewController *)vc
          asPopoverRelativeToRect:(NSRect)positioningRect
          ofView:(NSView *)positioningView
          preferredEdge:(NSRectEdge)preferredEdge
          behavior:(NSPopoverBehavior)behavior;

- (IBAction)dismissController:(id)sender;
```

NSViewController

Manual presentation

NEW

```
- (void)presentViewControllerAsSheet:(NSViewController *)vc;

- (void)presentViewControllerAsModalWindow:(NSViewController *)vc;

- (void)presentViewController:(NSViewController *)vc
          asPopoverRelativeToRect:(NSRect)positioningRect
          ofView:(NSView *)positioningView
          preferredEdge:(NSRectEdge)preferredEdge
          behavior:(NSPopoverBehavior)behavior;

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NSViewController

Manual presentation

NEW

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– (void)presentViewControllerAsSheet:(NSViewController *)vc;

– (void)presentViewControllerAsModalWindow:(NSViewController *)vc;

– (void)presentViewController:(NSViewController *)vc
           asPopoverRelativeToRect:(NSRect)positioningRect
           ofView:(NSView *)positioningView
           preferredEdge:(NSRectEdge)preferredEdge
           behavior:(NSPopoverBehavior)behavior;

– (IBAction)dismissController:(id)sender;
```

NSViewController

Manual presentation

NEW

```
- (void)presentViewControllerAsSheet:(NSViewController *)vc;

- (void)presentViewControllerAsModalWindow:(NSViewController *)vc;

- (void)presentViewController:(NSViewController *)vc
          asPopoverRelativeToRect:(NSRect)positioningRect
          ofView:(NSView *)positioningView
          preferredEdge:(NSRectEdge)preferredEdge
          behavior:(NSPopoverBehavior)behavior;

- (IBAction)dismissController:(id)sender;
```

NSViewController

Manual presentation

NEW

```
- (void)presentViewControllerAsSheet:(NSViewController *)vc;

- (void)presentViewControllerAsModalWindow:(NSViewController *)vc;

- (void)presentViewController:(NSViewController *)vc
          asPopoverRelativeToRect:(NSRect)positioningRect
          ofView:(NSView *)positioningView
          preferredEdge:(NSRectEdge)preferredEdge
          behavior:(NSPopoverBehavior)behavior;

- (IBAction)dismissController:(id)sender;
```

NSViewController

Manual presentation

NEW

```
- (void)presentViewController:(NSViewController *)viewController
             animator:(id <NSViewControllerPresentationAnimator>)animator;
```

NSViewController

Manual presentation

```
- (void)presentViewController:(NSViewController *)viewController
            animator:(id <NSViewControllerPresentationAnimator>)animator;
```

NSViewController

Manual presentation

NEW

```
- (void)presentViewController:(NSViewController *)viewController
          animator:(id <NSViewControllerPresentationAnimator>)animator;

@protocol
- (void)animatePresentationOfViewController:(NSViewController *)vc
          fromViewController:(NSViewController *)fromViewController;

- (void)animateDismissalOfViewController:(NSViewController *)vc
          fromViewController:(NSViewController *)fromViewController;
```

API

Looking under the hood

Storyboards

View controllers

Window controllers

Gesture recognizers

NSWindowController

NSWindowController

NEW

```
@property (strong) NSViewController *contentViewController;
@property(readonly, strong) NSStoryboard *storyboard;
- (IBAction)dismissController:(id)sender;
```

NSWindowController

NEW

```
@property (strong) NSViewController *contentViewController;
@property(readonly, strong) NSStoryboard *storyboard;
- (IBAction)dismissController:(id)sender;
```

NSWindowController

NEW

```
@property (strong) NSViewController *contentViewController;
@property(readonly, strong) NSStoryboard *storyboard;
- (IBAction)dismissController:(id)sender;
```

NSWindowController

NEW

```
@property (strong) NSViewController *contentViewController;
@property(readonly, strong) NSStoryboard *storyboard;
- (IBAction)dismissController:(id)sender;
```

NSWindowController

NEW

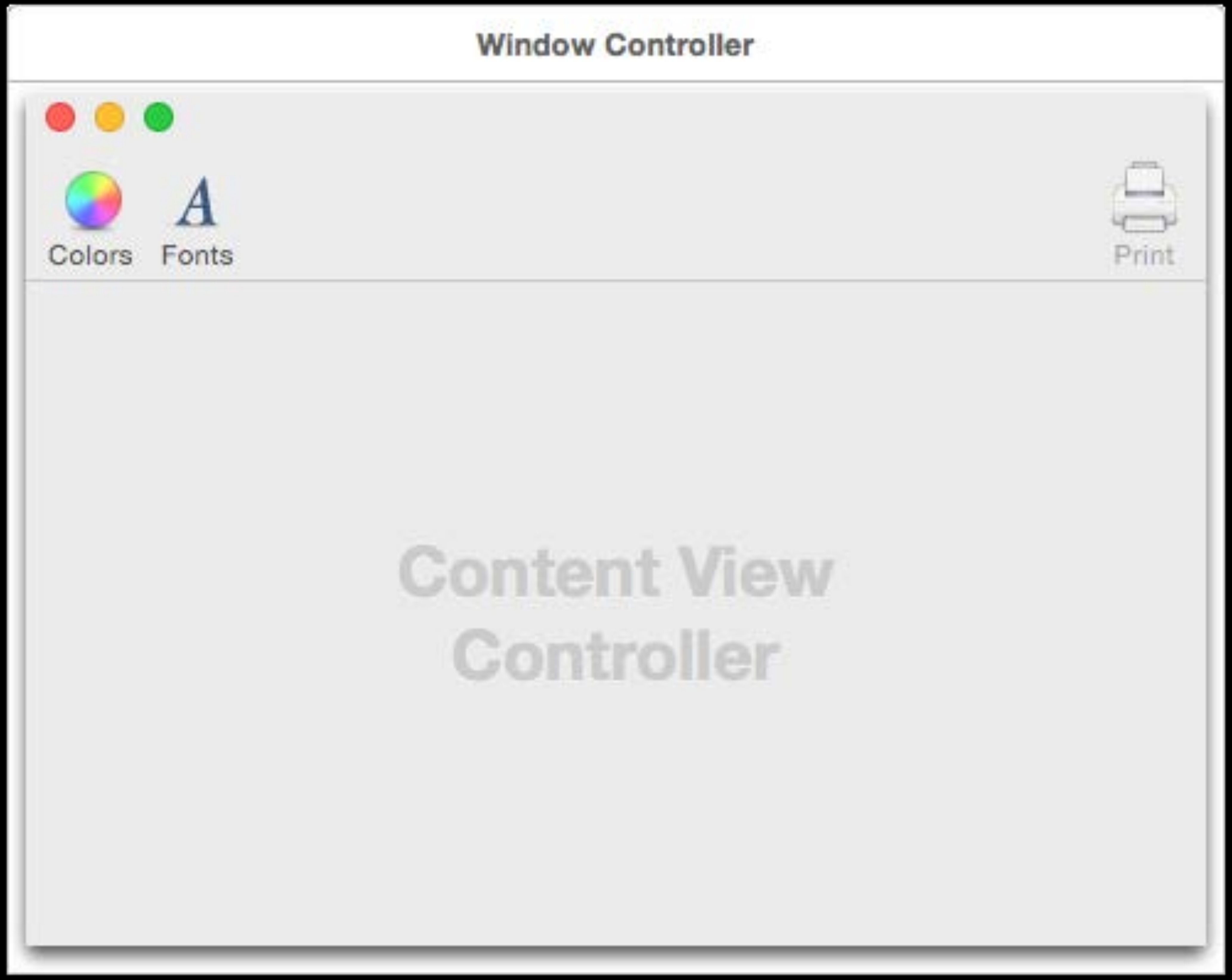
```
@property (strong) NSViewController *contentViewController;
@property(readonly, strong) NSStoryboard *storyboard;
- (IBAction)dismissController:(id)sender;

- (void)prepareForSegue:(NSStoryboardSegue *)segue sender:(id)sender;
- (void)performSegueWithIdentifier:(NSString *)identifier sender:(id)sender;
- (BOOL)shouldPerformSegueWithIdentifier:(NSString *)identifier
          sender:(id)sender;
```

NSWindowController

NEW

Manage window

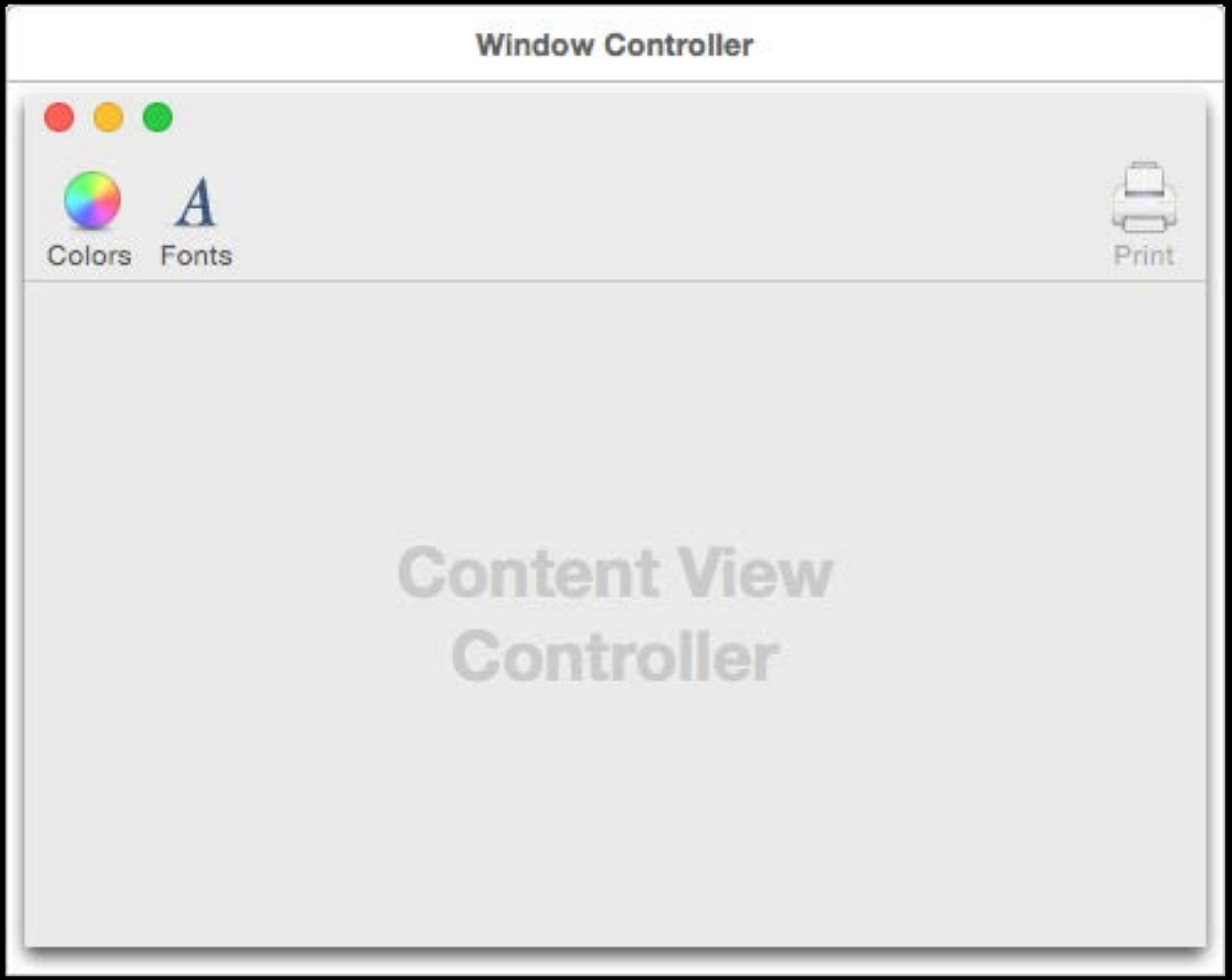


NSWindowController

NEW

Manage window

Manage titlebar and toolbar



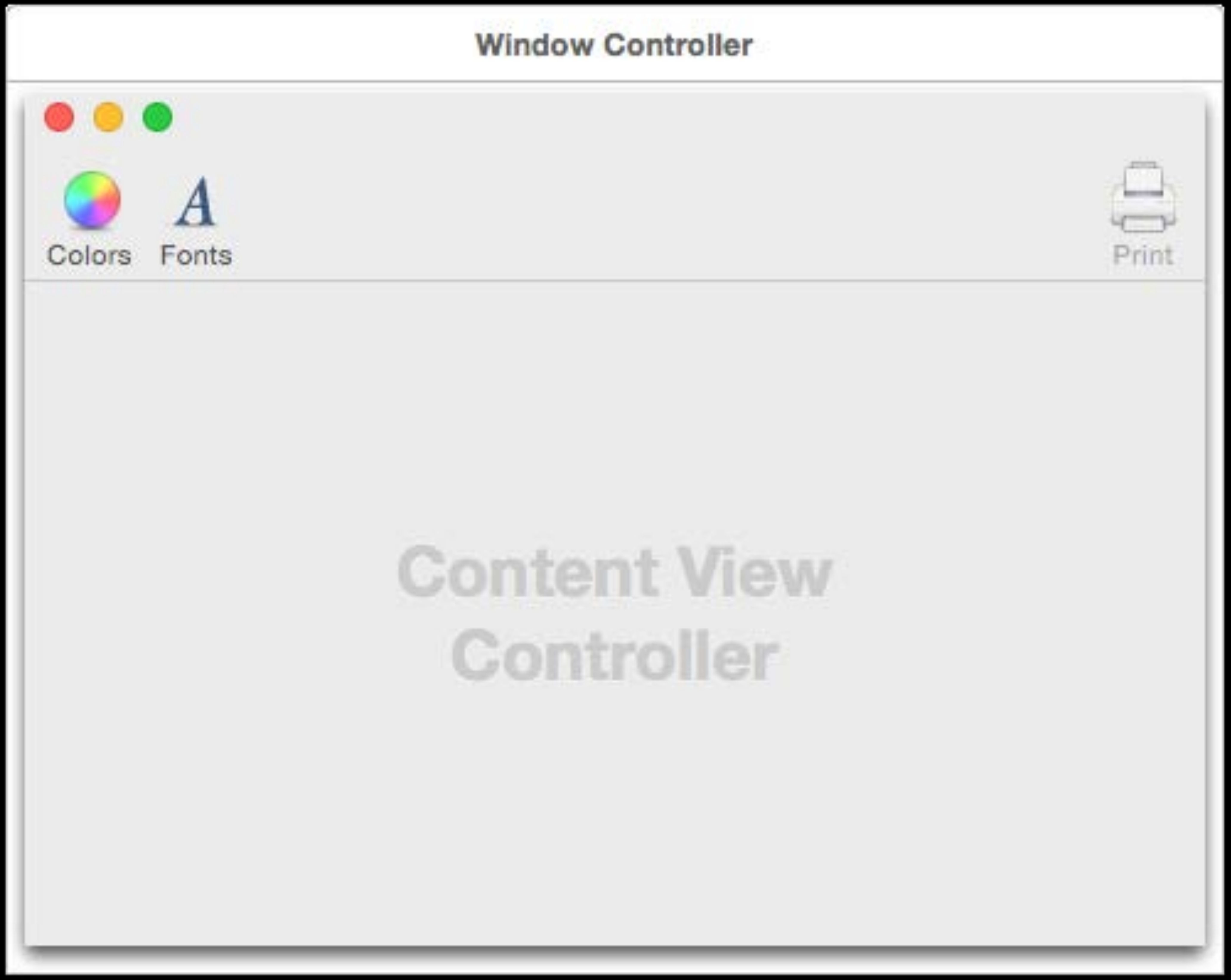
NSWindowController

NEW

Manage window

Manage titlebar and toolbar

Manage the contentViewController



API

Looking under the hood

Storyboards

View controllers

Window controllers

Gesture recognizers

NSGestureRecognizer

NEW

NSGestureRecognizer

NEW

Most gestures are determined by hardware (but not all)

NSGestureRecognizer

NEW

Most gestures are determined by hardware (but not all)

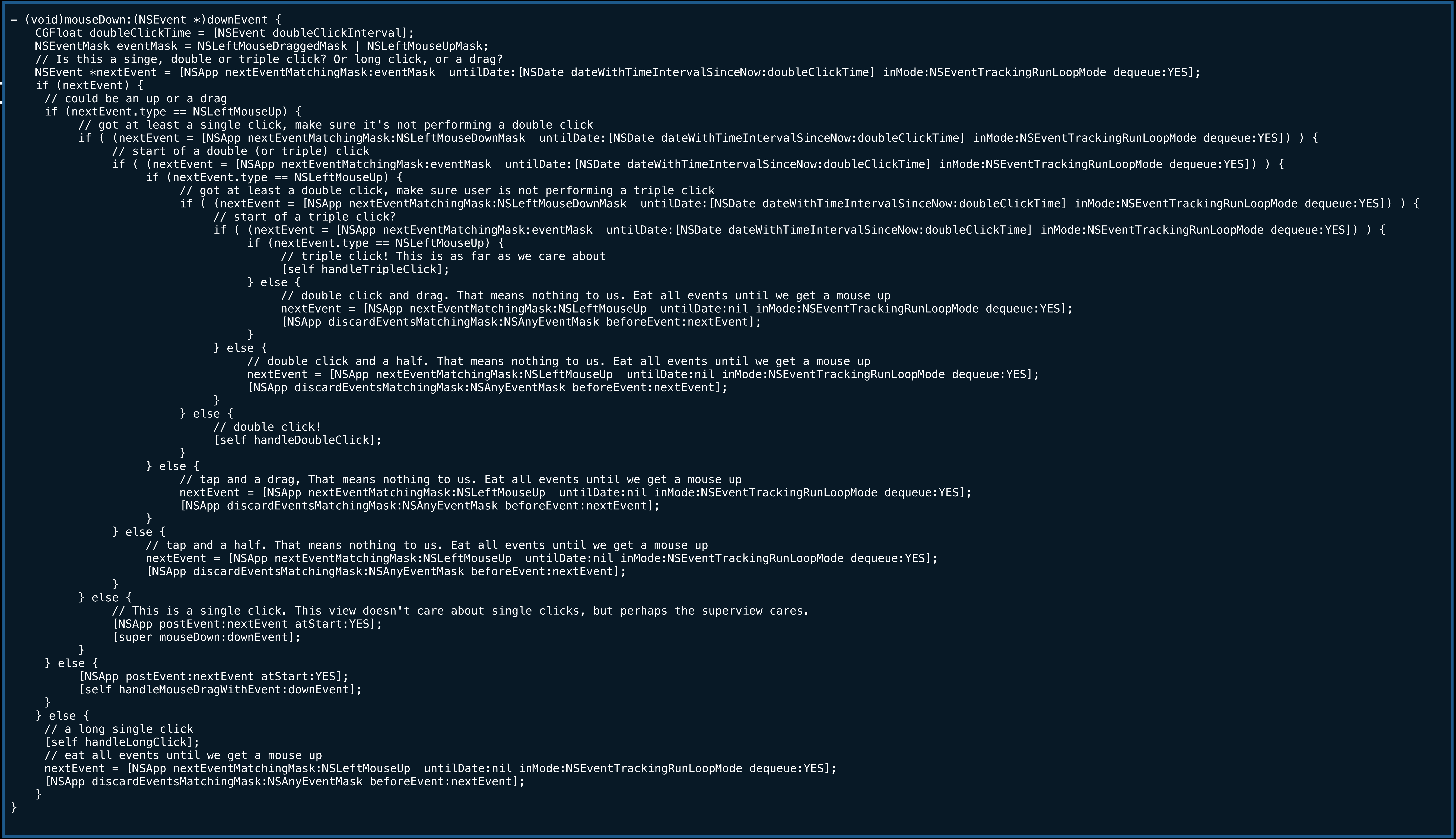
Disambiguating user input

NSGestureRecognizer

NEW

Most gest

Disambig



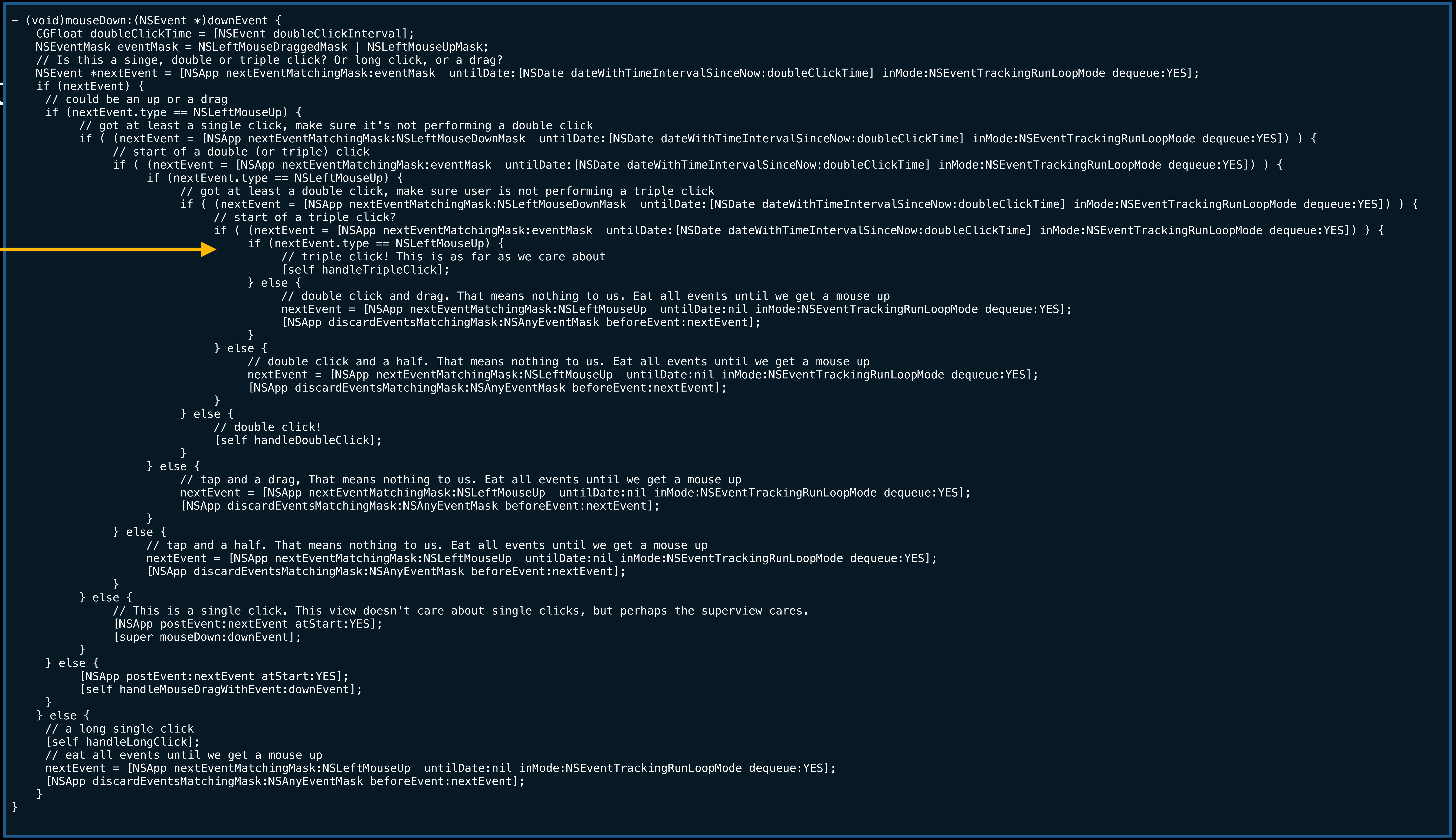
```
- (void)mouseDown:(NSEvent *)downEvent {
    CGFloat doubleClickTime = [NSEvent doubleClickInterval];
    NSEventMask eventMask = NSLeftMouseDraggedMask | NSLeftMouseUpMask;
    // Is this a singe, double or triple click? Or long click, or a drag?
    NSEvent *nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES];
    if (nextEvent) {
     // could be an up or a drag
     if (nextEvent.type == NSLeftMouseUp) {
          // got at least a single click, make sure it's not performing a double click
          if ( (nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseDownMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
               // start of a double (or triple) click
               if ( (nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                    if (nextEvent.type == NSLeftMouseUp) {
                         // got at least a double click, make sure user is not performing a triple click
                         if ( (nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseDownMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                              // start of a triple click?
                              if ( (nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                                   if (nextEvent.type == NSLeftMouseUp) {
                                        // triple click! This is as far as we care about
                                        [self handleTripleClick];
                                   } else {
                                        // double click and drag. That means nothing to us. Eat all events until we get a mouse up
                                        nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                                        [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                                   }
                              } else {
                                   // double click and a half. That means nothing to us. Eat all events until we get a mouse up
                                   nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                                   [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                              }
                         } else {
                              // double click!
                              [self handleDoubleClick];
                         }
                    } else {
                         // tap and a drag, That means nothing to us. Eat all events until we get a mouse up
                         nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                         [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                    }
               } else {
                    // tap and a half. That means nothing to us. Eat all events until we get a mouse up
                    nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                    [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
               }
          } else {
               // This is a single click. This view doesn't care about single clicks, but perhaps the superview cares.
               [NSApp postEvent:nextEvent atStart:YES];
               [super mouseDown:downEvent];
          }
     } else {
          [NSApp postEvent:nextEvent atStart:YES];
          [self handleMouseDragWithEvent:downEvent];
     }
    } else {
     // a long single click
     [self handleLongClick];
     // eat all events until we get a mouse up
     nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
     [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
    }
}
```

NSGestureRecognizer

NEW

Most gest

Disambig



```
- (void)mouseDown:(NSEvent *)downEvent {
    CGFloat doubleClickTime = [NSEvent doubleClickInterval];
    NSEventMask eventMask = NSLeftMouseDraggedMask | NSLeftMouseUpMask;
    // Is this a singe, double or triple click? Or long click, or a drag?
    NSEvent *nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES];
    if (nextEvent) {
     // could be an up or a drag
     if (nextEvent.type == NSLeftMouseUp) {
          // got at least a single click, make sure it's not performing a double click
          if ( (nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseDownMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
               // start of a double (or triple) click
               if ( (nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                    if (nextEvent.type == NSLeftMouseUp) {
                         // got at least a double click, make sure user is not performing a triple click
                         if ( (nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseDownMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                              // start of a triple click?
                              if ( (nextEvent = [NSApp nextEventMatchingMask:eventMask  untilDate:[NSDate dateWithTimeIntervalSinceNow:doubleClickTime] inMode:NSEventTrackingRunLoopMode dequeue:YES]) ) {
                                   if (nextEvent.type == NSLeftMouseUp) {
                                        // triple click! This is as far as we care about
                                        [self handleTripleClick];
                                   } else {
                                        // double click and drag. That means nothing to us. Eat all events until we get a mouse up
                                        nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                                        [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                                   }
                              } else {
                                   // double click and a half. That means nothing to us. Eat all events until we get a mouse up
                                   nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                                   [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                              }
                         } else {
                              // double click!
                              [self handleDoubleClick];
                         }
                    } else {
                         // tap and a drag, That means nothing to us. Eat all events until we get a mouse up
                         nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                         [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
                    }
               } else {
                    // tap and a half. That means nothing to us. Eat all events until we get a mouse up
                    nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
                    [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
               }
          } else {
               // This is a single click. This view doesn't care about single clicks, but perhaps the superview cares.
               [NSApp postEvent:nextEvent atStart:YES];
               [super mouseDown:downEvent];
          }
     } else {
          [NSApp postEvent:nextEvent atStart:YES];
          [self handleMouseDragWithEvent:downEvent];
     }
    } else {
     // a long single click
     [self handleLongClick];
     // eat all events until we get a mouse up
     nextEvent = [NSApp nextEventMatchingMask:NSLeftMouseUp  untilDate:nil inMode:NSEventTrackingRunLoopMode dequeue:YES];
     [NSApp discardEventsMatchingMask:NSAnyEventMask beforeEvent:nextEvent];
    }
}
```

NSGestureRecognizer

NEW

Most gestures are determined by hardware (but not all)

Disambiguating user input

NSGestureRecognizer

NEW

Most gestures are determined by hardware (but not all)

Disambiguating user input

Good fit for view controllers (target of action)

NSGestureRecognizer

NEW

```
NSGestureRecognizer *gr = [[NSMagnificationGestureRecognizer alloc]
                             initWithTarget:self action:@selector(magnify:)];
[self.view addGestureRecognizer:gr];
gr.delegate = self;

- (void)magnify:(NSClickGestureRecognizer*)gr {
    switch (gr.state) {
        case NSGestureRecognizerStateBegan: …
        case NSGestureRecognizerStateChanged: …
        case NSGestureRecognizerStateEnded: …
        case NSGestureRecognizerStateCancelled: …
    }
}
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NSGestureRecognizer

NEW

NSClickGestureRecognizer

NSPanGestureRecognizer

NSPressGestureRecognizer

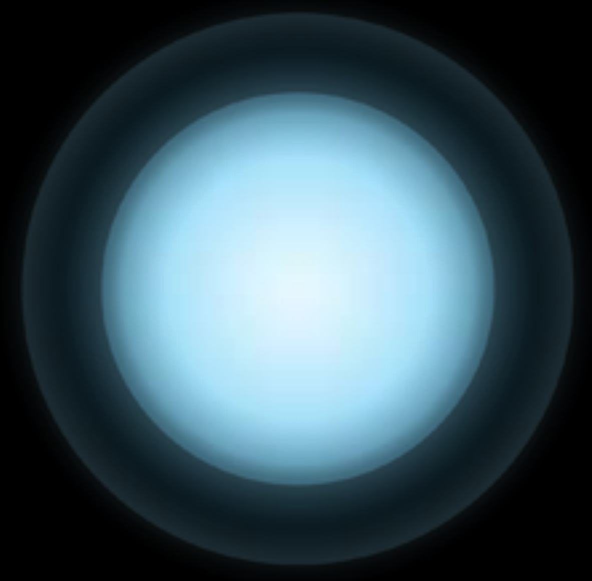
NSMagnificationGestureRecognizer

NSRotationGestureRecognizer

NSGestureRecognizer

NEW

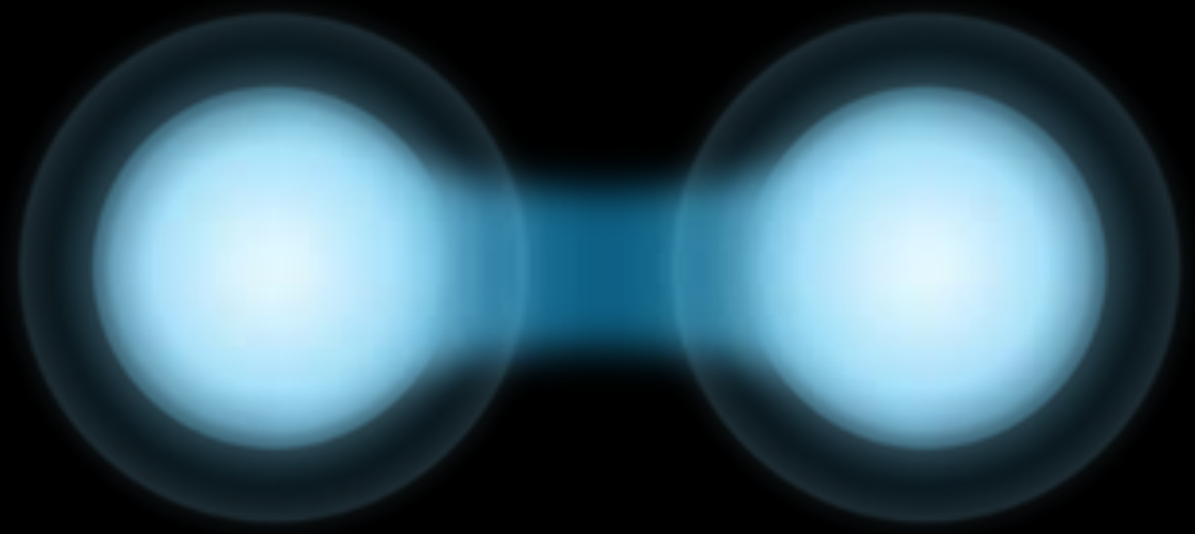
- NSClickGestureRecognizer
- NSPanGestureRecognizer
- NSPressGestureRecognizer
- NSMagnificationGestureRecognizer
- NSRotationGestureRecognizer



NSGestureRecognizer

NEW

- NSClickGestureRecognizer
- NSPanGestureRecognizer
- NSPressGestureRecognizer
- NSMagnificationGestureRecognizer
- NSRotationGestureRecognizer



NSGestureRecognizer

NEW

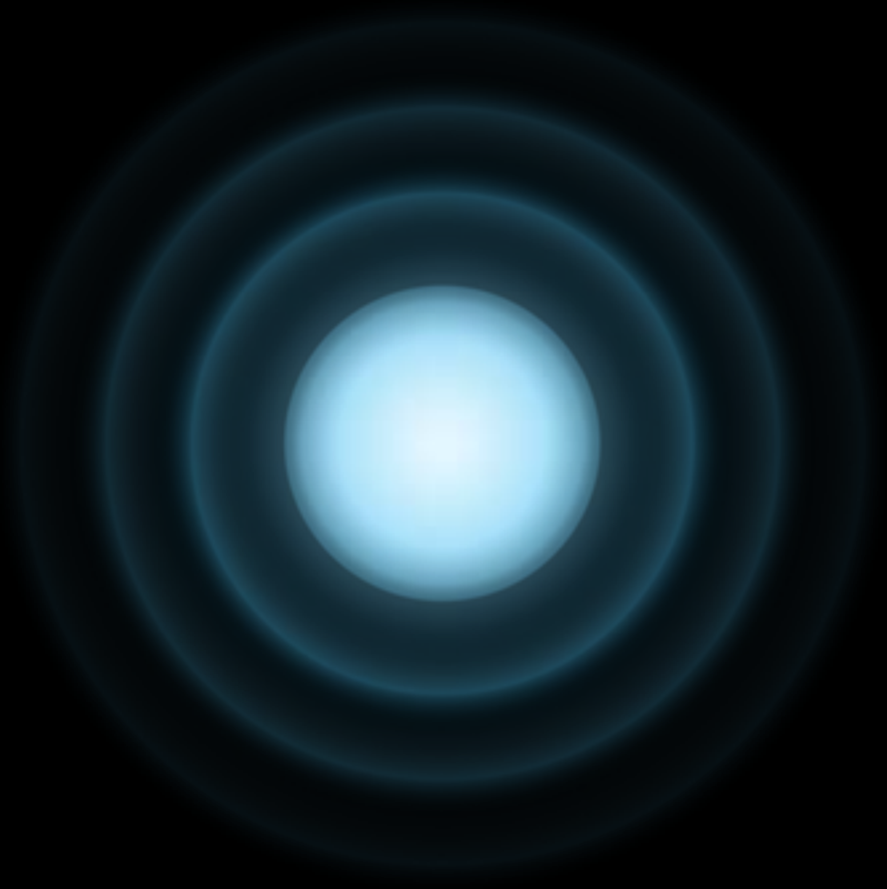
NSClickGestureRecognizer

NSPanGestureRecognizer

NSPressGestureRecognizer

NSMagnificationGestureRecognizer

NSRotationGestureRecognizer



NSGestureRecognizer

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NSClickGestureRecognizer

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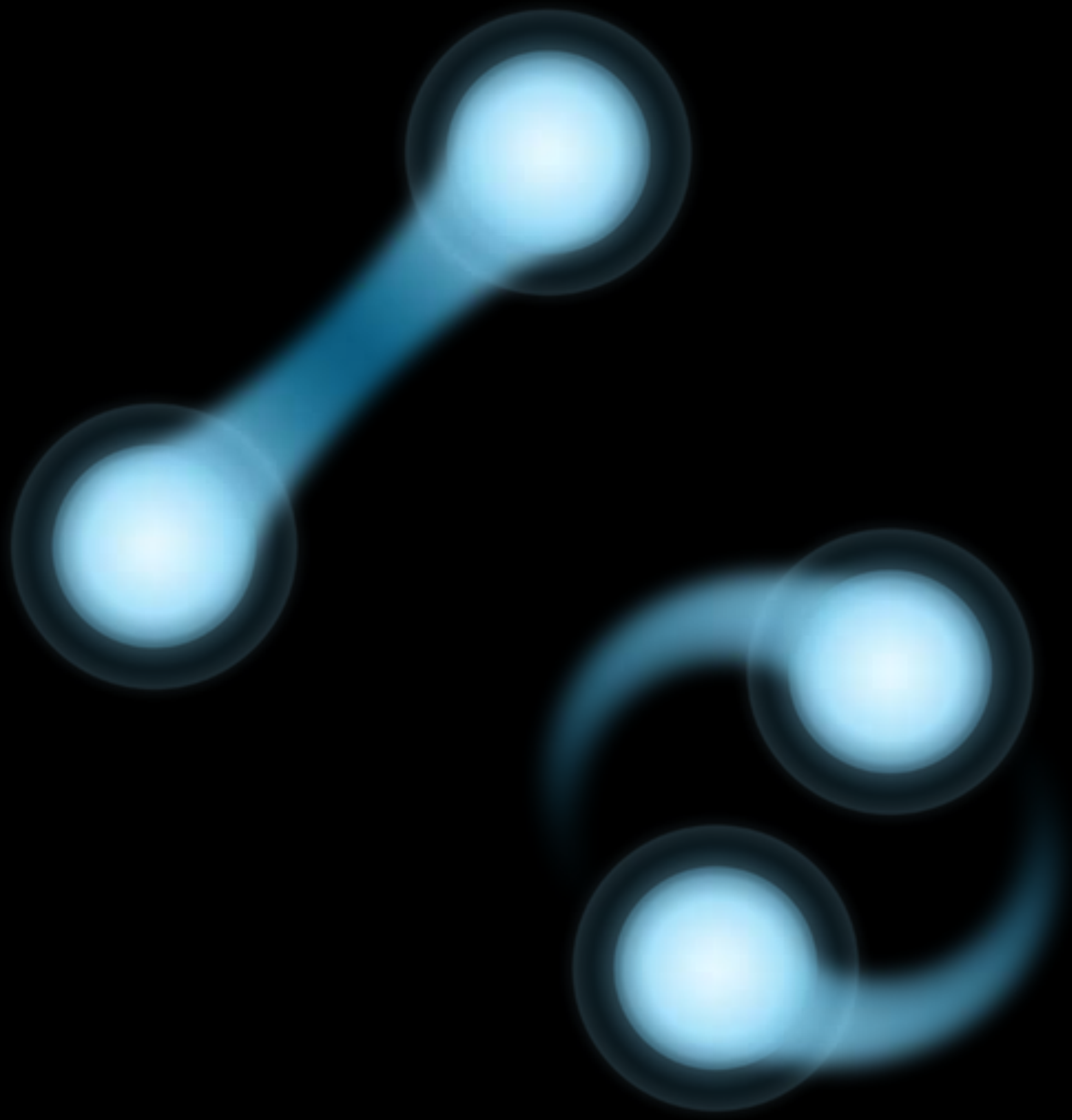
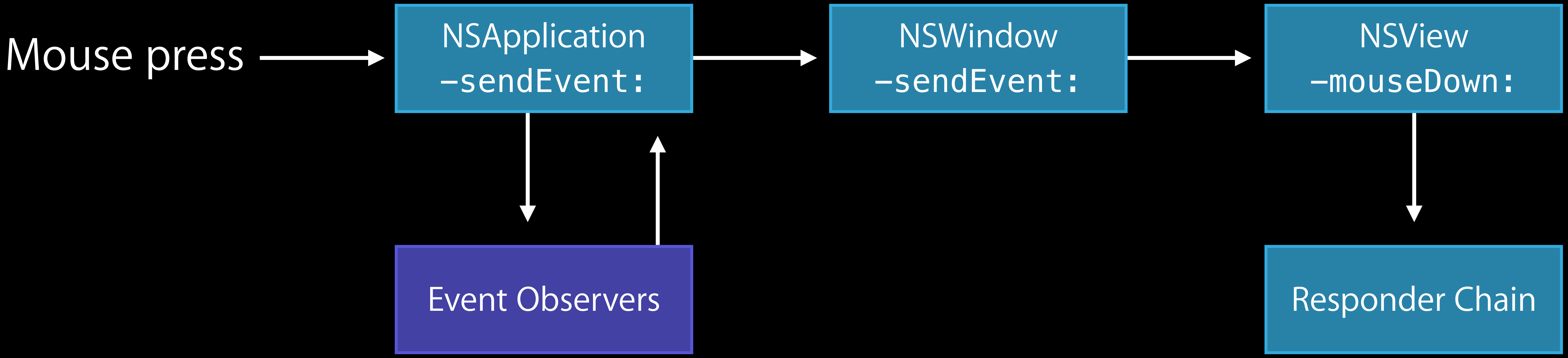
NSMagnificationGestureRecognizer

NSRotationGestureRecognizer



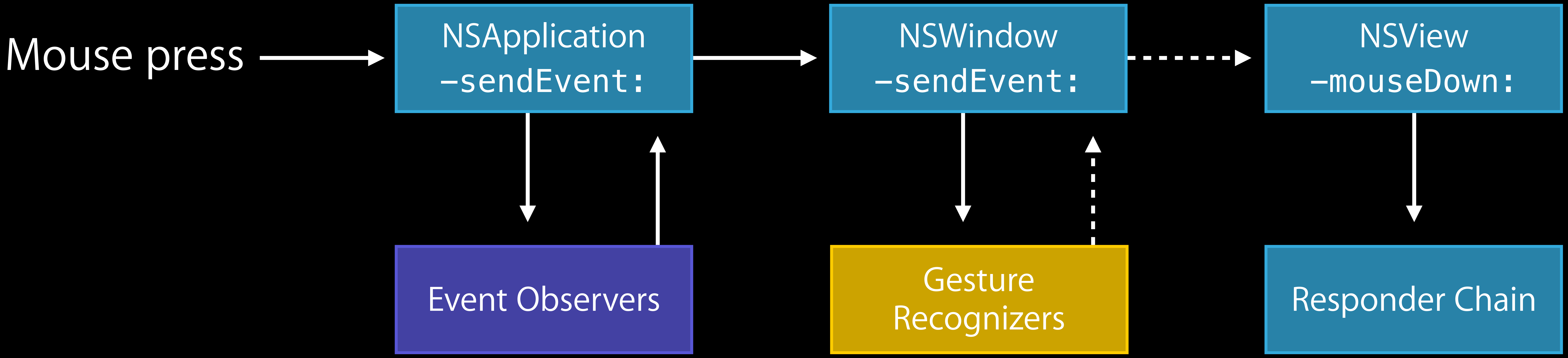
NSGestureRecognizer

Event flow



NSGestureRecognizer

Event flow



NSGestureRecognizer

For subclassers

NEW

See NSGestureRecognizer (NSSubclassUse)

Demo

View controllers and gesture recognizers

Raleigh Ledet
AppKit Engineer

Summary

Looking under the hood

Storyboards

View controllers

Window controllers

Gesture recognizers

More Information

Jake Behrens
App Frameworks Evangelist
behrens@apple.com

Documentation
What’s New in OS X
http://developer.apple.com/

Apple Developer Forums
http://devforums.apple.com

Related Sessions

● Adapting Your App to the New UI of OS X Yosemite	Pacific Heights	Tuesday 3:15PM
● Adopting Advanced Features of the New UI of OS X Yosemite	Marina	Wednesday 2:00PM
● What's New in Interface Builder	Mission	Wednesday 3:15PM
● Creating Modern Cocoa Apps	Marina	Thursday 10:15AM

Labs

●	Interface Builder and Live Views Lab	Tools Lab C	Wednesday 9:00AM
●	New UI and Cocoa Lab	Frameworks Lab B	Wednesday 3:15PM
●	Xcode and Interface Builder Lab	Tools Lab C	Thursday 9:00AM
●	View Controllers and Cocoa Lab	Frameworks Lab B	Thursday 11:30AM
●	Cocoa Lab	Frameworks Lab B	Thursday 4:30PM
●	Interface Builder and Auto Layout Lab	Tools Lab C	Friday 9:00AM

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