

Introducing the Modern WebKit API

Session 206
Anders Carlsson
Safari and WebKit Engineer

WebKit Overview

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THE PITCHFORK REVIEW

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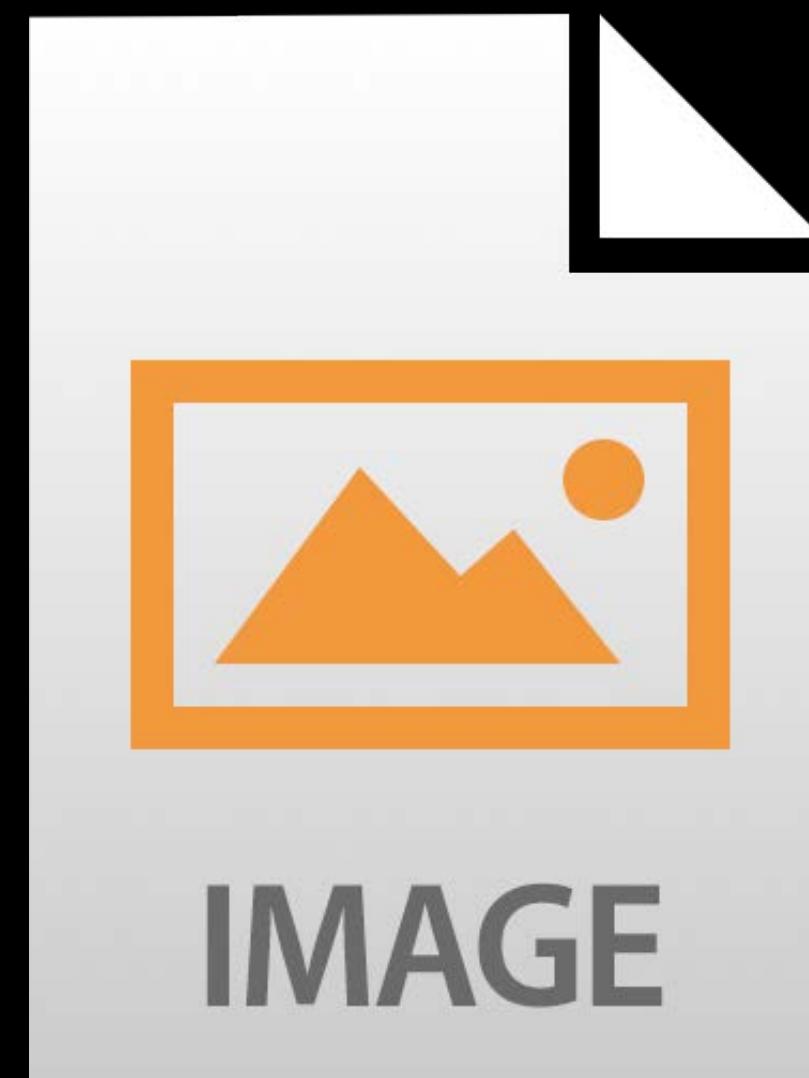
APRIL 22

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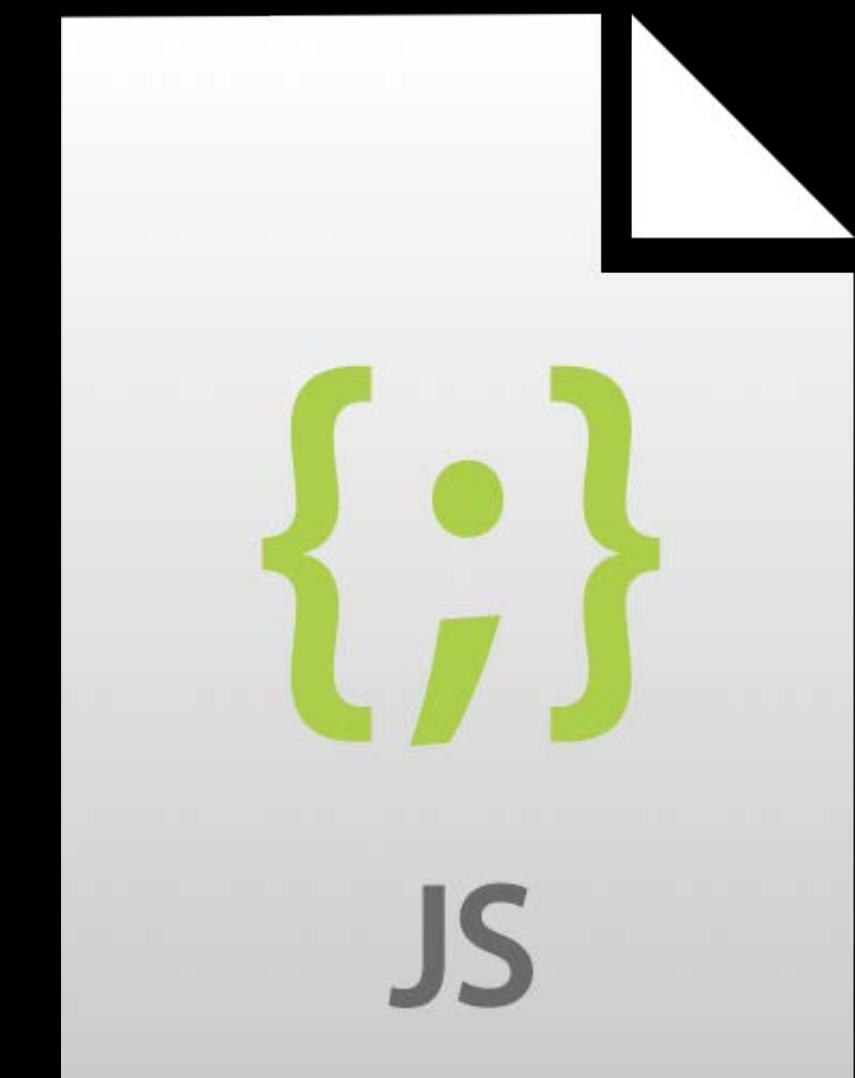
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IMAGE



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REVIEWS Wild Beasts PRESENT TENSE Much has been made about how Wild Beasts have drastically reduced the musical drama since their swashbuckling, chandelier-swinging debut Limbo, Panto. Present Tense doesn't reverse that trend, but without much left to discard sonically, Wild Beasts make their most radical and daring subtraction: emotional drama.

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THE PITCHFORK REVIEW THE PITCHFORK REVIEW

APRIL 21 APRIL 22 APRIL 23 APRIL 24

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ADVANCE TRACKS

THE PITCHFORK REVIEW

APRIL 20 APRIL 21 APRIL 22 APRIL 23 APRIL 24

Chance Graham 

To: Erin Steed

Trip to South America

October 22, 2013 at 9:41 AM 

Day three of our vacation is starting off great. We had an amazing breakfast then took a hike. I wanted to share this photo of David kayaking on the lake yesterday. I'm pretty sure this is the most excited he's ever been. Tomorrow we're headed into town to check out the local shops. Anything I should bring back for you? I know you said you wanted something authentic. Anything but a refrigerator magnet, right?

I've taken about a thousand photos and we haven't even been here a week. So I'll have many more photos and stories to share when we get home. But for now, we're off to dinner. Adios!





Adventure III

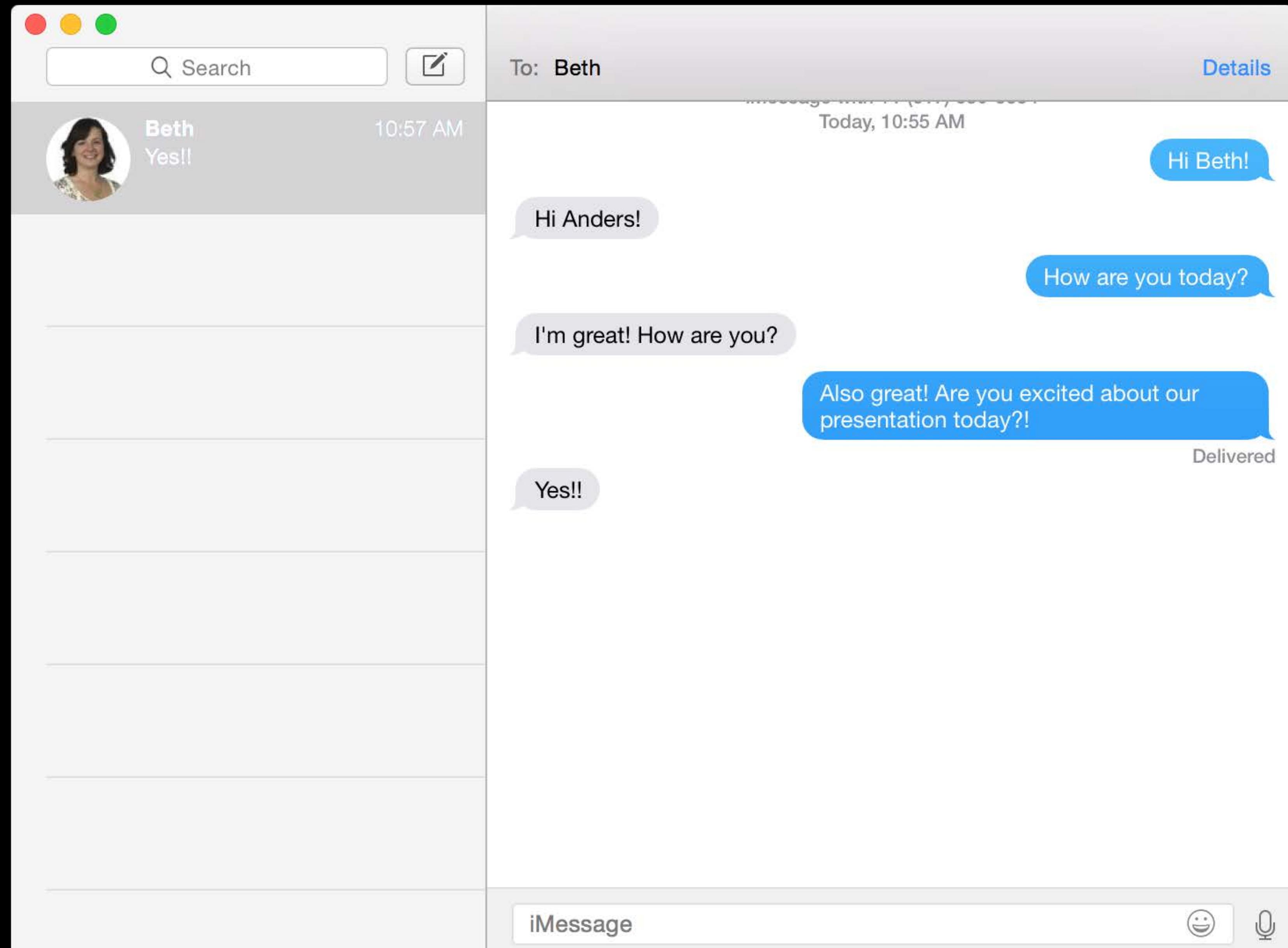
A Case of Identity

"My dear fellow," said **Sherlock Holmes** as we sat on either side of the fire in his lodgings at Baker Street, "life is infinitely stranger than anything which the mind of man could invent. We would not dare to conceive the things which are really mere commonplaces of existence. If we could fly out of that window hand in hand, hover over this great city, gently remove the roofs, and peep in at the queer things which are going on, the strange coincidences, the plannings, the cross-purposes, the wonderful chains of events, working through generations, and leading to the most *outré* results, it would make all fiction with its conventionalities and foreseen conclusions most stale and unprofitable."

"And yet I am not convinced of it," I answered. "The cases which come to light in the papers are, as a rule, bald enough, and vulgar enough. We have in our police reports realism pushed to its extreme limits, and yet the result is, it must be confessed, neither fascinating nor artistic."

"A certain selection and discretion must be used in producing a realistic effect," remarked Holmes. "This is wanting in the police report, where more stress is laid, perhaps, upon the platitudes of the magistrate than upon the details, which to an observer contain the vital essence of the whole matter. Depend upon it, there is nothing so unnatural as the commonplace."

I smiled and shook my head. "I can quite understand your thinking so," I said. "Of course, in your position of unofficial adviser and helper to everybody who is absolutely puzzled, throughout three continents, you are brought in contact with all that is strange and bizarre. But here"—I





WebKit in Your App

WebKit in Your App



UIWebView
UIKit.framework

WebKit in Your App



UIWebView
UIKit.framework



WebView
WebKit.framework

What You Will Learn

What You Will Learn

Embedding web content in your app

What You Will Learn

Embedding web content in your app

Taking advantage of new features of the WebKit API

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Taking advantage of new features of the WebKit API

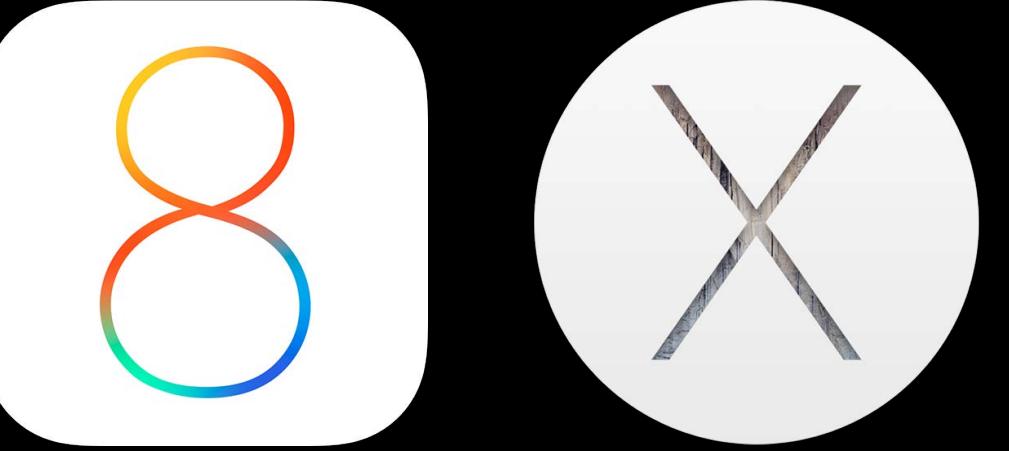
Customizing how your app interacts with web content

The Modern WebKit API

The Modern WebKit API

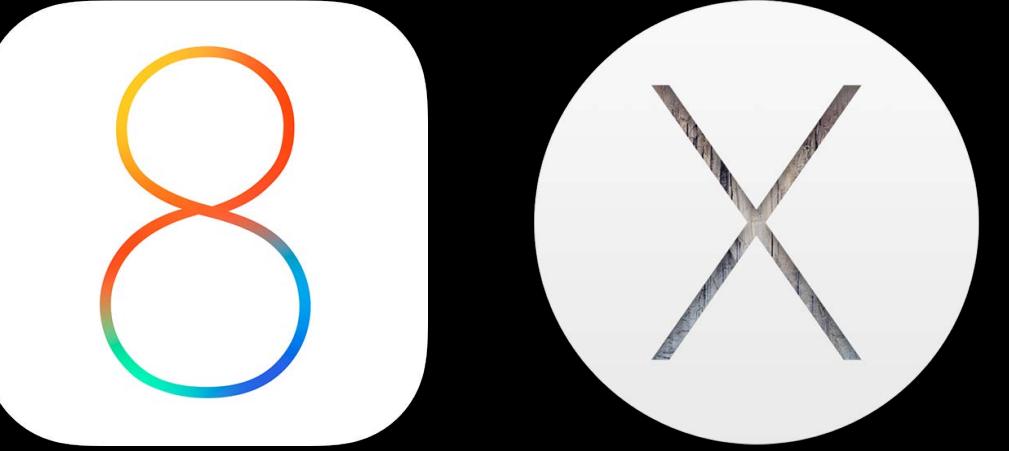


The Modern WebKit API



Same on iOS and OS X

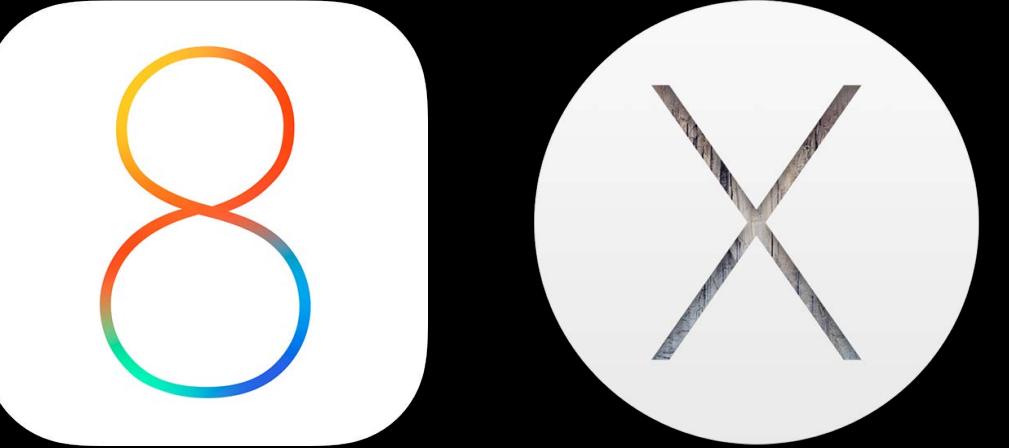
The Modern WebKit API



Same on iOS and OS X

Modern

The Modern WebKit API

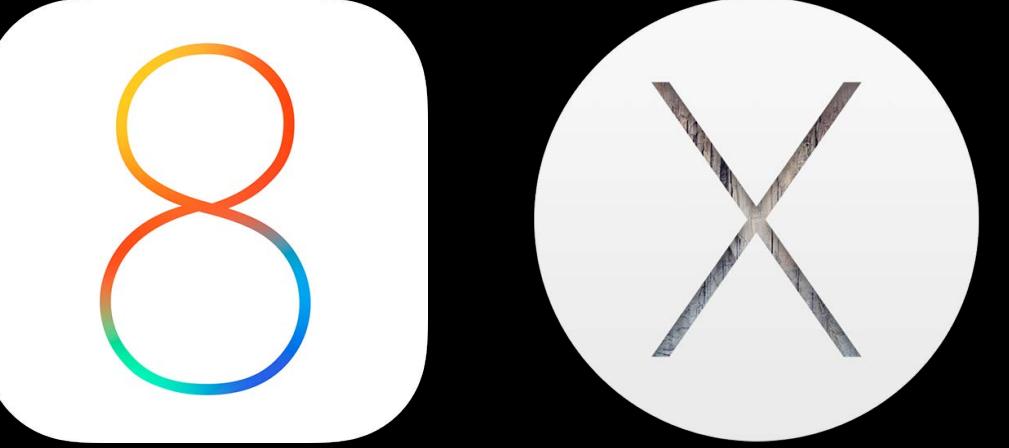


Same on iOS and OS X

Modern

Streamlined

The Modern WebKit API



Same on iOS and OS X
Modern
Streamlined
Multi-process architecture

The Modern WebKit API

Features

The Modern WebKit API

Features

Responsive scrolling



The Modern WebKit API

Features

Responsive scrolling

Fast JavaScript



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Features

Responsive scrolling

Fast JavaScript

Built-in gestures



The Modern WebKit API

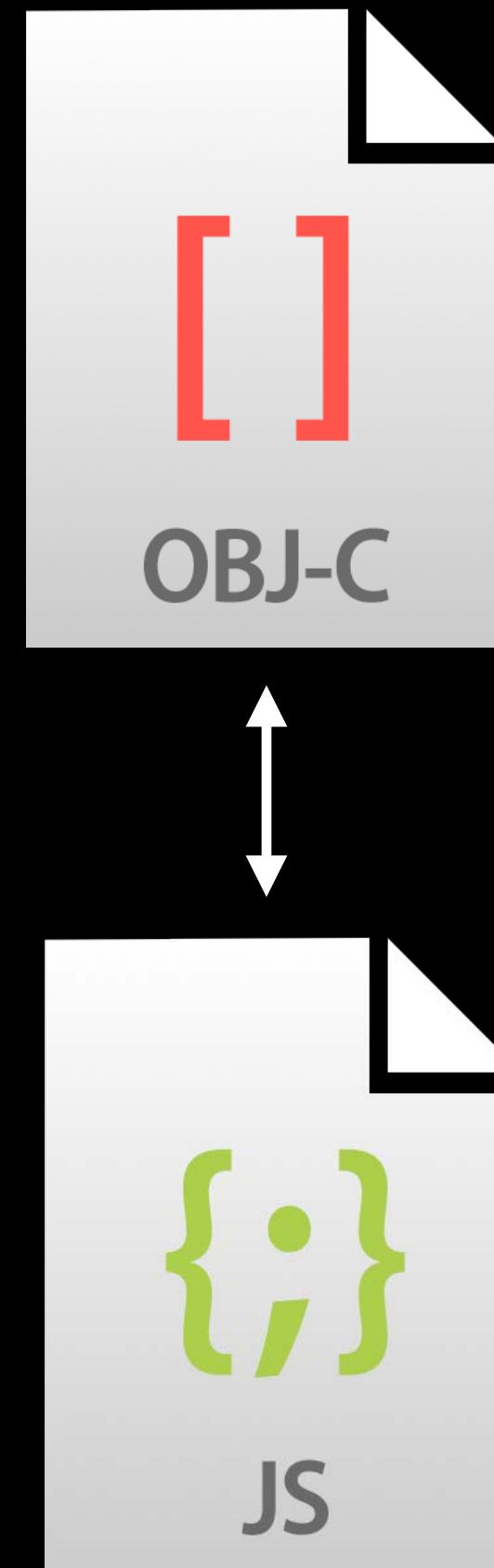
Features

Responsive scrolling

Fast JavaScript

Built-in gestures

Easy app-webpage communication



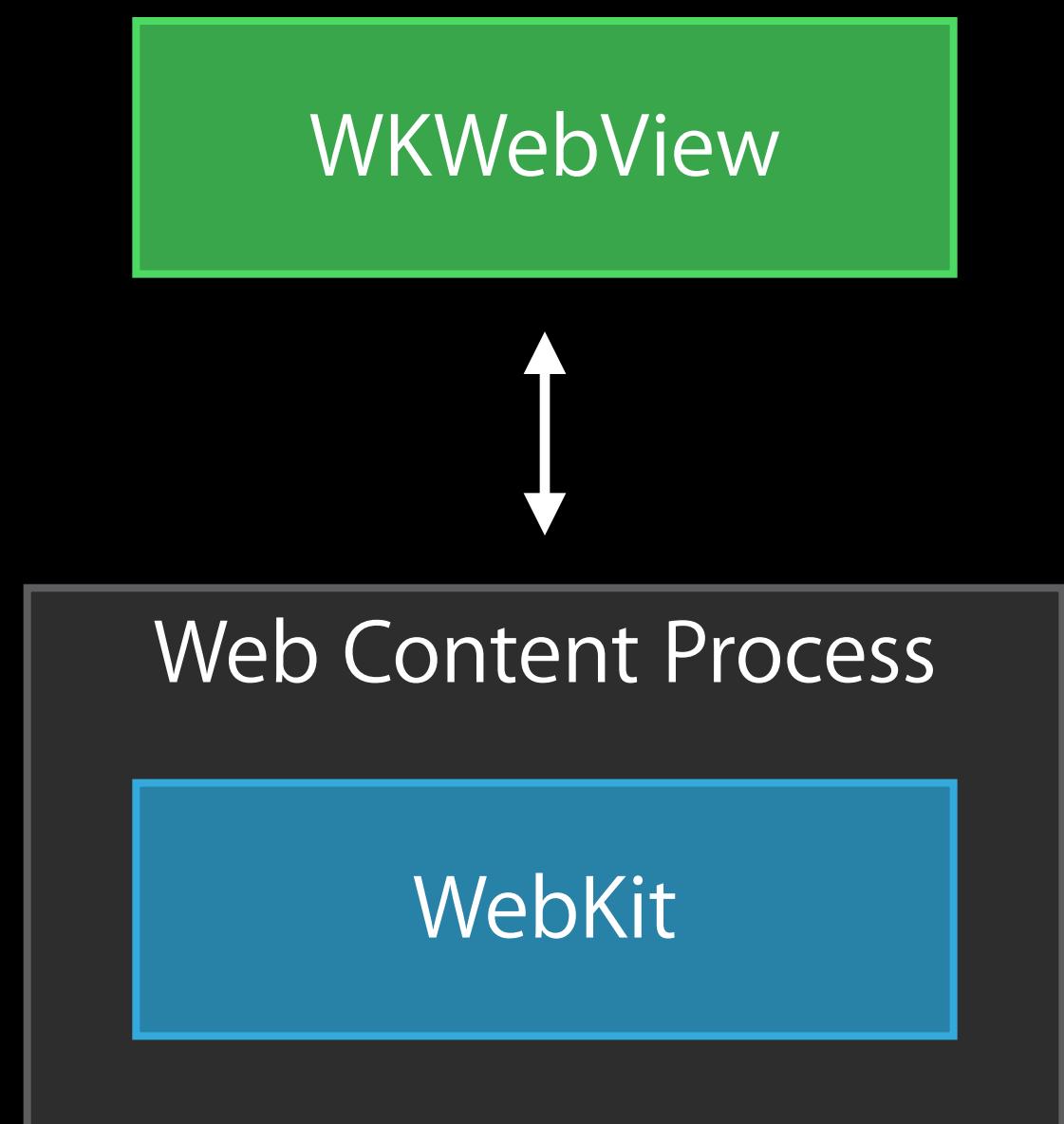
Multi-process Architecture

Multi-process Architecture

Web content runs in its own process

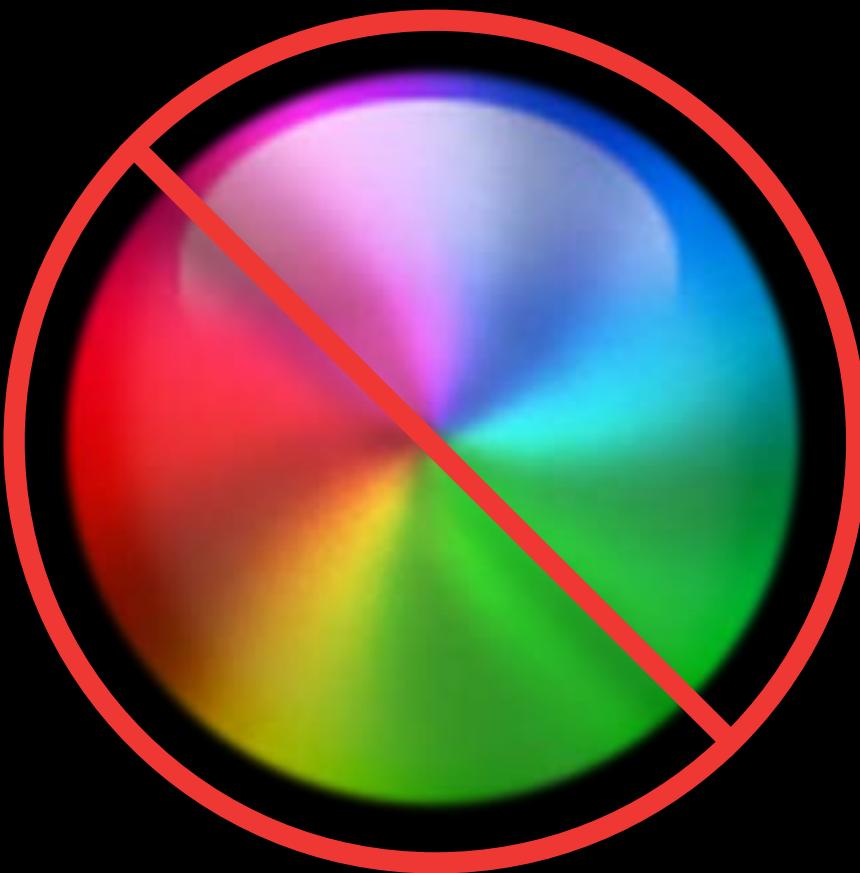
Multi-process Architecture

Web content runs in its own process



Multi-process Architecture

Consistently responsive



Multi-process Architecture

Consistently responsive

Energy efficient

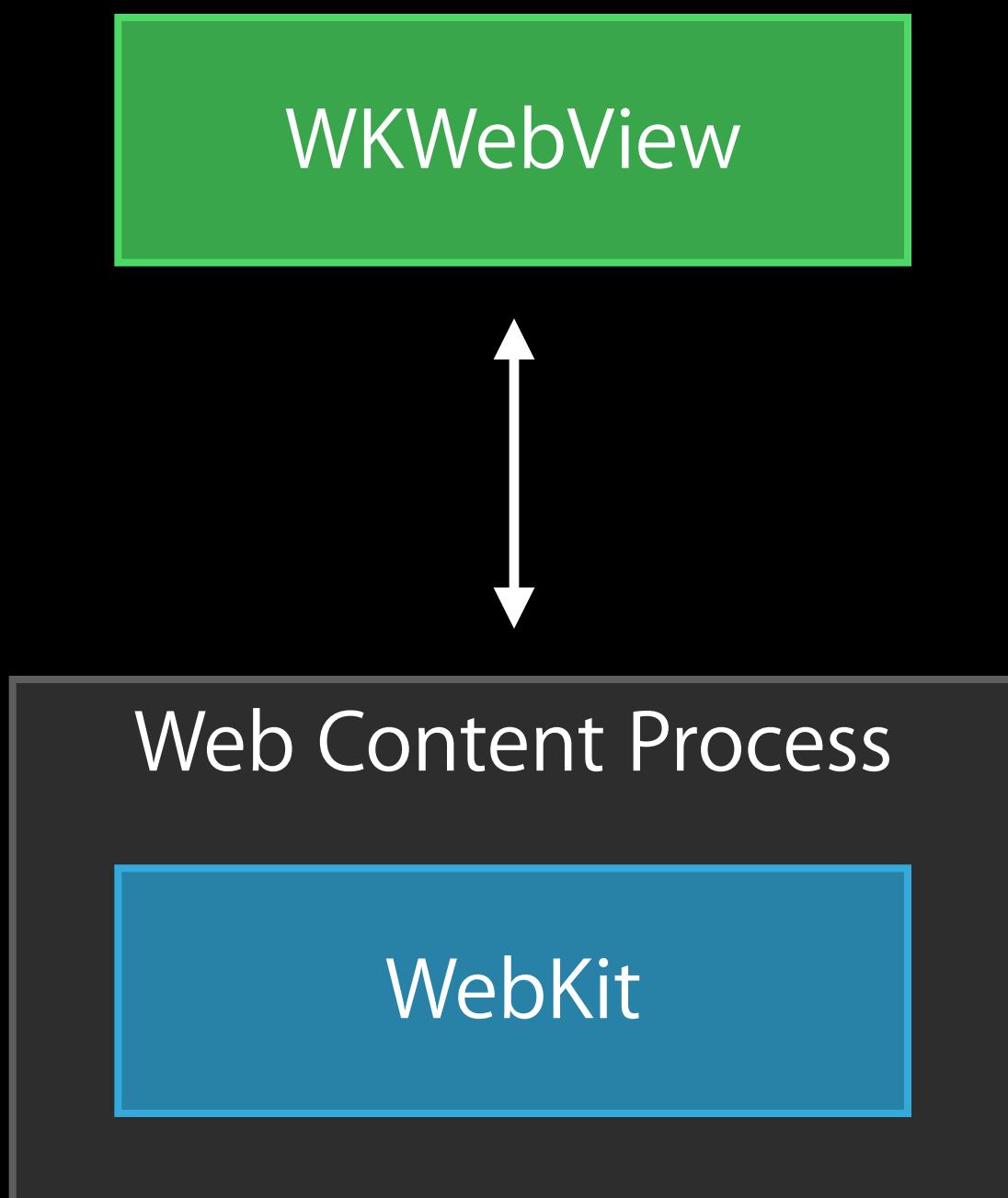


Multi-process Architecture

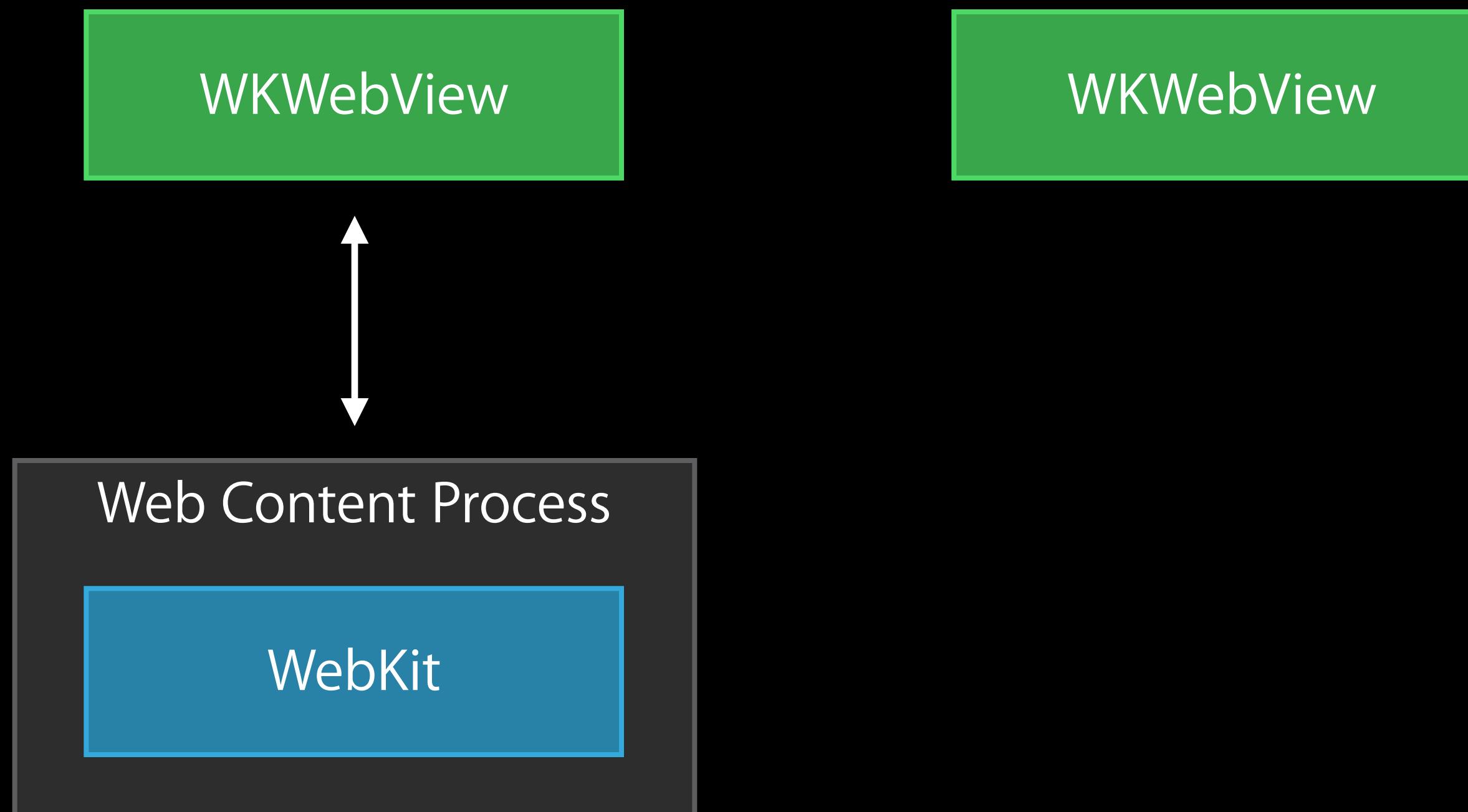
Multi-process Architecture

WKWebView

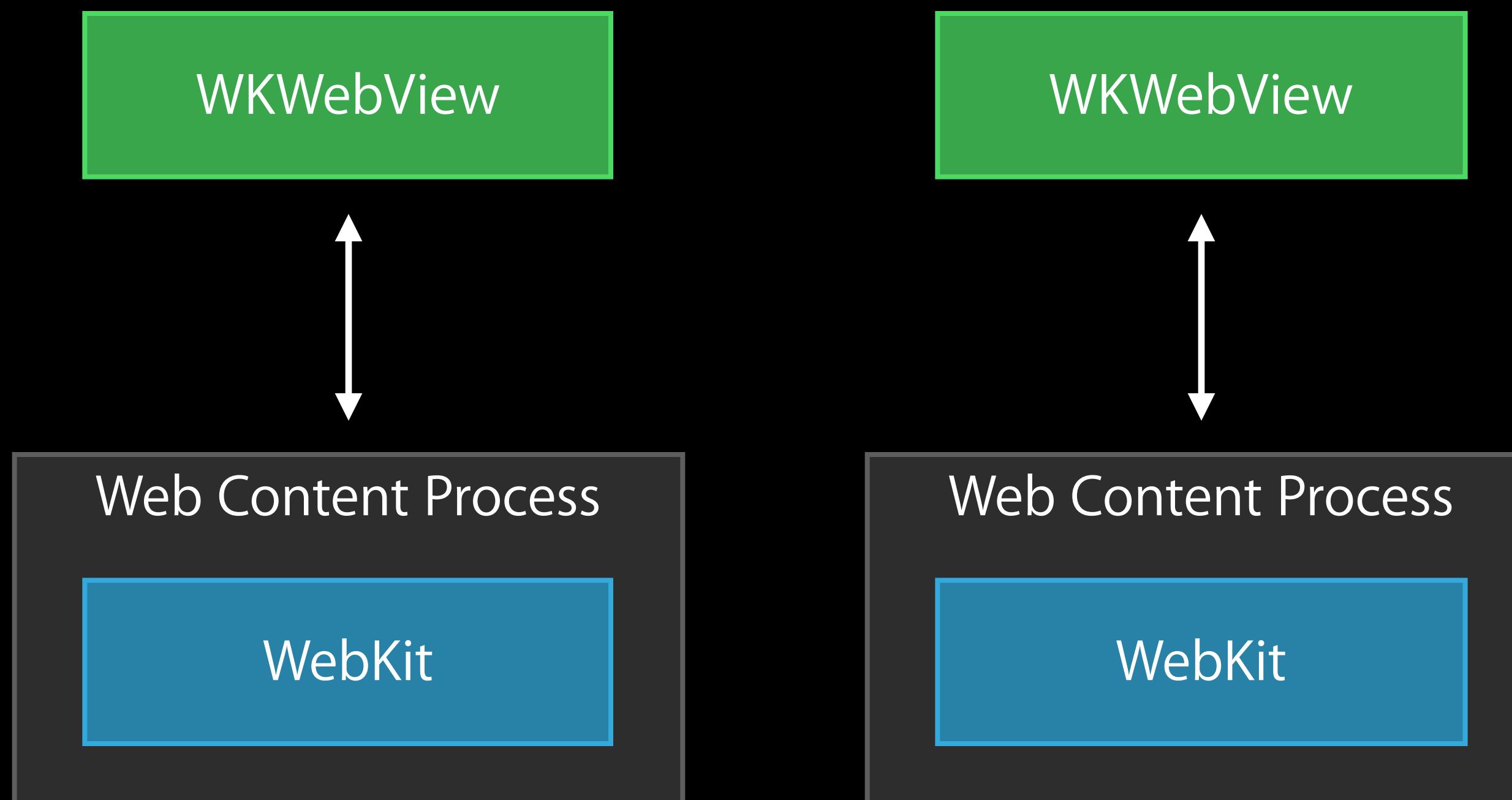
Multi-process Architecture



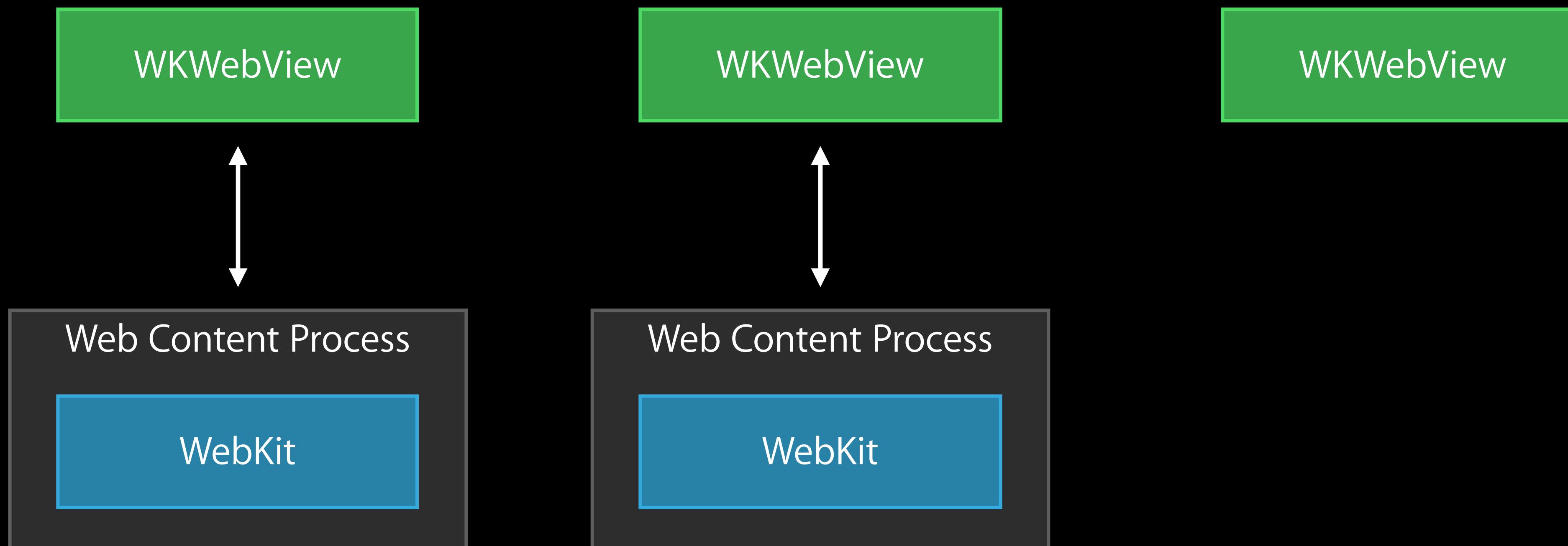
Multi-process Architecture



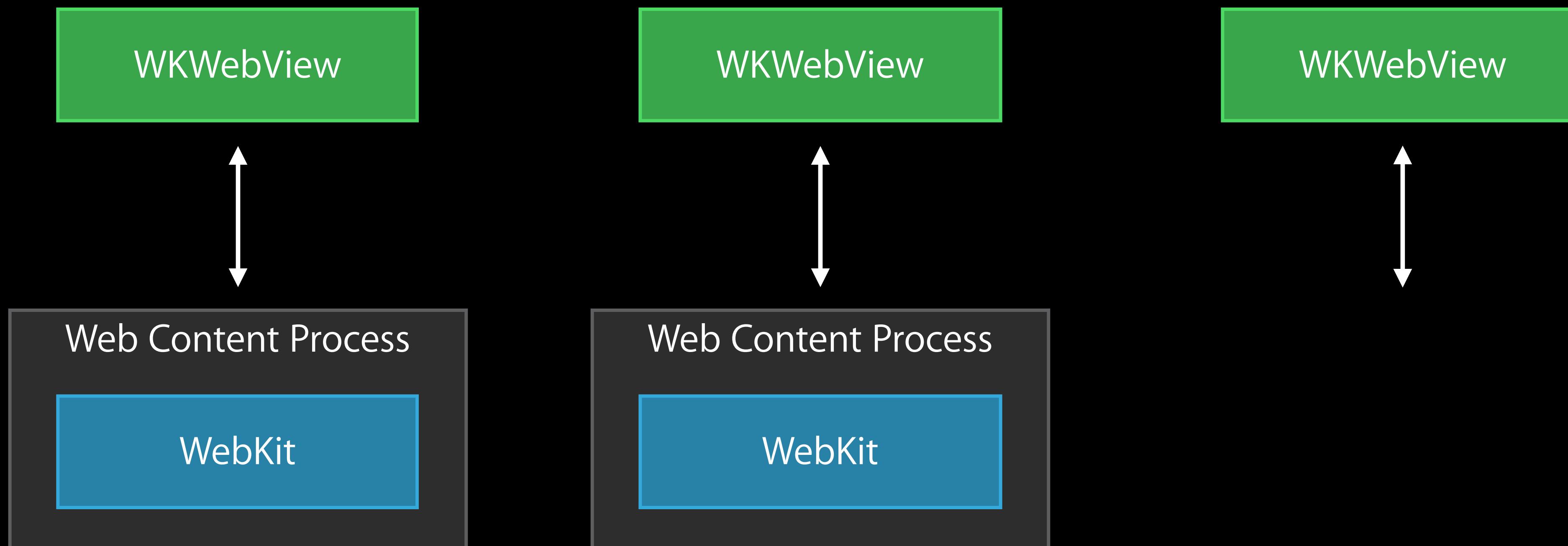
Multi-process Architecture



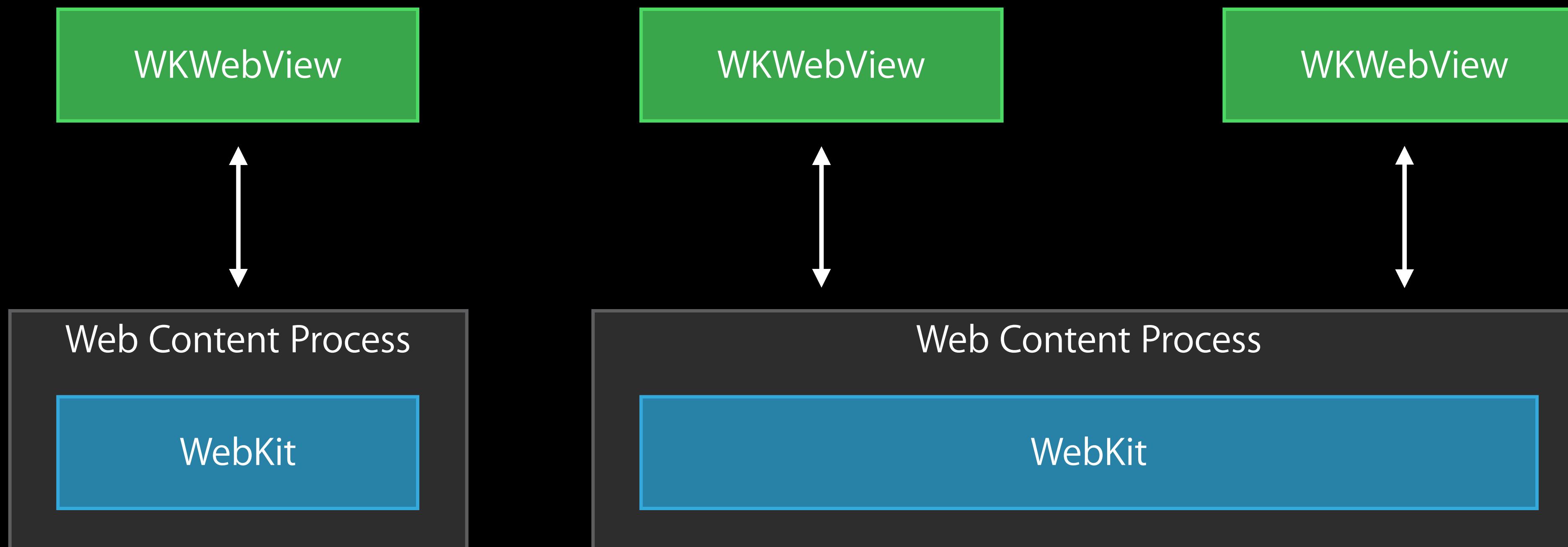
Multi-process Architecture



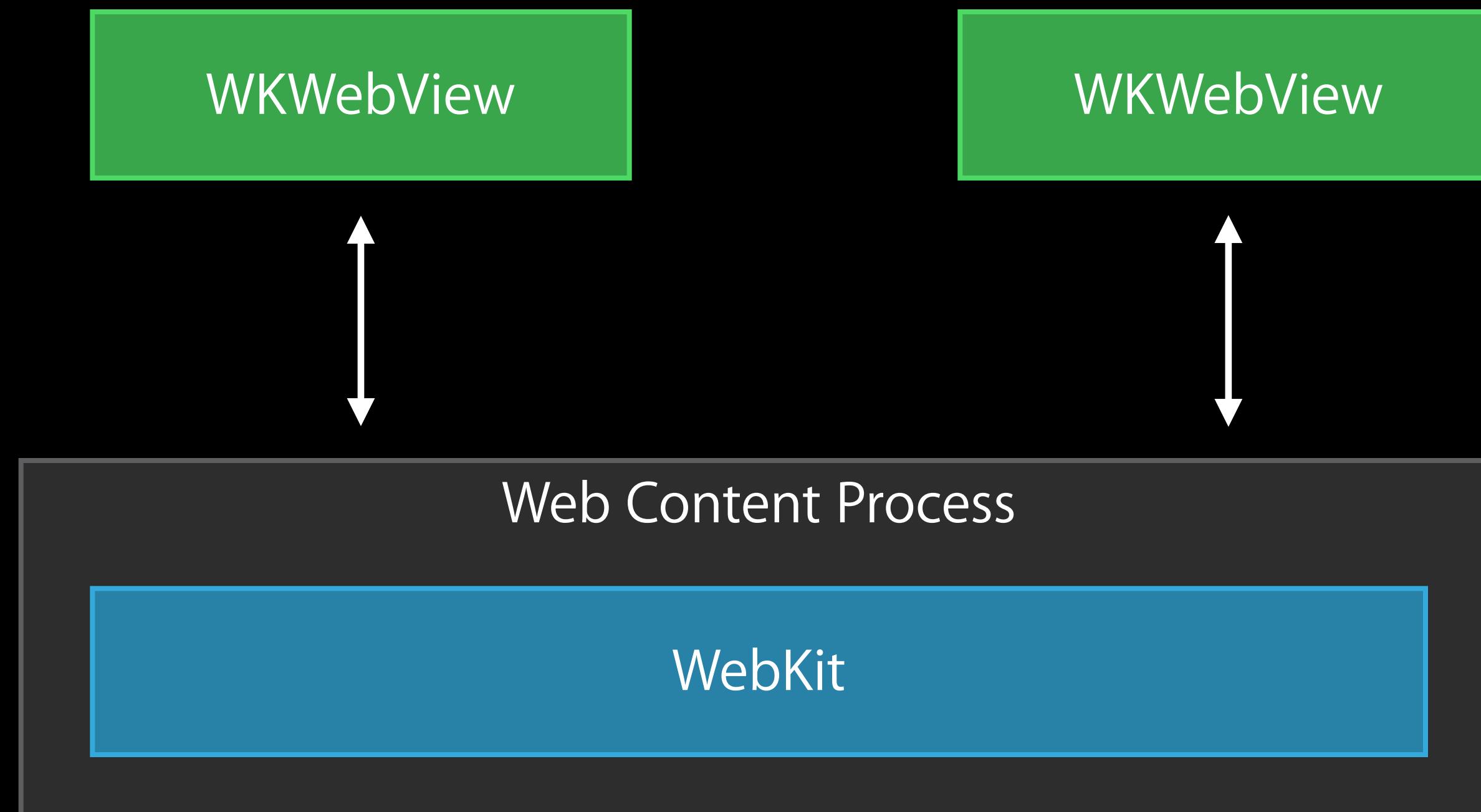
Multi-process Architecture



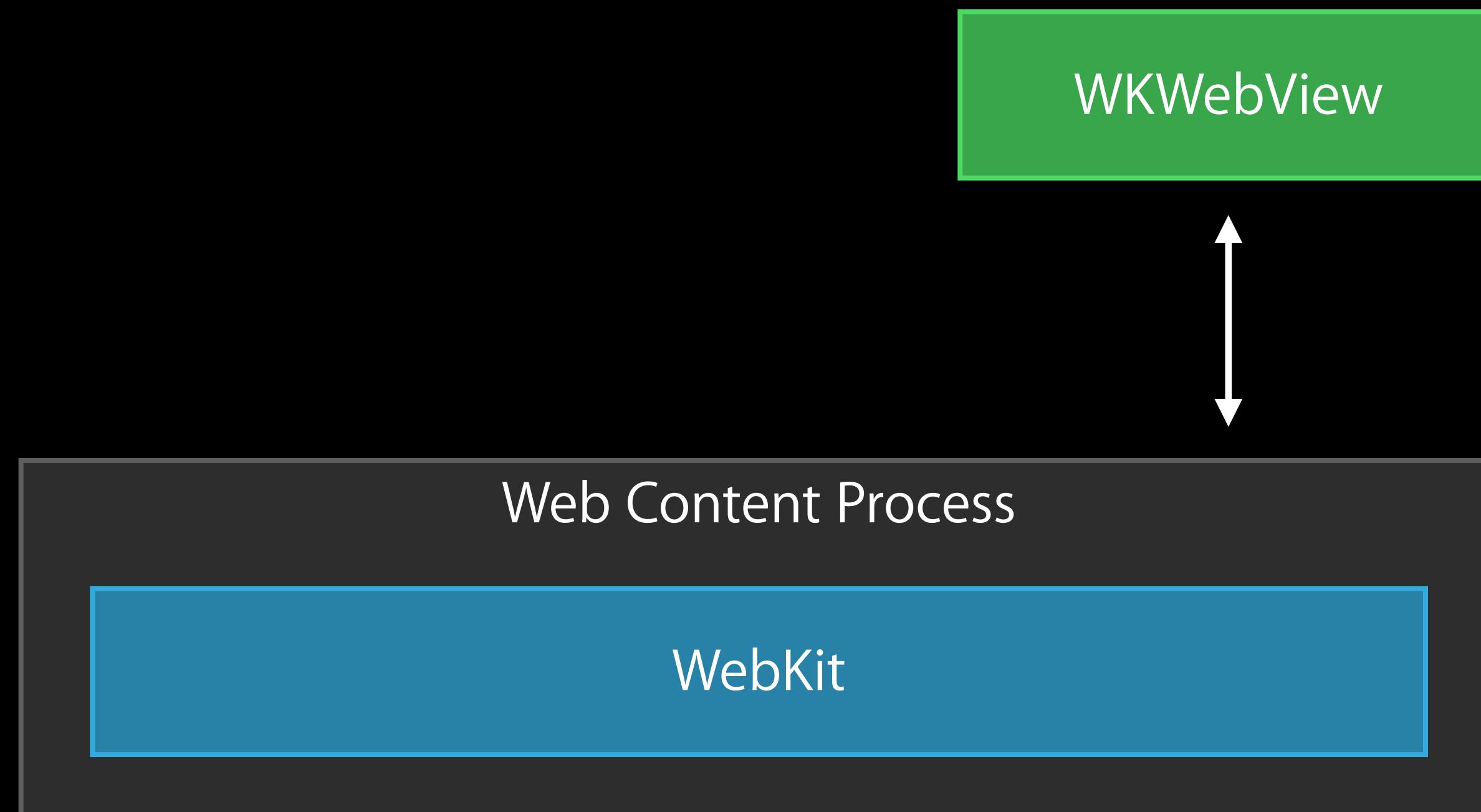
Multi-process Architecture



Multi-process Architecture



Multi-process Architecture



Multi-process Architecture

Adopting the Modern WebKit API

Adopting the Modern WebKit API

WKpedia—a Wikipedia browsing app



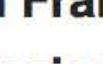
The screenshot shows a Mac OS X window titled "WKpedia". The main content area displays the Wikipedia article for "San Francisco". The article title is "San Francisco" (with "Talk" selected in the tab bar). Below the title, it says "From Wikipedia, the free encyclopedia" and provides coordinates "37°47'N 122°25'W". A sidebar on the right contains sections for "San Francisco" (selected), "City and county", and "City and County of San Francisco", along with a thumbnail image of the Golden Gate Bridge.

San Francisco

From Wikipedia, the free encyclopedia

Coordinates:  37°47'N 122°25'W

This article is about the city and county in California. For other uses, see [San Francisco \(disambiguation\)](#).

San Francisco  /sæn frən'siskəʊ/, officially the **City and County of San Francisco**, is the cultural center and a leading financial hub of the [San Francisco Bay Area](#) and [Northern California](#).

The only [consolidated city-county](#) in California,^[11] San Francisco encompasses a land area of about 46.9 square miles (121 km²)^[12] on the northern end of the [San Francisco Peninsula](#), giving it a density of about 17,867 people per square mile (6,898 people per km²). It is the most densely settled large city (population greater than 200,000) in the state of California and the [second-most densely populated](#) major city in the [United States](#) after [New York City](#).^[13] San Francisco is the [fourth-most populous city](#) in California, after [Los Angeles](#), [San Diego](#) and [San Jose](#), and the [14th-most populous city](#) in the United States—with a Census-estimated 2013 population of 837,442.^[10] The city is also the financial and cultural hub of the larger [San Jose-San Francisco-Oakland](#) combined statistical area, with a population of 8.5 million.

San Francisco (Spanish for "Saint Francis") was founded on June 29, 1776, when colonists from Spain established a fort at the [Golden Gate](#)

San Francisco

City and county

City and County of San Francisco



San Francisco from the Marin Headlands, with the [Golden Gate Bridge](#) in the foreground





Adopting the Modern WebKit API

Creating a WKWebView

Adopting the Modern WebKit API

Creating a WKWebView

```
WKWebView *webView = [[WKWebView alloc] initWithFrame:myFrame];
```

Adopting the Modern WebKit API

Loading a webpage

Adopting the Modern WebKit API

Loading a webpage

```
NSURL *URL = [NSURL URLWithString:@"http://en.wikipedia.org/wiki"];
```

Adopting the Modern WebKit API

Loading a webpage

```
NSURL *URL = [NSURL URLWithString:@"http://en.wikipedia.org/wiki"];  
NSURLRequest *request = [NSURLRequest requestWithURL:URL];
```

Adopting the Modern WebKit API

Loading a webpage

```
NSURL *URL = [NSURL URLWithString:@"http://en.wikipedia.org/wiki"];  
NSURLRequest *request = [NSURLRequest requestWithURL:URL];  
  
[webView loadRequest:request];
```

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San Francisco (Spanish for "Saint Francis") was founded on June 29, 1776, when [colonists from Spain](#) established a [fort](#) at the [Golden Gate](#)

San Francisco

City and county

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Golden Gate Bridge

From Wikipedia, the free encyclopedia

The **Golden Gate Bridge** is a suspension bridge spanning the Golden Gate strait, the mile-wide, three-mile-long entrance to the San Francisco Bay from the Pacific Ocean. The structure connects the city of San Francisco on the northern tip of the San Francisco Peninsula to Marin County on the southern tip.

U.S. Route 101 and **California State Route 1** run across the bridge, which is one of the most internationally recognized symbols of California, and the United States. It has been called "the Eighth Wonder of the Modern World" by the American Society of Civil Engineers.

The **Frommers** travel guide considers it the most beautiful, certainly the most recognizable, bridge in the world, at 4,200 feet (1,300 m) long.

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Transamerica Pyramid

From Wikipedia, the free encyclopedia

"Transamerica Tower" redirects here. For other uses, see [Transamerica](#).

The **Transamerica Pyramid** is a skyscraper located in the Financial District of San Francisco, California, and the United States. It was designed by architect William Pereira and completed in 1972.

The Frommers travel guide considers it the most beautiful, certainly the most recognizable, building in the world, at 4,200 feet (1,300 m) long.

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San Francisco

City and county

City and County of San Francisco



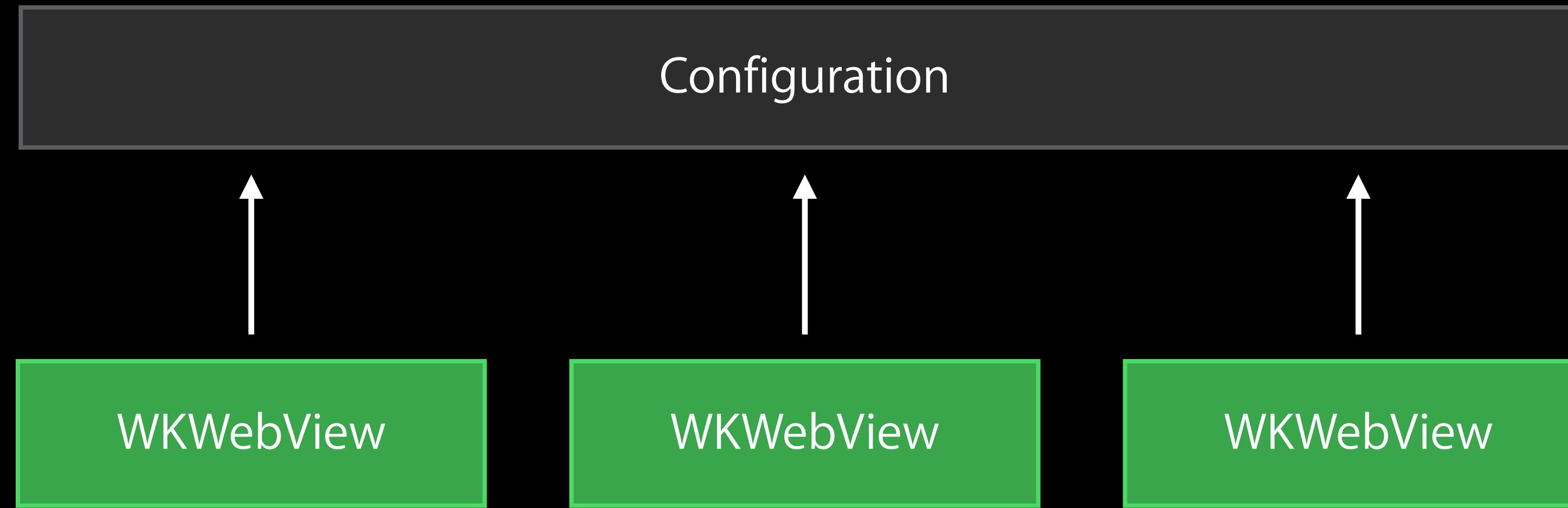
Coordinates: 37°47'N 122°25'W

San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground



Adopting the Modern WebKit API

Configurations



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```
WKWebViewConfiguration *configuration =  
[ [WKWebViewConfiguration alloc] init];
```

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San Francisco

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San Francisco

City and county

City and County of San Francisco



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Adding App UI

Screenshot of a web browser window displaying the Wikipedia article for "San Francisco". The browser has a dark theme.

The page title is "San Francisco". The top navigation bar includes links for "Create account" and "Log in". Below the title, there are tabs for "Article" (selected), "Talk", "Read", "Edit", "View history", and a search bar.

The main content starts with the heading "San Francisco". A sub-header below it says "From Wikipedia, the free encyclopedia". To the right, there is a coordinate box showing "Coordinates: 37°47'N 122°25'W" with a small map icon.

The text of the article begins with a disambiguation note: "This article is about the city and county in California. For other uses, see [San Francisco \(disambiguation\)](#)".

The main text describes San Francisco as a consolidated city-county in California, officially the City and County of San Francisco. It is described as the cultural center and a leading financial hub of the San Francisco Bay Area and Northern California.

Below this, a large block of text provides detailed information about San Francisco's size, population density, and ranking among US cities. It mentions its status as the fourth-most populous city in California and the 14th-most populous city in the United States.

At the bottom of the main content, there is a short paragraph about the city's founding on June 29, 1776, by colonists from Spain.

On the right side of the page, there is a sidebar with a section titled "San Francisco" containing three items: "City and county", "City and County of San Francisco", and a thumbnail image of the Golden Gate Bridge and the city skyline.

At the very bottom of the page, there is a footer section with the "CITY AND COUNTY OF SAN FRANCISCO" logo and a small image of an eagle.

Adding App UI

San Francisco

Create account Log in

Article Talk Read Edit View history Search

San Francisco

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Coordinates: 37°47'N 122°25'W

This article is about the city and county in California. For other uses, see San Francisco (disambiguation).

San Francisco /sæn frən'siskəʊ/, officially the **City and County of San Francisco**, is the cultural center and a leading financial hub of the **San Francisco Bay Area** and Northern California.

The only **consolidated city-county** in California,[11] San Francisco encompasses a land area of about 46.9 square miles (121 km²)[12] on the northern end of the **San Francisco Peninsula**, giving it a density of about 17,867 people per square mile (6,898 people per km²). It is the most densely settled large city (population greater than 200,000) in the state of California and the second-most densely populated major city in the United States after New York City.[13] San Francisco is the fourth-most populous city in California, after Los Angeles, San Diego and San Jose, and the 14th-most populous city in the United States—with a Census-estimated 2013 population of 837,442.[10] The city is also the financial and cultural hub of the larger **San Jose-San Francisco-Oakland** combined statistical area, with a population of 8.5 million.

San Francisco (Spanish for "Saint Francis") was founded on June 29, 1776, when colonists from Spain established a fort at the **Golden Gate**

San Francisco

City and county

City and County of San Francisco



San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground



WKWebView Actions

WKWebView Actions

- goBack:
- goForward:
- reload:
- stopLoading:

WKWebView Actions

- goBack:
- goForward:
- reload:
- stopLoading:

Adding App UI

San Francisco

Create account Log in

Article Talk Read Edit View history Search

San Francisco

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San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground



WKWebView Properties

WKWebView Properties

Name	Type
title	NSString
URL	NSURL
loading	BOOL
estimatedProgress	double

WKWebView Properties

Name	Type
title	NSString
URL	NSURL
loading	BOOL
estimatedProgress	double

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Name	Type
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San Francisco
City and county
City and County of San Francisco



San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground



Flag



Seal

Nickname(s): *The City by the Bay; Fog City; San Fran; Frisco;*^{[1][2][3][4]} *The City that Knows How*

WebKit

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WebKit

From Wikipedia, the free encyclopedia
(Redirected from [Webkit](#))

WebKit is a layout engine software component for rendering web pages in web browsers. It powers Apple's Safari web browser and was previously used in Google's Chrome web browser. As of September 2013 WebKit browser market share^[4] was larger than that of both the Trident engine used by Internet Explorer, and the Gecko engine used by Firefox.

WebKit is also used as the basis for the experimental browser included with the Amazon Kindle e-book reader, as well as the default browser in the Apple iOS, Android, BlackBerry 10, and Tizen mobile operating systems. WebKit's C++ application programming interface provides a set of classes to display web content in windows, and implements browser features such as following links when clicked by the user, managing a back-forward list, and managing a history of pages recently visited.

WebKit's HTML and JavaScript code originally began as a fork of the KHTML and KJS libraries from KDE,^[5] and has now been further developed by individuals from KDE, Apple, Google, Nokia, Bitstream, BlackBerry, Igalia, and others.^[6] OS X, Windows, GNU/Linux, and some other Unix-like operating systems are supported by the project.^[7] On April 3, 2013 Google announced that it had forked WebCore, a component of WebKit to be used in future versions of Google Chrome and Opera under the name Blink.^{[8][9]}

WebKit is available under a BSD-form license^[10] with the exception of the WebCore and JavaScriptCore components, which are available under the GNU Lesser General Public License. As of March 7, 2013, WebKit is a trademark of

WebKit	
	Original author(s) KDE ^{[1][2]}
Developer(s)	Apple, Adobe, and others
Initial release	November 4, 1998; 15 years ago (KHTML released) June 7, 2005; 8 years ago (WebKit open sourced)
Written in	C++
Operating system	Cross-platform ^[3]
Type	Layout engine
License	BSD v2.0 (most of browser engine), GNU LGPL v2.1 (some files in the JavaScriptCore & WebCore components)
Website	www.webkit.org

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The WebKit Open Source Project



- Home
- Surfin' Safari Blog
- Planet WebKit
- Project Goals
- Keeping in Touch
- Trac
- Contributors Meeting

Working with the Code

- Installing Developer Tools
- Getting the Code
- Building WebKit
- Running WebKit
- Debugging WebKit
- Contributing Code
- Commit and Review Policy
- Adding Features
- Security Policy

Documentation

- Wiki
- Projects
- Code Style Guidelines
- Technical Articles
- Web Inspector
- Web Developer Resources
- Demos

Testing

- Regression Testing
- Leak Hunting
- Writing New Tests

The WebKit Open Source Project

Welcome to the website for the WebKit Open Source Project!

WebKit is an open source web browser engine. WebKit is also the name of the Mac OS X system framework version of the engine that's used by [Safari](#), Dashboard, Mail, and many other OS X applications. WebKit's HTML and JavaScript code began as a branch of the [KHTML](#) and KJS libraries from KDE.

Getting involved

There are many ways to get involved. You can:

- download the latest [nightly build](#)
- install developer tools and then [check out](#) and [build the source code](#)

Once you have either of these, you can help by:

- reporting bugs you find in the software
- providing [reductions](#) to bugs
- submitting [patches for review](#)

More info

More information about WebKit can be found on its [wiki](#). You can help here too, by adding information that can help others learn about WebKit. If you have more questions, [contact us](#).

Projects

There are many exciting (new) projects that you can contribute to:

- help us improve [Website compatibility](#)
- write [documentation](#)
- [SVG](#)
- [MathML](#)
- [CSS](#)
- [DOM](#)

 **Download**
Nightly builds 

Customizing Page Loading

Page Loading

Page Loading

Action

Page Loading

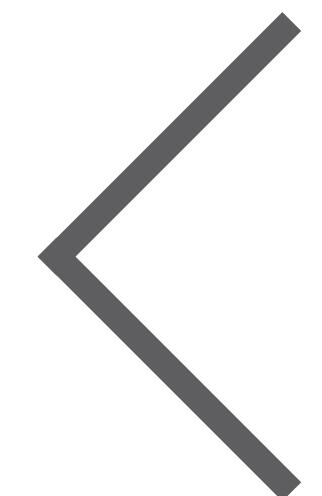
Action

Link



Page Loading

Action



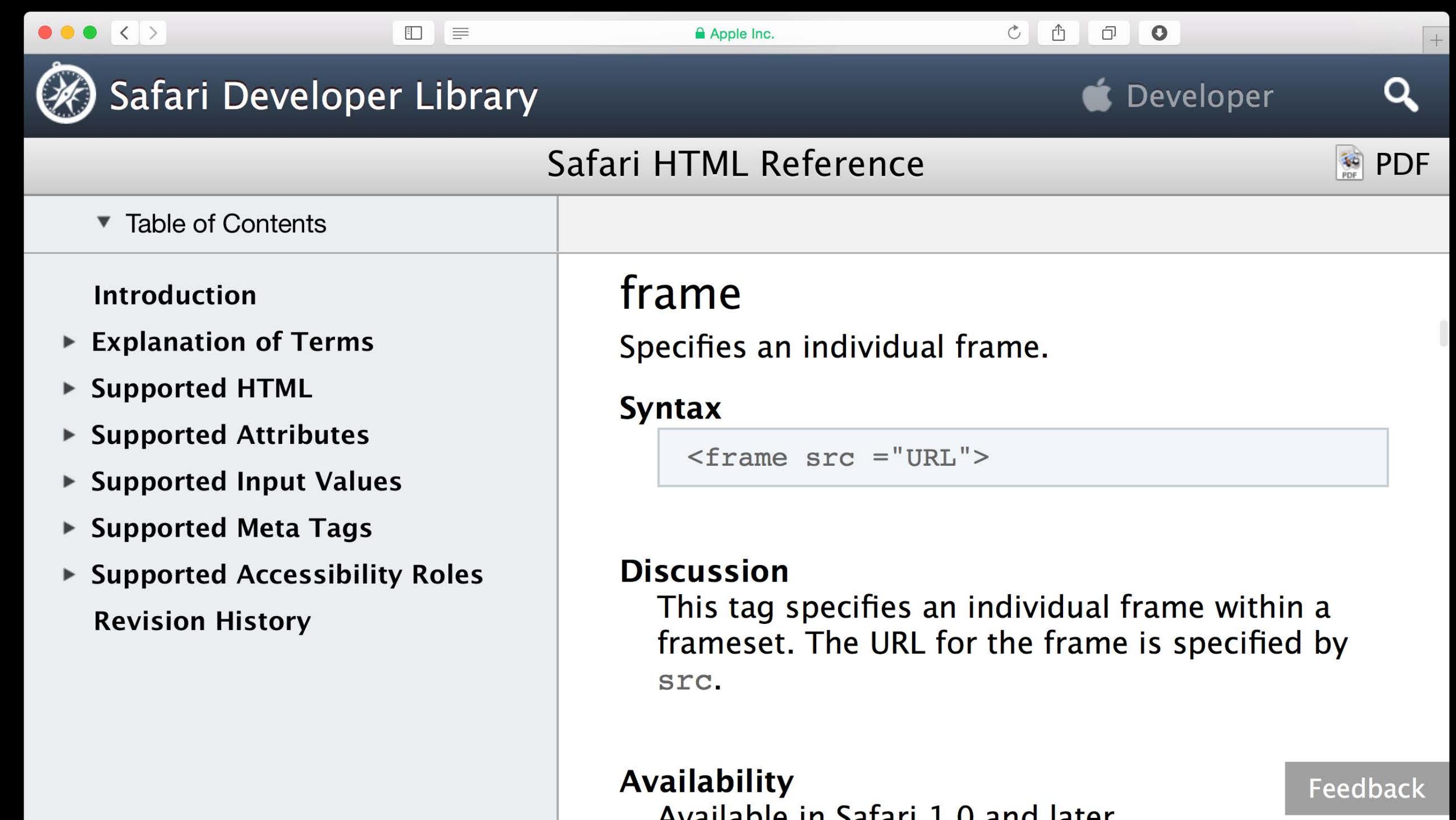
Page Loading

Action

```
window.location = 'http://www.apple.com/' ;
```

Page Loading

Action



The screenshot shows a Mac OS X desktop with a dark-themed window titled "Safari Developer Library". The window contains the "Safari HTML Reference" for the "frame" element. The left sidebar has a "Table of Contents" section with links to "Introduction", "Explanation of Terms", "Supported HTML", "Supported Attributes", "Supported Input Values", "Supported Meta Tags", "Supported Accessibility Roles", and "Revision History". The main content area starts with the definition of the **frame** element, which "Specifies an individual frame." It includes a "Syntax" section with the code `<frame src = "URL">`, a "Discussion" section explaining it's used within framesets, and an "Availability" section stating it's available in Safari 1.0 and later. A "Feedback" button is in the bottom right corner.

Apple Inc.

Safari Developer Library

Developer

PDF

Safari HTML Reference

Table of Contents

- ▶ Introduction
- ▶ Explanation of Terms
- ▶ Supported HTML
- ▶ Supported Attributes
- ▶ Supported Input Values
- ▶ Supported Meta Tags
- ▶ Supported Accessibility Roles
- Revision History

frame

Specifies an individual frame.

Syntax

```
<frame src = "URL">
```

Discussion

This tag specifies an individual frame within a frameset. The URL for the frame is specified by `src`.

Availability

Available in Safari 1.0 and later.

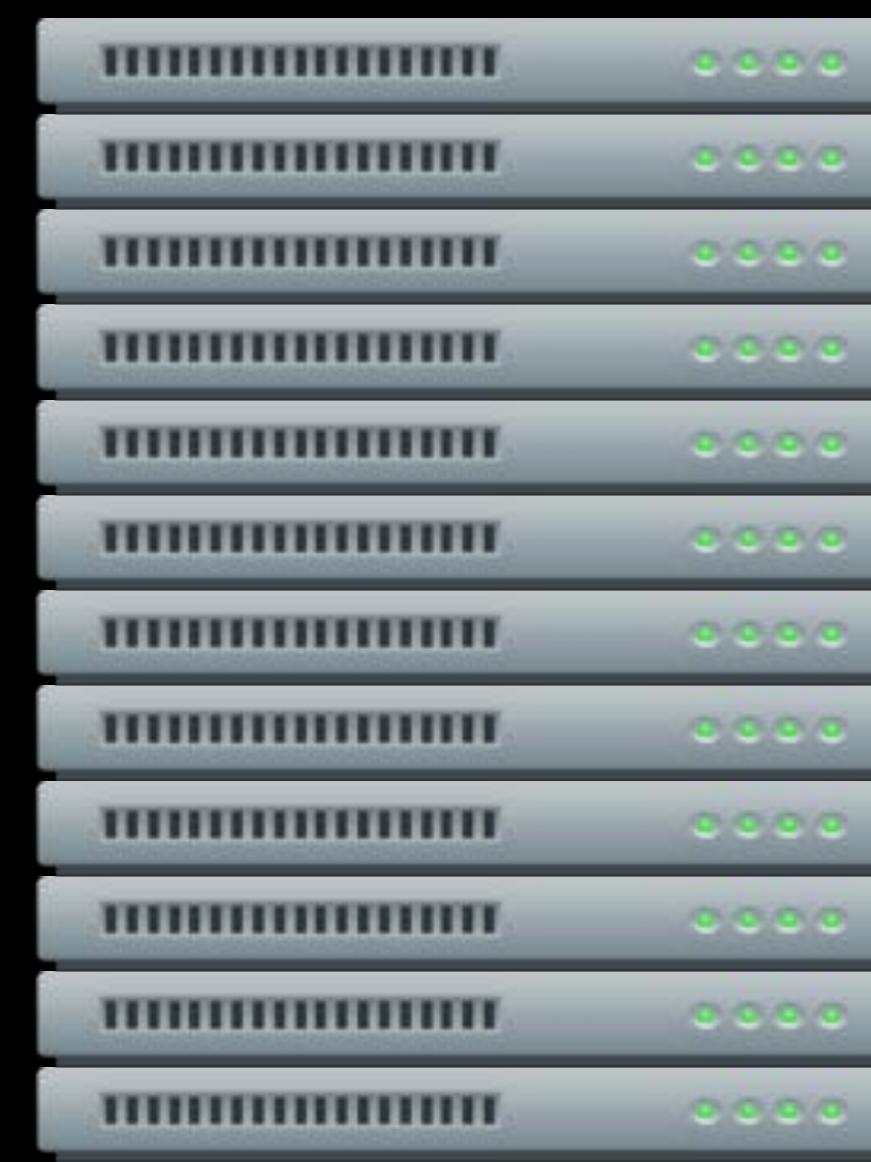
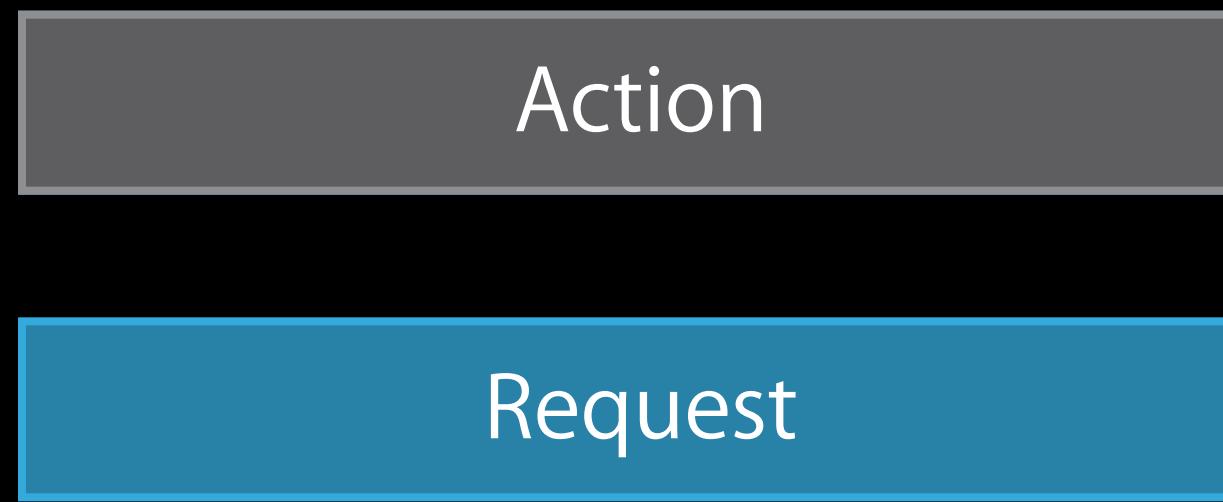
Feedback

Page Loading

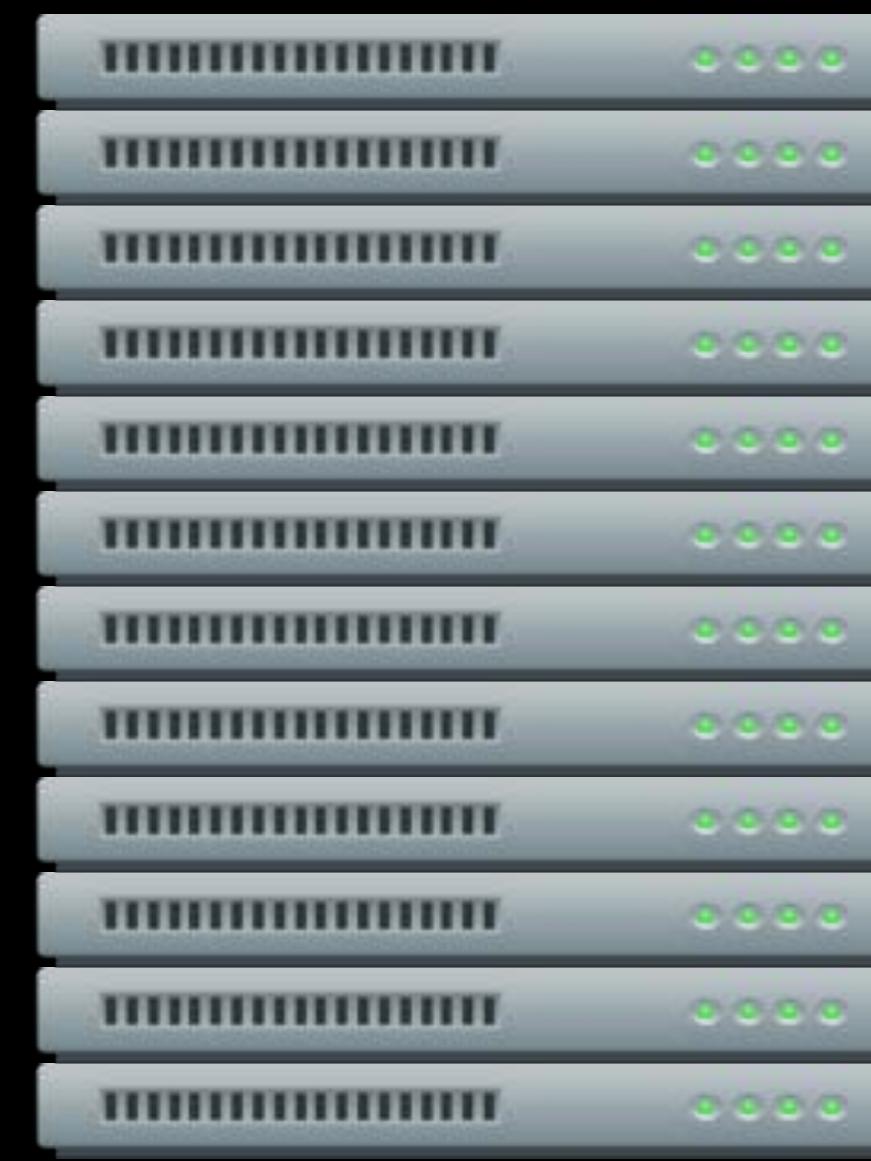
Action

- [WKWebView loadRequest:]

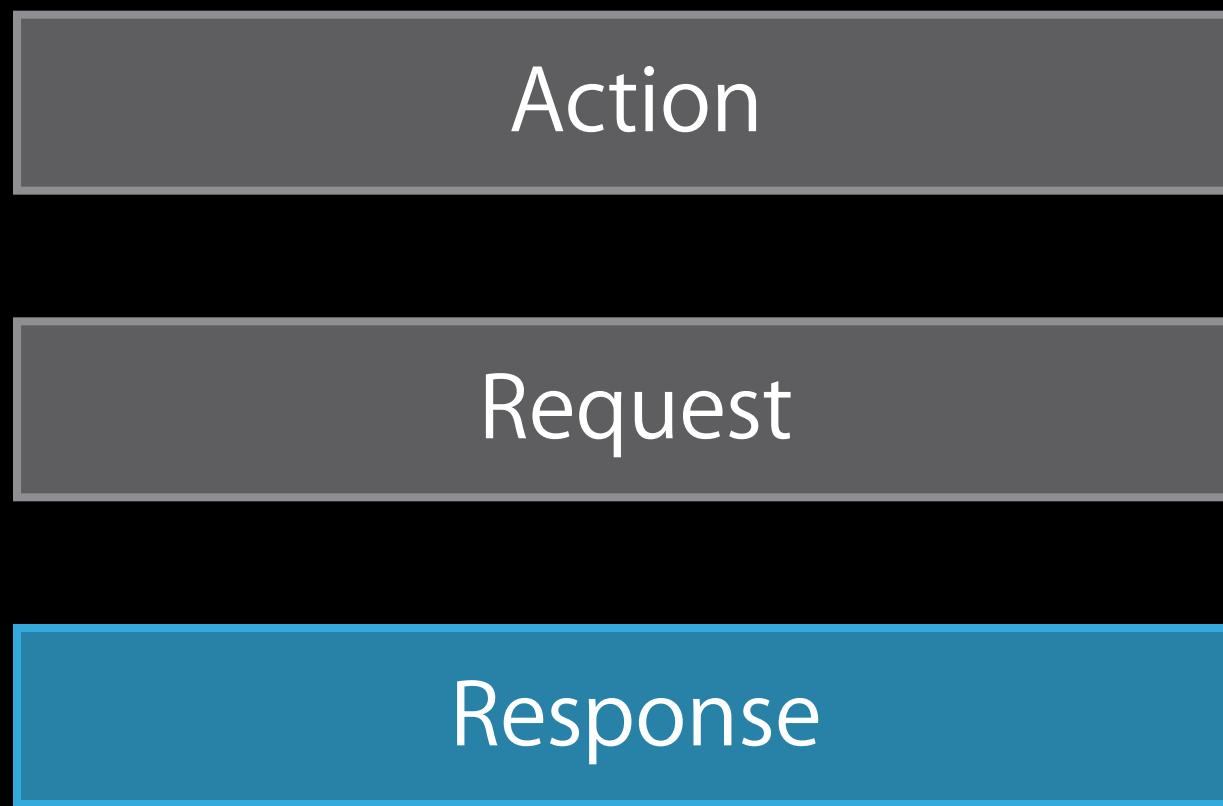
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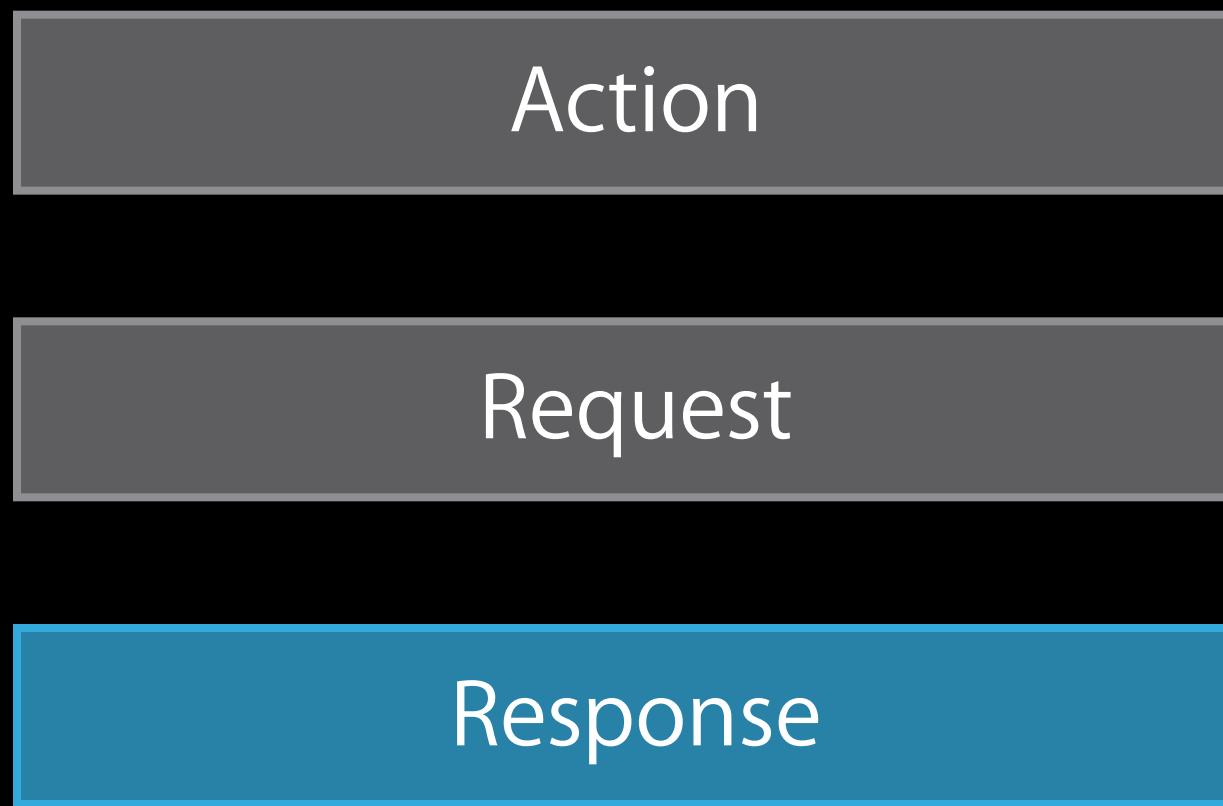
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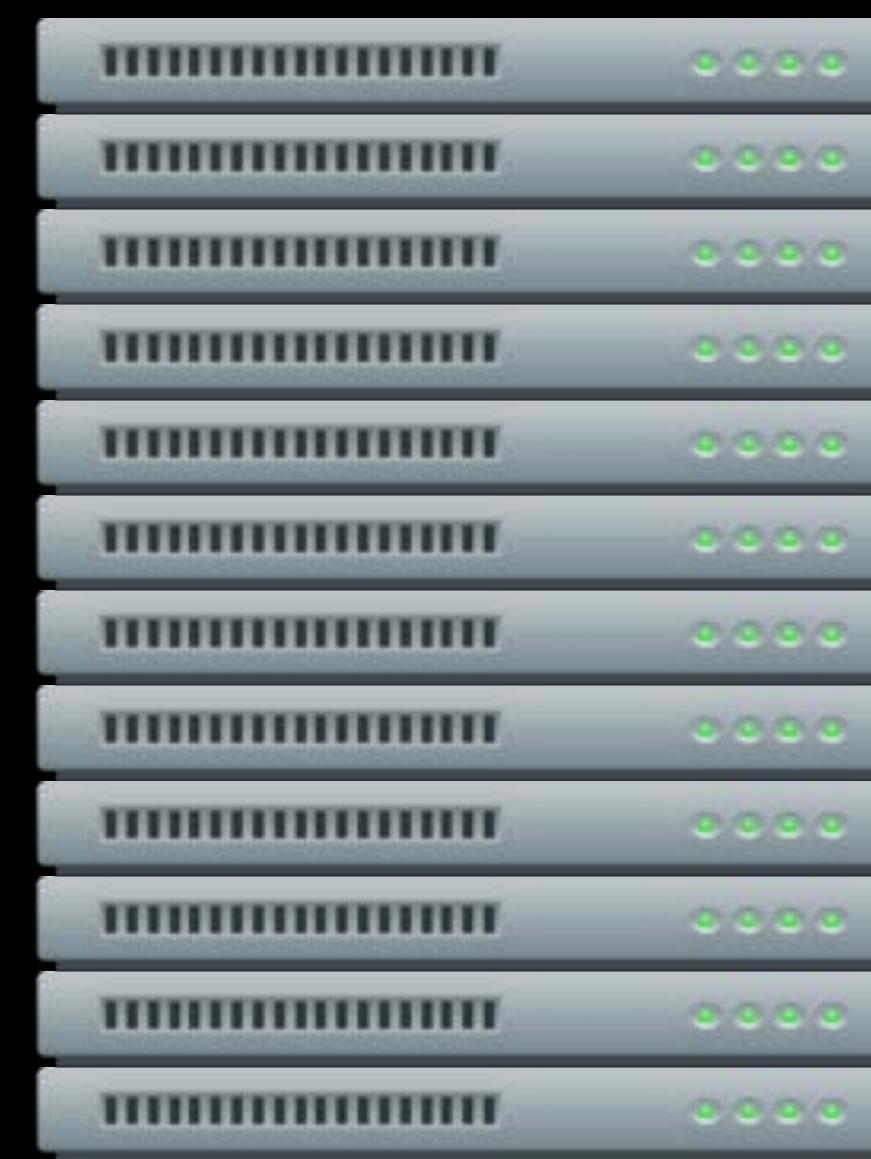
Page Loading



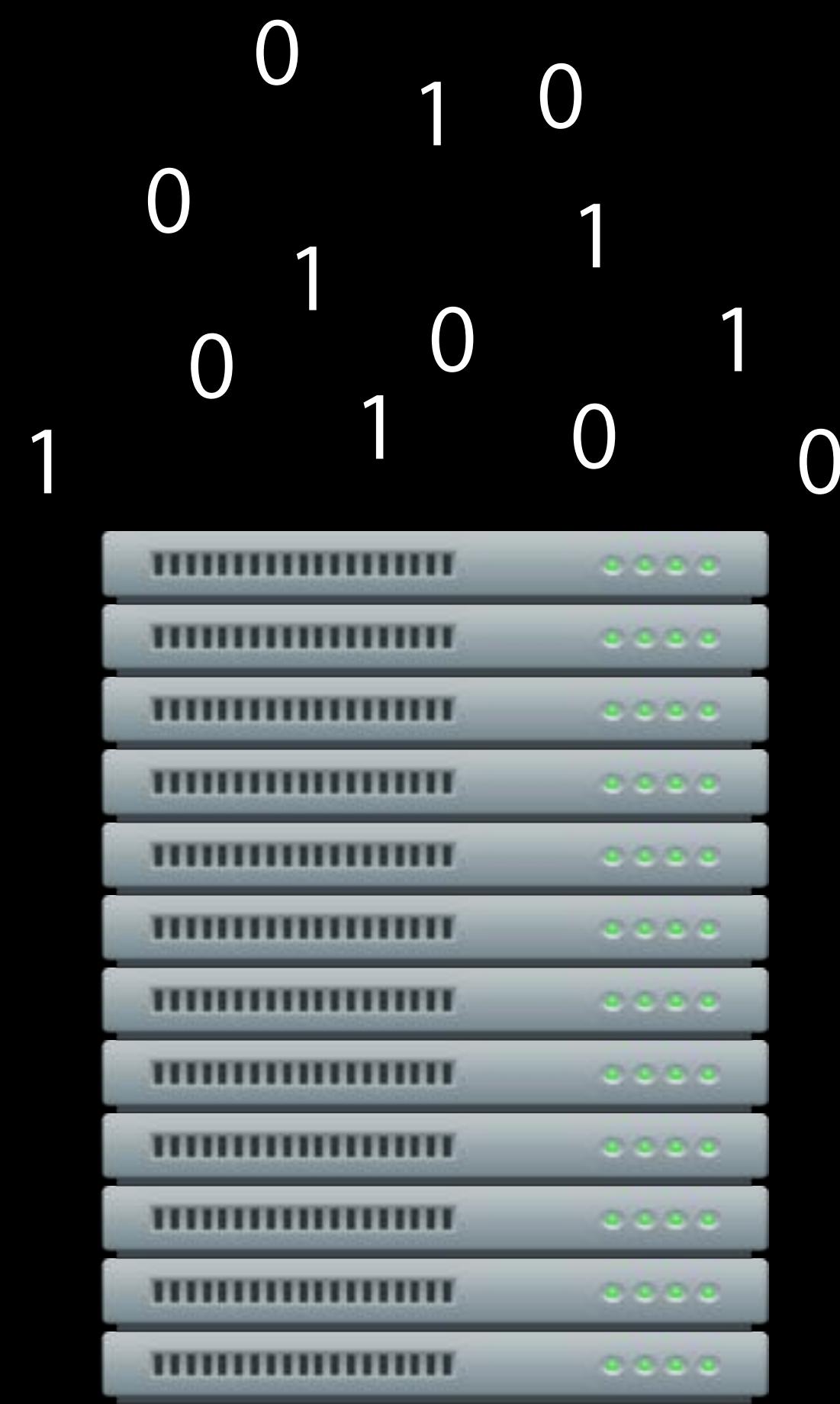
Page Loading



Page Loading



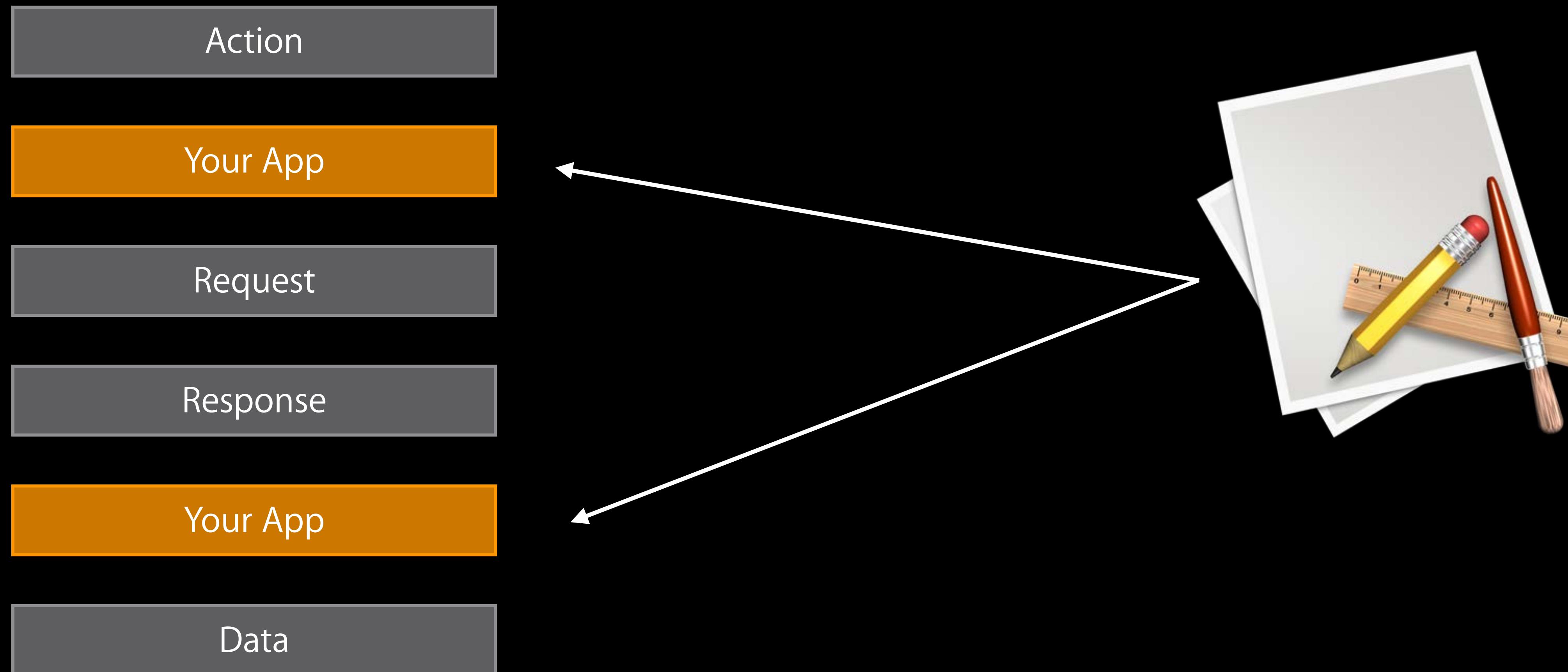
Page Loading



Page Loading



Page Loading



Customizing Page Loading

```
@property (nonatomic, weak) WKNavigationDelegate *navigationDelegate;
```

Customizing Page Loading

```
@property (nonatomic, weak) WKNavigationDelegate *navigationDelegate;
```

```
- webView:decidePolicyForNavigationAction:decisionHandler:
```

Customizing Page Loading

```
@property (nonatomic, weak) WKNavigationDelegate *navigationDelegate;
```

- webView:decidePolicyForNavigationAction:decisionHandler:
- webView:decidePolicyForNavigationResponse:decisionHandler:

Customizing Page Loading

WKNavigationAction

Customizing Page Loading

WKNavigationAction

Name	Type
navigationType	WKNavigationType
sourceFrame	WKFrameInfo
destinationFrame	WKFrameInfo
request	NSURLRequest
modifierFlags	NSEventModifierFlags

Customizing Page Loading

WKNavigationAction

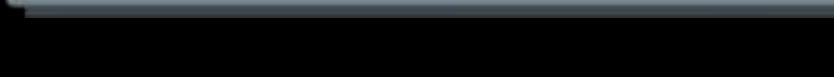
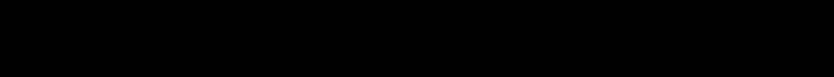
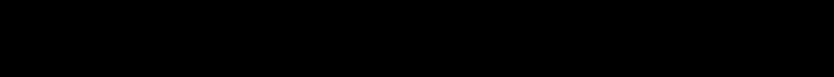
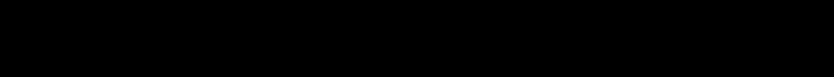
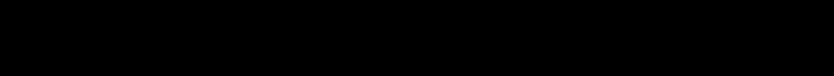
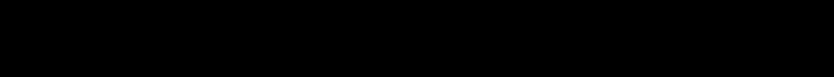
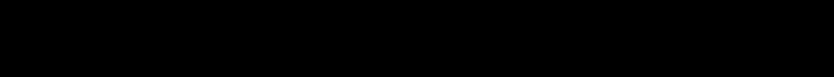
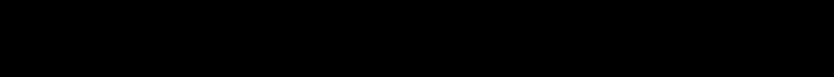
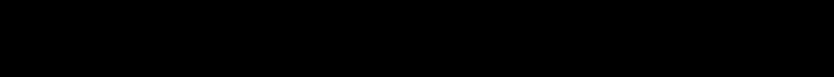
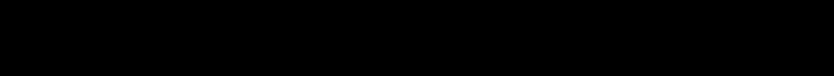
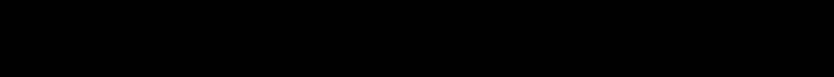
Name	Type
navigationType	WKNavigationType
sourceFrame	WKFrameInfo
destinationFrame	WKFrameInfo
request	NSURLRequest
modifierFlags	NSEventModifierFlags



- [WKWebView loadRequest:]

Customizing Page Loading

WKNavigationAction

Name	Type	
navigationType	WKNavigationType	
sourceFrame	WKFrameInfo	
destinationFrame	WKFrameInfo	
request	NSURLRequest	
modifierFlags	NSEventModifierFlags	
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		
		

Customizing Page Loading

WKNavigationAction

Name	Type		
navigationType	WKNavigationType		
sourceFrame	WKFrameInfo		Shift
destinationFrame	WKFrameInfo		
request	NSURLRequest		
modifierFlags	NSEventModifierFlags	Option	Control

Customizing Page Loading

WKNavigationResponse

Customizing Page Loading

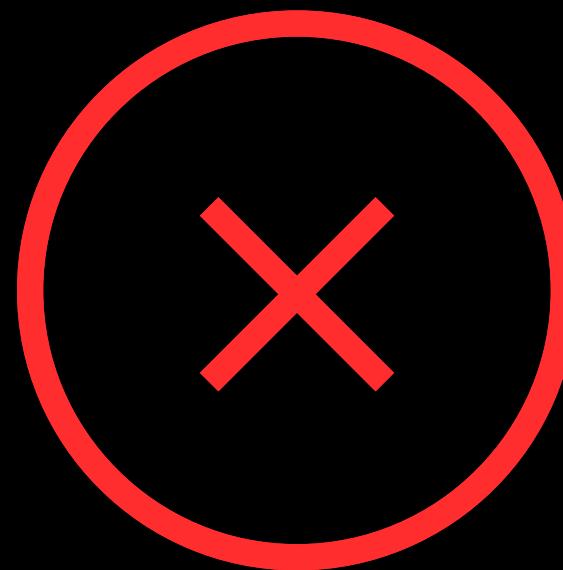
WKNavigationResponse

Name	Type
response	NSURLResponse
forMainFrame	BOOL
canShowMIMEType	BOOL

Customizing Page Loading

WKNavigationResponse

Name	Type
response	NSURLResponse
forMainFrame	BOOL
canShowMIMEType	BOOL



Customizing Page Loading

Decision Handler

Customizing Page Loading

Decision Handler

You decide whether to cancel or allow

Customizing Page Loading

Decision Handler

You decide whether to cancel or allow

Navigation action

`WKNavigationActionPolicyCancel`

`WKNavigationActionPolicyAllow`

Customizing Page Loading

Decision Handler

You decide whether to cancel or allow

Navigation action

`WKNavigationActionPolicyCancel`

`WKNavigationActionPolicyAllow`

Navigation response

`WKNavigationResponsePolicyCancel`

`WKNavigationResponsePolicyAllow`

Customizing Page Loading

Decision Handler

You decide whether to cancel or allow

Navigation action

`WKNavigationActionPolicyCancel`

`WKNavigationActionPolicyAllow`

Navigation response

`WKNavigationResponsePolicyCancel`

`WKNavigationResponsePolicyAllow`

Asynchronous

Demo

WKpedia

Beth Dakin
Safari and WebKit Engineer

Gestures

Navigation Gestures

Gestures

Navigation Gestures

```
webView.allowsBackForwardNavigationGestures = YES;
```

Gestures

Zoom Gestures

Gestures

Zoom Gestures

OS X

```
webView.allowsMagnification = YES;
```

iPad 9:41 AM 100%

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San Francisco is a popular tourist destination,^[18] known for its cool summers, fog, steep rolling hills, **eclectic mix of architecture**, and landmarks including the **Golden Gate Bridge**, **cable cars**, the former **prison** on **Alcatraz Island**, and its **Chinatown** district. San Francisco is also the headquarters of five major banking institutions and various other companies such as **Gap Inc.**, **Pacific Gas and Electric Company**, **Yelp**, **Twitter**, **Instagram**, and **Craigslist**.

Contents [hide]

- 1 History
- 2 Geography
 - 2.1 Cityscape
 - 2.1.1 Neighborhoods
 - 2.2 Climate
- 3 Demographics
 - 3.1 Race and ethnicity
 - 3.2 Education, households, and income

San Francisco

City and county

City and County of San Francisco



San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground


Flag


Seal

Nickname(s): *The City by the Bay; Fog City; San Fran; Frisco*;^{[1][2][3][4]} *The City that Knows How (antiquated);[5] Baghdad by the Bay (antiquated);[6] The Paris of the West*^[7]
Motto: *Oro en Paz, Fierro en Guerra* (English: "Gold in Peace, Iron in War")


Location of San Francisco in California


Location in the United States
Coordinates: 37°47'N 122°25'W

San Francisco

বাংলা
Bân-lâm-gú
Беларуская (тарашкевіца)
Български
Boarisch
ବ୍ୟାଙ୍ଗୀଷ୍ମ
Bosanski
Brezhoneg
Català
Чӑвашла
Čeština
Corsu
Cymraeg
Dansk
Deutsch
Deutsch
Eesti
Ελληνικά
★ Español
Esperanto
Estremeñu
Euskara
فارسی
Føroyskt
★ Français
Frysk
Gaeilge
Gaelg
Gàidhlig
Galego
贛語
客家語/Hak-kâ-ngî
한국어
Hawai'i
Հայերեն
हिन्दी
Hrvatski
Ido
Ilokano
ଓଡ଼ିଆ ମଣପୁଣୀ
Bahasa Indonesia
Interlingua
Ирон
ଓଡ଼ିଆ
Íslenska
Italiano
עברית
Basa Jawa
Karapangpan
Къарачай-малкъар
ქართული
Қазақша
Kernowek
Kiswahili
Kreyòl ayisyen
Kurdî
Latina
Latviešu
Lëtzebuergesch
Lietuvių
Limburgs
Lumbaart
Magyar

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 - 3.3 Languages and ages
- 4 Economy
- 5 Culture and contemporary life
 - 5.1 Entertainment and performing arts
 - 5.2 Museums
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- 8 Law and government
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 - 9.1 Colleges and universities
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 - 11.4 Seaports
 - 11.5 Safety
- 12 Notable people
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History [edit]

Main article: [History of San Francisco](#)

See also: [Timeline of San Francisco history](#)

Historical Affiliations

- Spanish Empire 1776–1821
- First Mexican Empire 1821–1823
- United Mexican States 1823–1835
- Mexican Republic 1835–1848
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Location of San Francisco in California



Location in the United States

Coordinates: 37°47'N 122°25'W

Country	United States
State	California
Founded	June 30, 1776
Incorporated	April 15, 1850[8]
Founded by	Lieutenant José Joaquin Moraga and Francisco Palou
Named for	St. Francis of Assisi
Government	
• Type	Mayor-council
• Body	Board of Supervisors
• Mayor of San Francisco	Ed Lee (D)
• Board of Supervisors	Supervisors [show]
• California State Assembly	Tom Ammiano (D) Phil Ting (D)
• California State Senate	Leland Yee (D) Mark Leno (D)
• United States House of Representatives	Nancy Pelosi (D) Jackie Speier (D)
Area ^[9]	
• City and county	231.89 sq mi (600.6 km ²)
• Land	46.87 sq mi (121.4 km ²)
• Water	185.02 sq mi (479.2 km ²) 80.00%
• Metro	3,524.4 sq mi (9,128 km ²)
Elevation	52 ft (16 m)
Highest elevation	925 ft (282 m)
Lowest elevation	0 ft (0 m)
Population (2013) ^[10]	
• City and county	837,442
• Density	17,867/sq mi (6,898/km ²)
• Metro	4,516,276 (11th)
• CSA	8,469,854 (5th)
Demonym	San Franciscan
Time zone	Pacific Standard Time (UTC-8)
• Summer (DST)	Pacific Daylight Time (UTC-7)
ZIP Code	94101–94112, 94114–94147, 94150–94170, 94172, 94175, 94177
Area code(s)	415
FIPS code	06-67000
EIPS code	06-075

San Francisco

বাংলা
Bân-lâm-gú
Беларуская (тарашкевіца)
Български
Boarisch
ବ୍ୟାଙ୍ଗୀଷ୍ମ
Bosanski
Brezhoneg
Català
Чӑвашла
Čeština
Corsu
Cymraeg
Dansk
Deitsch
Deutsch
Eesti
Ελληνικά
★ Español
Esperanto
Estremeñu
Euskara
فارسی
Føroyskt
★ Français
Frysk
Gaeilge
Gaelg
Gàidhlig
Galego
贛語
客家語/Hak-kâ-ngî
한국어
Hawai'i
Հայերեն
हिन्दी
Hrvatski
Ido
Ilokano
ଓଡ଼ିଆ ମଣିପୁରୀ
Bahasa Indonesia
Interlingua
Ирон
ଓଡ଼ିଆ
Íslenska
Italiano
עברית
Basa Jawa
Karapangan
Қараачай-малкъар
ქართული
Қазақша
Kernowek
Kiswahili
Kreyòl ayisyen
Kurdî
Latina
Latviešu
Lëtzebuergesch
Lietuvių
Limburgs
Lumbaart
Magyar

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History [edit]

Main article: [History of San Francisco](#)

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Historical Affiliations

Spanish Empire 1776–1821
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Mission San Francisco de Asís
(Mission Dolores)

Upon independence from Spain in 1821, the area became part of [Mexico](#). Under Mexican rule, the mission system gradually ended, and its lands became privatized. In 1835, Englishman [William Richardson](#) erected the first independent homestead,[21] near a boat anchorage around what is today [Portsmouth Square](#). Together with [Alcalde Francisco de Haro](#), he laid out a street plan for the expanded settlement, and the town, named [Yerba Buena](#), began to attract American settlers. Commodore [John D. Sloat](#) claimed California for the United States on July 7, 1846, during the [Mexican-American War](#), and Captain [John B. Montgomery](#) arrived to claim Yerba Buena two days later. Yerba Buena was renamed San Francisco on January 30 of the next year,[22] and Mexico officially ceded the territory to the United States at the end of the war. Despite its attractive location as a port and naval base, San Francisco was still a small settlement with inhospitable geography.[23]



The [California Gold Rush](#) brought a flood of treasure seekers. With their [sourdough bread](#) in tow,[24] prospectors accumulated in San Francisco over rival [Benicia](#),[25] raising the population from 1,000 in 1848 to 25,000 by December 1849.[26] The promise of fabulous riches was so strong that crews on arriving vessels deserted and



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The only **consolidated city-county** in **California**,^[1] San Francisco encompasses a land area of about 46.9 square miles (121 km²)^[2] on the northern end of the **San Francisco Peninsula**, giving it a density of about 17,867 people per square mile (6,898 people per km²). It is the most densely settled large city (population greater than 200,000) in the state of California and the **second-most densely populated** major city in the **United States** after **New York City**.^[3] San Francisco is the **fourth-most populous** city in California, after **Los Angeles**, **San Diego** and **San Jose**, and the **14th-most populous city** in the United States—with a Census-estimated 2013 population of 837,442.^[4] The city is also the financial and cultural hub of the larger **San Jose-San Francisco-Oakland** combined statistical area, with a population of 8.5 million.

San Francisco (Spanish for "Saint Francis") was founded on June 29, 1776, when colonists from Spain established a **fort** at the **Golden Gate** and a mission named for St. Francis of Assisi a few miles away.^[5] The **California Gold Rush** of 1849 brought rapid growth, making it the largest city on the **West Coast** at the time. Due to the growth of its population, San Francisco became a consolidated city-county in 1856.^[6] After three-quarters of the city was destroyed by the 1906 earthquake and fire,^[7] San Francisco was quickly rebuilt, hosting the **Panama-Pacific International Exposition** nine years later. During **World War II**, San Francisco was the port of embarkation for service members shipping out to the **Pacific Theater**.^[8] After the war, the confluence of returning servicemen, massive **immigration**, liberalizing attitudes, and other factors led to the **Summer of Love** and the **gay rights movement**, cementing San Francisco as a center of **liberal activism** in the **United States**.

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History [edit]

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Historical Affiliations

Spanish Empire 1776–1821
First Mexican Empire 1821–1823

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San Francisco

City and county

City and County of San Francisco


San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground


Flag


Seal

Nickname(s): *The City by the Bay; Fog City; San Fran; Frisco*;^{[1][2][3][4]} *The City that Knows How (antiquated);[5] Baghdad by the Bay (antiquated);[6] The Paris of the West*^[7]
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Location of San Francisco in California


Location in the United States

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San Francisco

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Spanish Empire 1776–1821
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San Francisco
City and county
City and County of San Francisco



San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground

Flag



Seal



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Location of San Francisco in California



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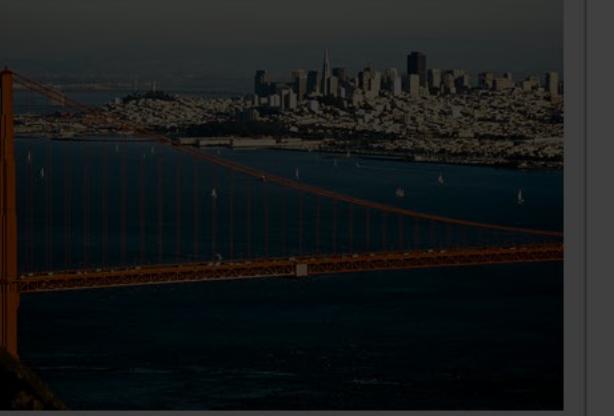
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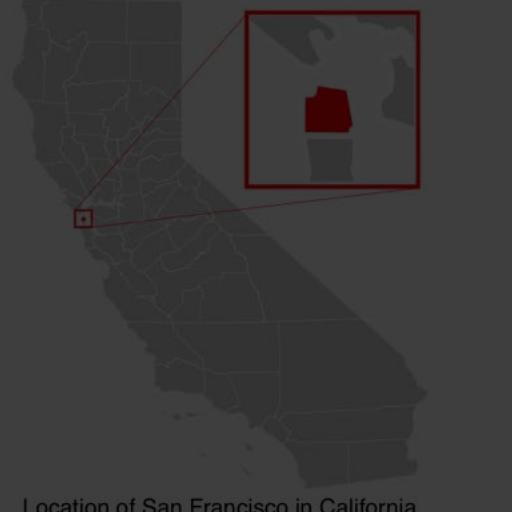


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Geography	Read Edit View history Search
Cityscape	Coordinates: 37°47'N 122°25'W
Neighborhoods	<i>For other uses, see San Francisco (disambiguation).</i>
Climate	County of San Francisco , is the largest county in California by area, encompassing a land area of 4,700 square miles (12,000 km ²). It is the most densely populated county of California and the second-most populous county in the United States after New York City. ^[13] San Francisco is the largest city in California, after Los Angeles and San Jose, and the 14th-most populous city in the United States, with an estimated 2013 population of 837,442. ^[10] San Francisco is located on the San Francisco Peninsula, which separates the San Francisco Bay from the Pacific Ocean.
Demographics	City and County of San Francisco
Race and ethnicity	
Education, households, and income	<i>In June 29, 1776, when colonists from New Spain founded the city, it was named for St. Francis of Assisi. The city grew rapidly, reaching a population of 40,000 by 1850. In 1850, San Francisco became a city. The city was destroyed by the 1906 San Francisco earthquake and fire, but quickly rebuilt. In 1915, San Francisco was the port of call for the Panama-Pacific International Exposition. After the war, the city's economy diversified, becoming a center of finance and technology. San Francisco is also the headquarters of major companies such as Gap Inc., Pacific Gas and Electric Company, and Autodesk. The city is known for its cool summers, fog, steep rolling hills, and diverse neighborhoods. The Golden Gate Bridge, cable cars, and Chinatown are among the most recognizable landmarks. San Francisco is also the headquarters of major companies such as Gap Inc., Pacific Gas and Electric Company, and Autodesk. The city is known for its cool summers, fog, steep rolling hills, and diverse neighborhoods. The Golden Gate Bridge, cable cars, and Chinatown are among the most recognizable landmarks.</i>
Languages and ages	City and County of San Francisco
Economy	 San Francisco Flag
Culture and contemporary life	 Seal The seal of the City and County of San Francisco features a central shield depicting a Native American figure holding a bow and arrow, surrounded by symbols of industry and commerce. The words "THE CITY AND COUNTY OF SAN FRANCISCO" are inscribed around the shield.
Entertainment and performing arts	<i>Nickname(s): The City by the Bay; Fog City; San Fran; Frisco;^{[1][2][3][4]} The City that Knows How (antiquated);^[5] Bagdad by the Bay (antiquated);^[6] The Paris of the West^[7]</i>
Museums	<i>Motto: <i>Oro en Paz, Fierro en Guerra</i> (English: "Gold in Peace, Iron in War")</i>
Sports and recreation	 Location of San Francisco in California
Beaches and parks	 Location in the United States
Law and government	<i>Coordinates: 37°47'N 122°25'W</i>
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Education	
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San Francisco /sæn frənskəʊ/, officially the **City and County of San Francisco**, is the cultural center and a leading financial hub of the [San Francisco Bay Area](#) and [Northern California](#). The only [consolidated city-county](#) in California,[11] San Francisco encompasses a land area of about 46.9 square miles (121 km²)[12] on the northern end of the [San Francisco Peninsula](#), giving it a density of about 17,867 people per square mile (6,898 people per km²). It is the most densely settled large city (population greater than 200,000) in the state of California and the [second-most densely populated](#) major city in the United States after [New York City](#).[13] San Francisco is the fourth-most populous city in California, after [Los Angeles](#), [San Diego](#) and [San Jose](#), and the 14th-most populous city in the United States—with a Census-estimated 2013 population of 837,442.[10] The city is also the financial and cultural hub of the larger [San Jose-San Francisco-Oakland](#) combined statistical area, with a population of 8.5 million.

San Francisco (Spanish for "Saint Francis") was founded on June 29, 1776, when colonists from Spain established a [fort](#) at the [Golden Gate](#) and a [mission](#) named for St. Francis of Assisi a few miles away.[14] The [California Gold Rush](#) of 1849 brought rapid growth, making it the largest city on the [West Coast](#) at the time. Due to the growth of its population, San Francisco became a consolidated city-county in 1856.[15] After three-quarters of the city was destroyed by the [1906 earthquake and fire](#),[16] San Francisco was quickly rebuilt, hosting the [Panama-Pacific International Exposition](#) nine years later. During [World War II](#), San Francisco was the port of embarkation for service members shipping out to the [Pacific Theater](#).[17] After the war, the confluence of returning servicemen, massive [immigration](#), liberalizing attitudes, and other factors led to the [Summer of Love](#) and the [gay rights movement](#), cementing San Francisco as a center of [liberal activism](#) in the United States.

San Francisco is a popular tourist destination,[18] known for its cool summers, fog, steep rolling hills, [eclectic mix of architecture](#), and landmarks including the [Golden Gate Bridge](#), [cable cars](#), the former [prison](#) on [Alcatraz Island](#), and its [Chinatown](#) district. San Francisco is also the headquarters of five major banking institutions and various other companies such as [Gap Inc.](#), [Pacific Gas and Electric Company](#), [Yelp](#), [Twitter](#), [Instagram](#), and [Craigslist](#).

History [edit]

Main article: [History of San Francisco](#)

See also: [Timeline of San Francisco history](#)

Historical Affiliations The earliest archaeological evidence of human habitation of the territory of the city of San Francisco

San Francisco

City and county

City and County of San Francisco

 San Francisco from the Marin Headlands, with the Golden Gate Bridge in the foreground

  **Flag** **Seal**

Nickname(s): *The City by the Bay; Fog City; San Fran; Frisco*;[1][2][3][4] *The City that Knows How* (antiquated);[5] *Baghdad by the Bay* (antiquated);[6] *The Paris of the West*[7]
Motto: *Oro en Paz, Fierro en Guerra* (English: "Gold in Peace, Iron in War")



Customizing Webpage Content

Customizing Webpage Content

User Scripts

Customizing Webpage Content

User Scripts

Script Messages

Customizing Webpage Content

User Scripts

Script Messages

Managed by **WKUserContentController**

WKUserContentController

WKUserContentController

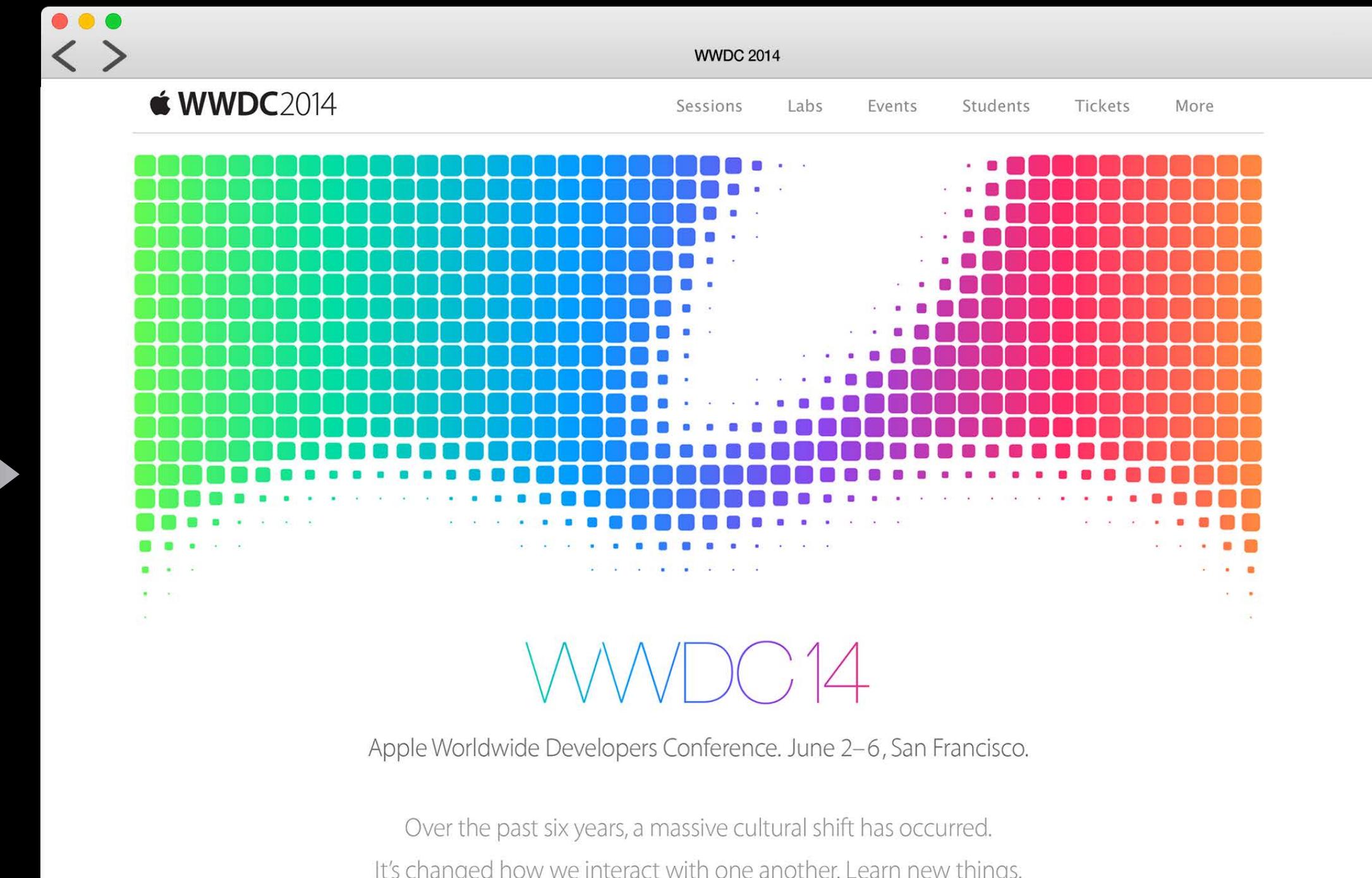
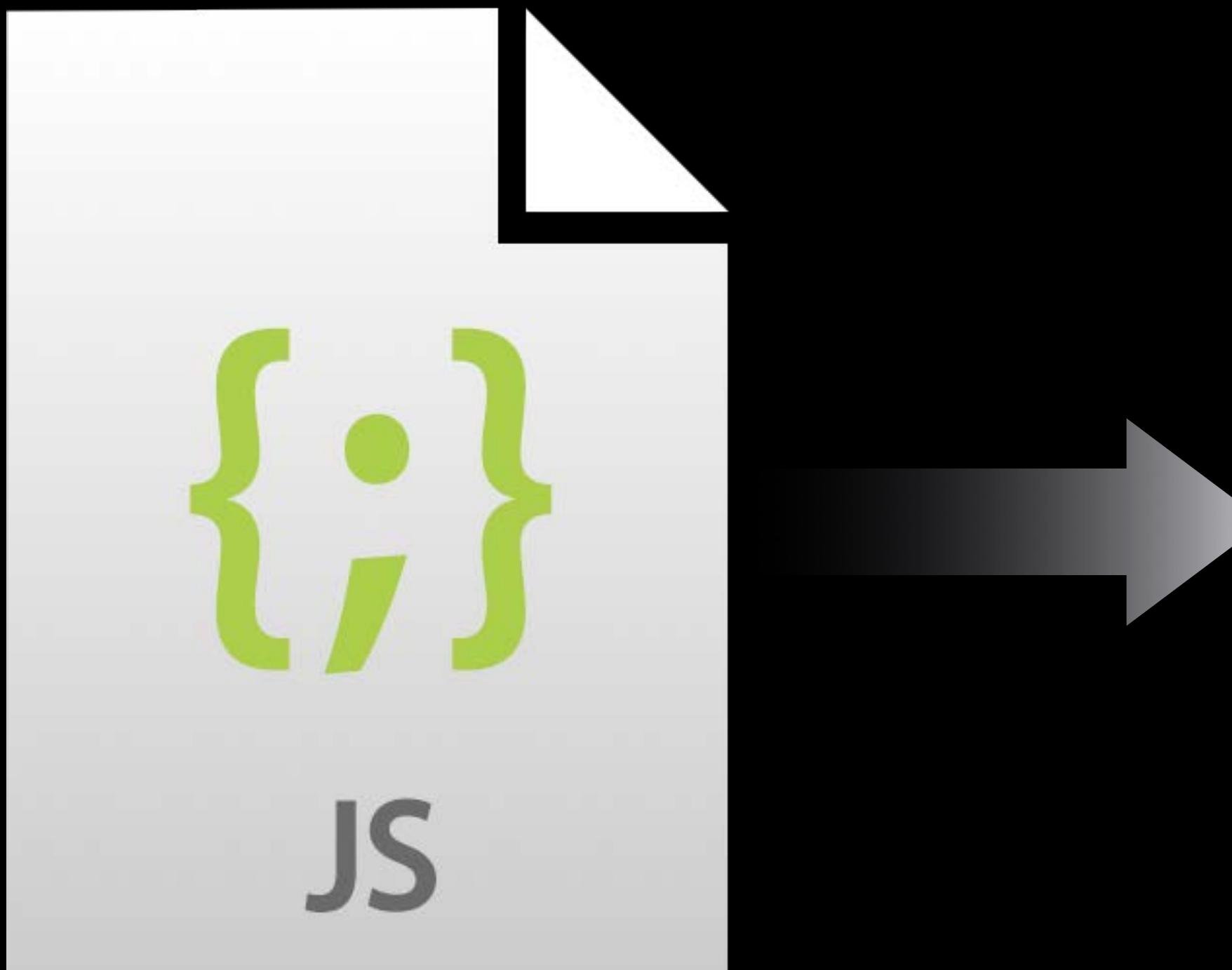
Part of WKWebViewConfiguration

WKUserContentController

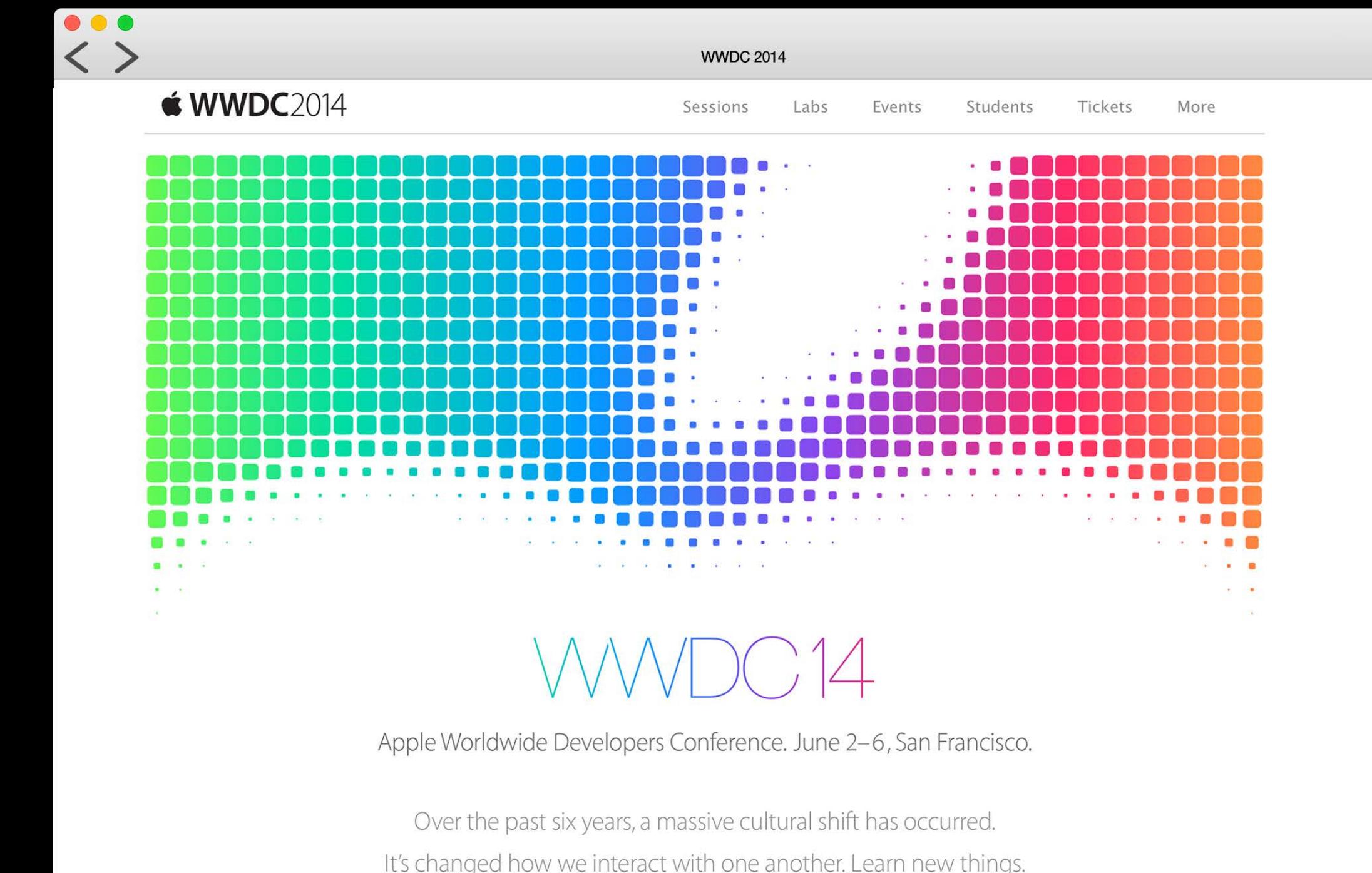
Part of WKWebViewConfiguration

```
@property (nonatomic, strong) WKUserContentController *userContentController;
```

User Scripts



User Scripts



User Scripts

User Scripts

When they run

User Scripts

When they run

- Document start

User Scripts

When they run

- Document start
- Document end

User Scripts

When they run

- Document start
- Document end

Where they run

User Scripts

When they run

- Document start
- Document end

Where they run

- All frames

User Scripts

When they run

- Document start
- Document end

Where they run

- All frames
- Main frame only

User Scripts

User Scripts

```
NSString *myScriptSource = @"alert('Hello, World!')";
```

User Scripts

```
NSString *myScriptSource = @"alert('Hello, World!')";  
  
WKUserScript *myUserScript = [[WKUserScript alloc]  
    initWithSource:myScriptSource  
    injectionTime:WKUserScriptInjectionTimeAtDocumentStart  
    forMainFrameOnly:YES];
```

User Scripts

```
NSString *myScriptSource = @"alert('Hello, World!')";  
  
WKUserScript *myUserScript = [[WKUserScript alloc]  
    initWithSource:myScriptSource  
    injectionTime:WKUserScriptInjectionTimeAtDocumentStart  
    forMainFrameOnly:YES];  
  
[userContentController addUserScript:myUserScript];
```

What Can User Scripts Do?

What Can User Scripts Do?

Incredibly powerful

What Can User Scripts Do?

Incredibly powerful

- Modify the document

What Can User Scripts Do?

Incredibly powerful

- Modify the document
- Listen for events

What Can User Scripts Do?

Incredibly powerful

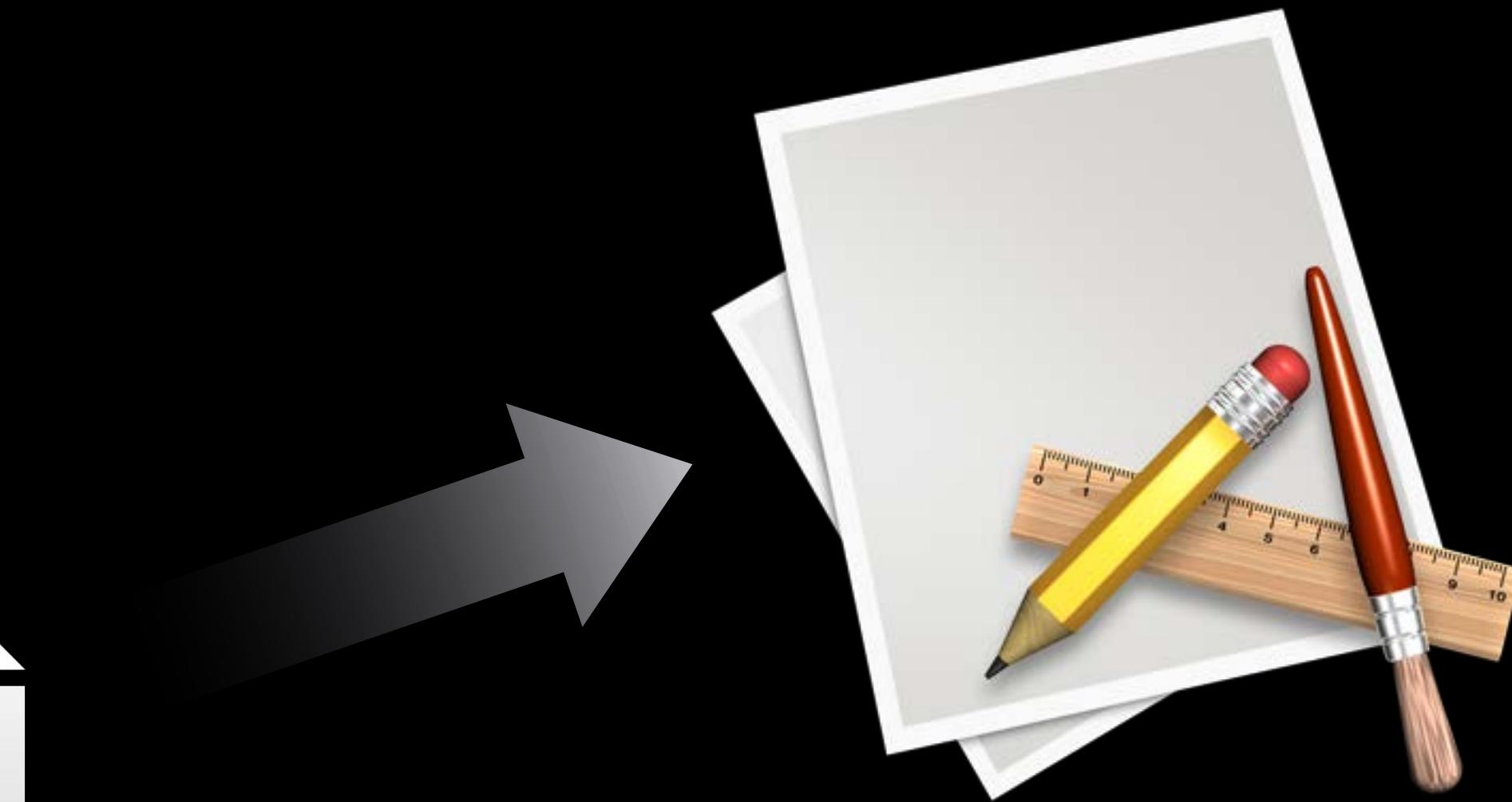
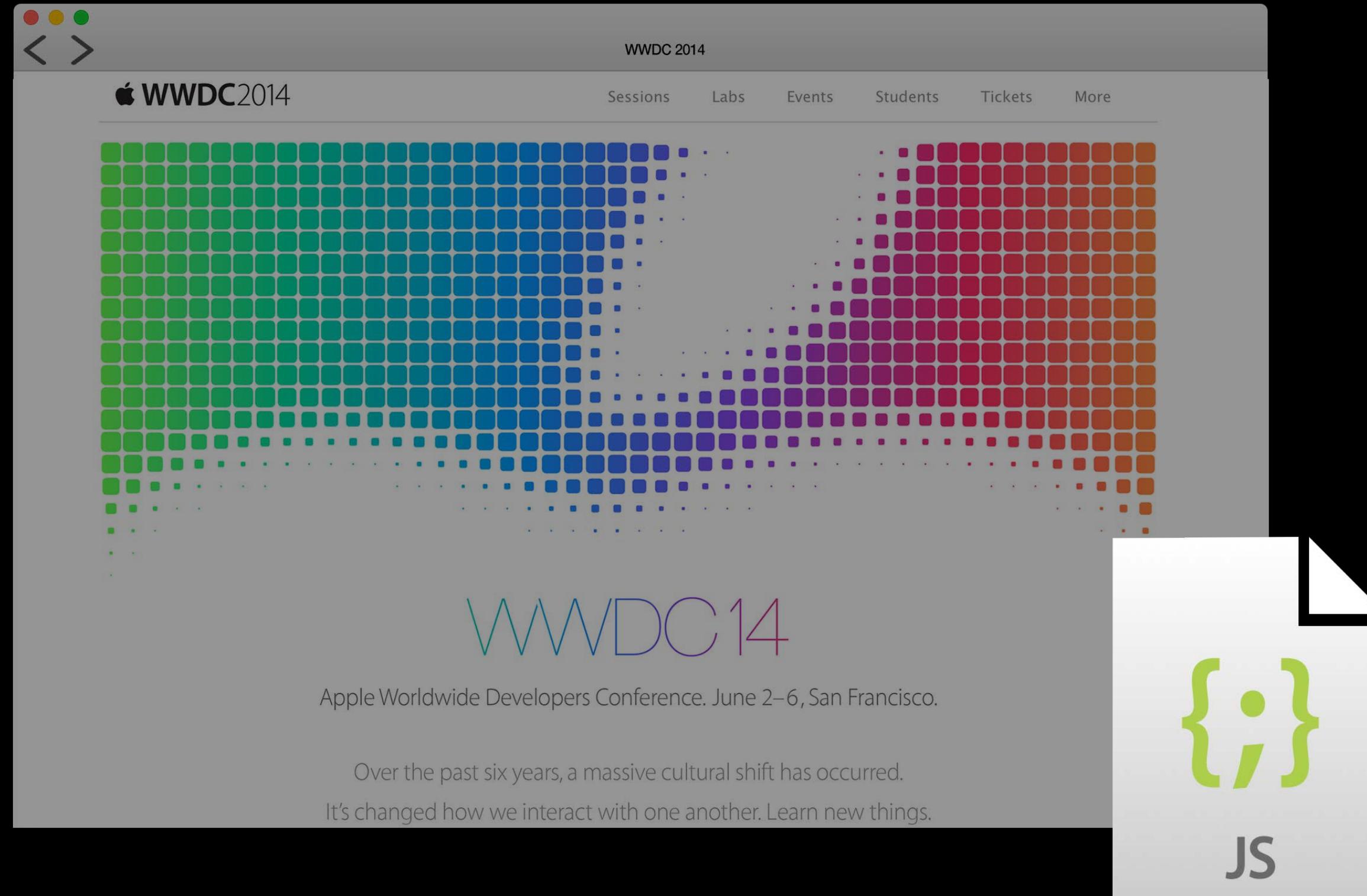
- Modify the document
- Listen for events
- Load resources

What Can User Scripts Do?

Incredibly powerful

- Modify the document
- Listen for events
- Load resources
- Communicate back to your application

Script Messages



Script Messages



Script Messages

Script Messages

Sent as JSON

Script Messages

Sent as JSON

Converted to Objective-C types

Script Messages

Registering a Script Message Handler

Script Messages

Registering a Script Message Handler

`WKScriptMessageHandler` protocol

Script Messages

Registering a Script Message Handler

WKScriptMessageHandler protocol

```
- (void)userContentController:(WKUserContentController  
*)userContentController didReceiveScriptMessage:(WKScriptMessage *)message;
```

Script Messages

Registering a Script Message Handler

WKScriptMessageHandler protocol

```
- (void)userContentController:(WKUserContentController  
*)userContentController didReceiveScriptMessage:(WKScriptMessage *)message;
```

```
[userContentController addScriptMessageHandler:handler name:@"myName"];
```

Script Messages

Posting messages

Script Messages

Posting messages

```
window.webkit.messageHandlers.<name>.postMessage();
```

Script Messages

Posting messages

```
window.webkit.messageHandlers.<name>.postMessage();
```

```
function postMyMessage()
{
    var message = { 'message' : 'Hello, World!', 'numbers' : [ 1, 2, 3 ] };
    window.webkit.messageHandlers.myName.postMessage(message);
}
```

Script Messages

Receiving messages

Script Messages

Receiving messages

```
- (void)userContentController:(WKUserContentController
*)userContentController didReceiveScriptMessage:(WKScriptMessage *)message
{
    NSLog(@"Message: %@", message.body);
}
```

Script Messages

WKScriptMessage

Name	Type
body	id
webView	WKWebView
name	NSString

Script Messages

Script Messages

The webpage can call postMessage

Script Messages

The webpage can call postMessage

- Great for allowing webpages to interact with your app

Script Messages

The webpage can call postMessage

- Great for allowing webpages to interact with your app
- Handle invalid messages

Demo

WKpedia for iPad

Beth Dakin
Safari and WebKit Engineer

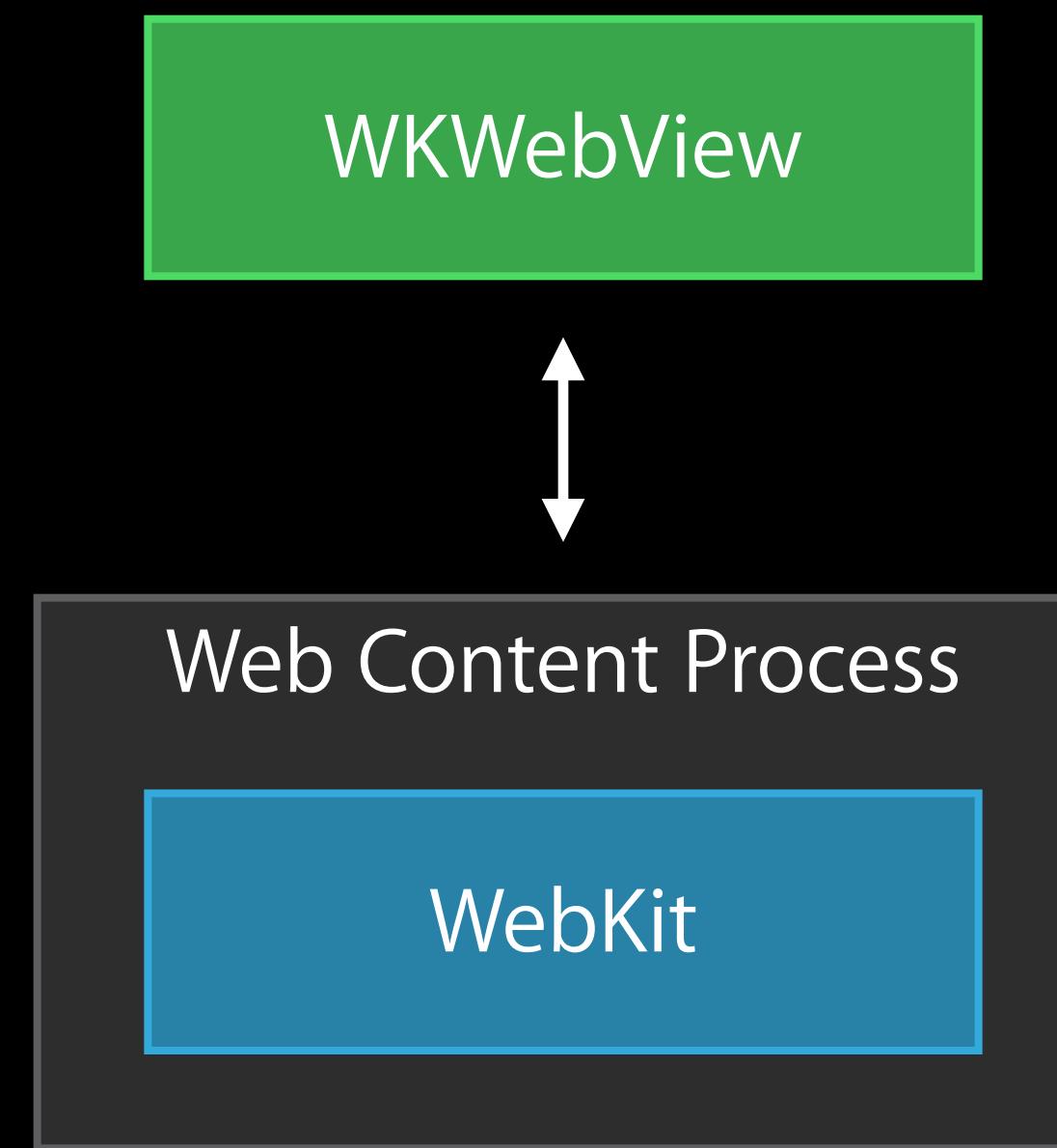
The Modern WebKit API



The Modern WebKit API



The Modern WebKit API



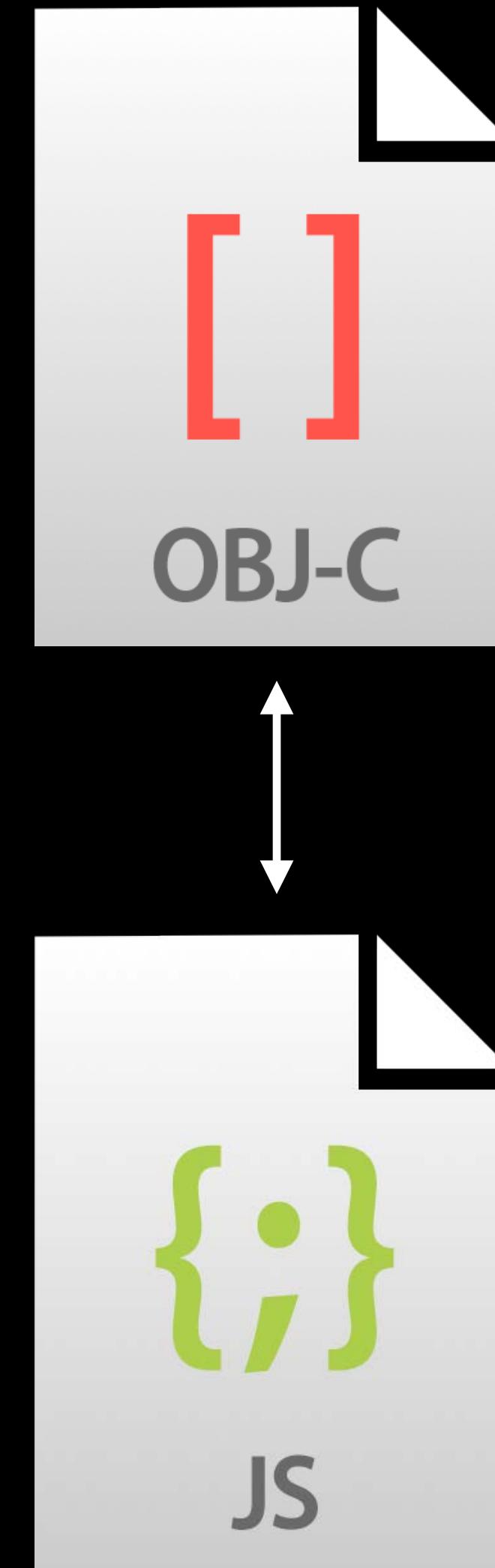
The Modern WebKit API



The Modern WebKit API



The Modern WebKit API



WKScriptMessageHandler

WKWebView

WKNavigationDelegate

WKBackForwardList

WKScriptMessage

WKUIDelegate

WKProcessPool

WKNavigationAction

WKWebViewConfiguration

WKBackForwardListItem

WKUserContentController

WKNavigation

WKPreferences

WKNavigationType

WKUserScript

WKNavigationResponse

WKWindowFeatures



Next Steps

Next Steps

Adopt the modern WebKit API

Next Steps

Adopt the modern WebKit API

Give us feedback

More Information

Evangelism

evangelism-frameworks@apple.com

Safari Dev Center

<http://developer.apple.com/safari/>

WebKit Open Source Project

<http://www.webkit.org/>

Apple Developer Forums

<http://devforums.apple.com/>

Related Sessions

- Your App, Your Website, and Safari Nob Hill Tuesday 4:30PM
 - Web Inspector and Modern JavaScript Russian Hill Thursday 10:15AM
 - Sharing Code Between iOS and OS X Presidio Friday 9:00AM

Labs

- Safari and WebKit Lab Media Lab B Tuesday 4:30PM
 - Safari and WebKit Lab Media Lab B Wednesday 4:30PM
 - Safari and WebKit Lab Media Lab B Thursday 2:00PM

