

Introducing Search APIs

Increase app usage and discoverability

Session 709

Vipul Ved Prakash Siri

Dave Salim Siri

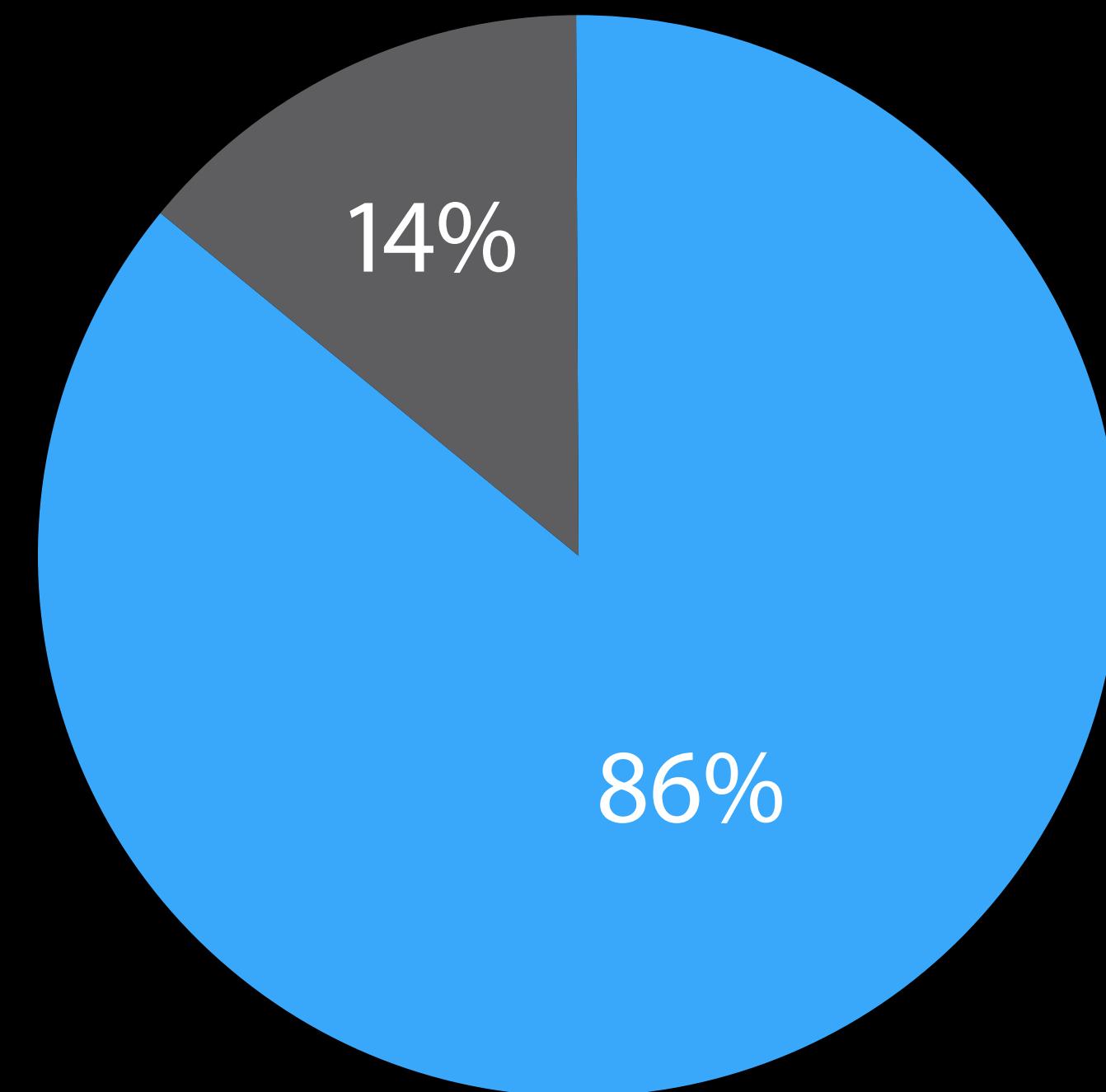
Jason Douglas Siri

Introducing Search APIs

Introducing Search APIs

Time Spent in Apps vs Web

● Web ● Apps



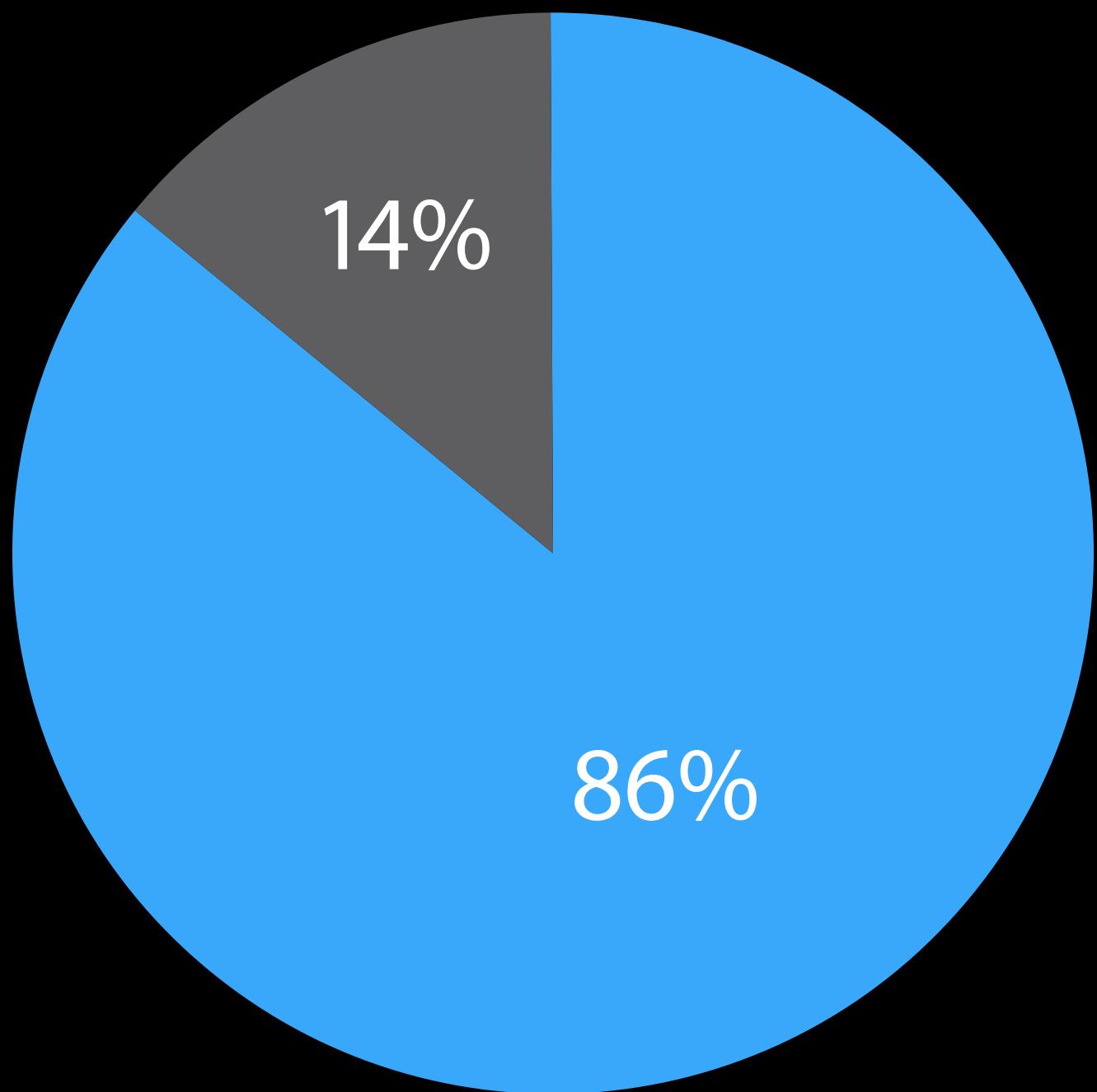
Flurry Insights

Introducing Search APIs

Developers choose what to index via Search APIs

Time Spent in Apps vs Web

● Web ● Apps

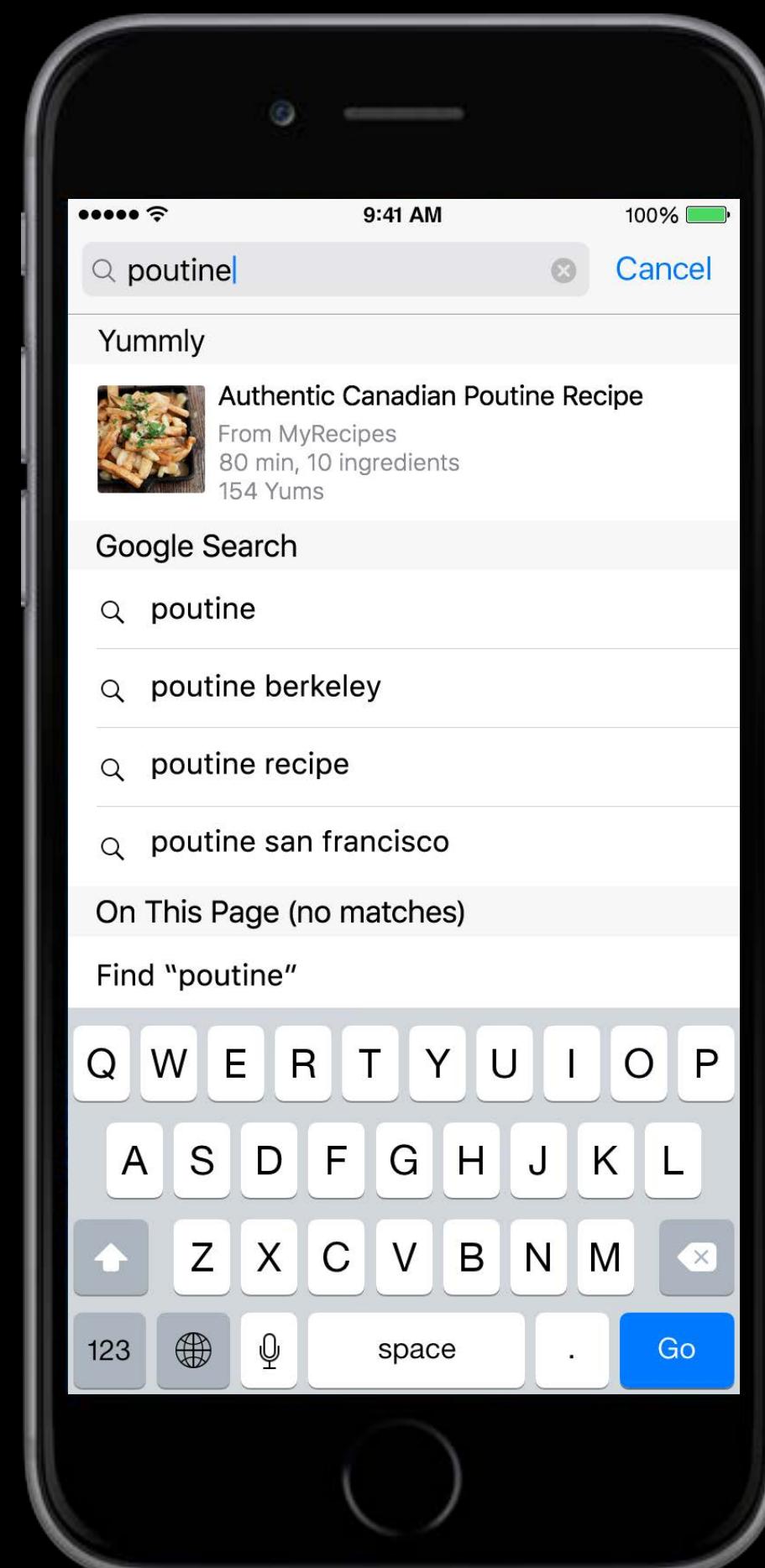


Flurry Insights

Introducing Search APIs

Developers choose what to index via Search APIs

App results appear in Spotlight *and* Safari

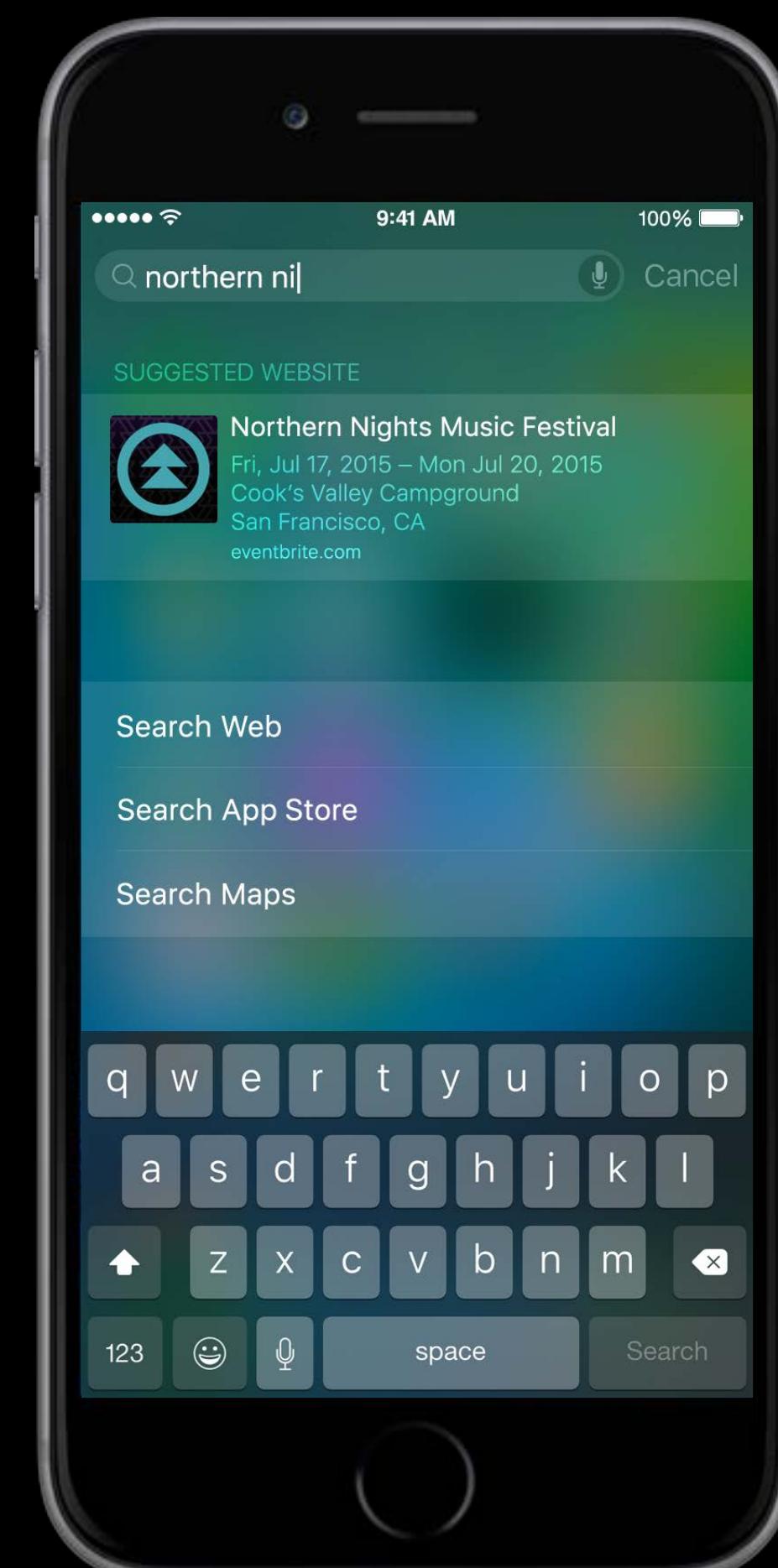


Introducing Search APIs

Developers choose what to index via Search APIs

App results appear in Spotlight *and* Safari

App results even appear when app *not* installed





9:41 AM 100%

napa

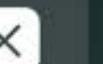
AIRBNB

 Warm & Welcome in Wine Country
Napa, CA
Confirmed: Jun 13th – 15th
2 nights, 2 guests

Inquiry - Warm & Welcome in Wine Country
 Alexis Kay
Hello Vipul. The code for the gate is 3231.
If you have any questions, just give me... 

WIKIPEDIA

 Napa County, California
Napa County is a county located north of San Pablo Bay in the U.S. state of California. As of the 2010 census, the population was 136,484. The county... 

q w e r t y u i o p
a s d f g h j k l
z x c v b n m 
123 ☺  space 

◀ Back to Search

9:41 AM

100% 



Reservation
HTF8DY

Help



Alexis Kay
Accepted



Warm & Welcome in Wine Country

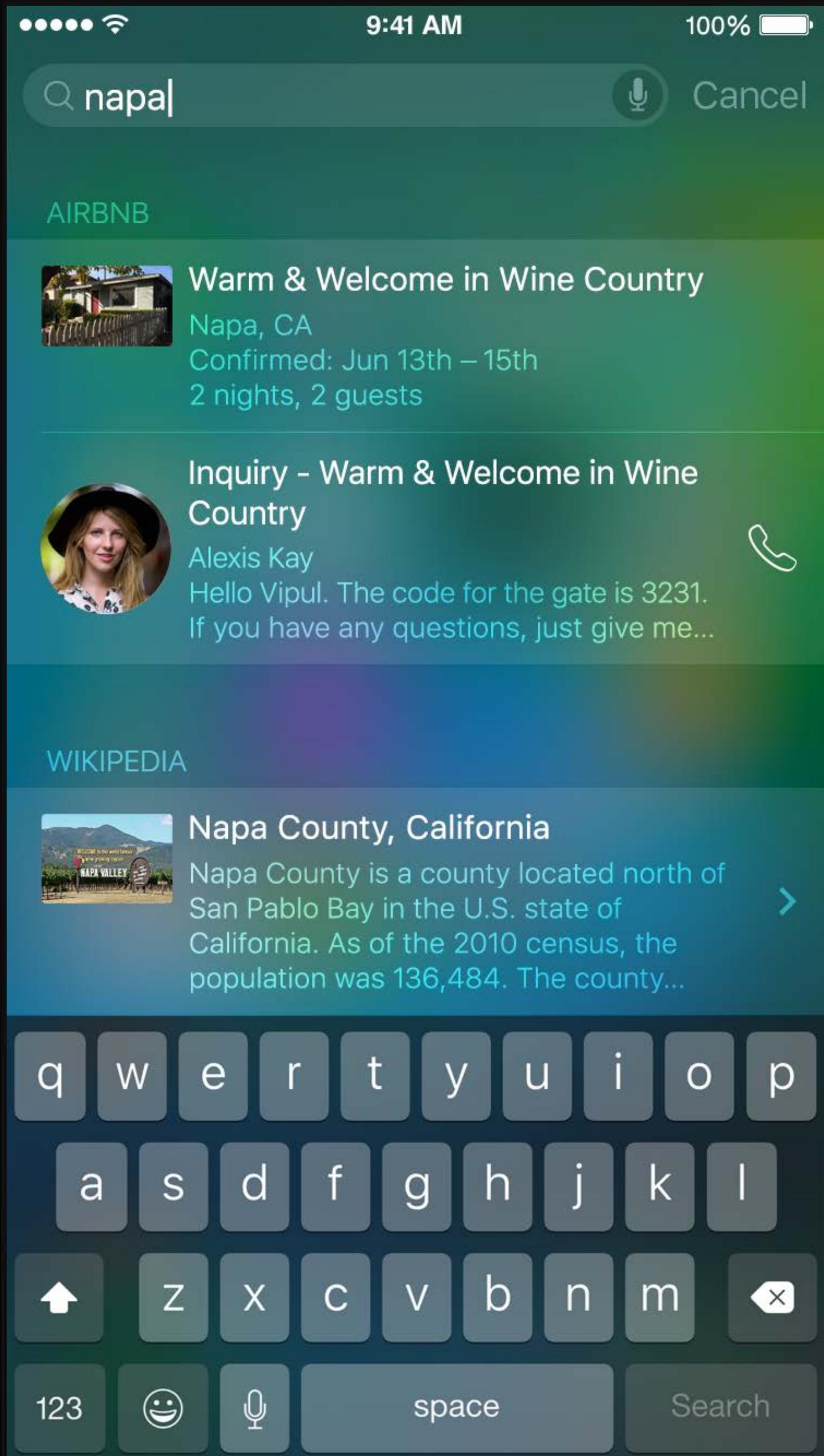
Entire 4 bedroom home in Napa Valley, CA

Arrives

Sat, Jun 13, 2015
3:00 PM

Departs

Mon, Jun 1, 2014
11:00 AM



9:41 AM 100%

napa

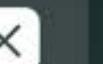
AIRBNB

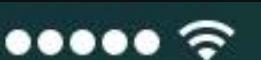
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q w e r t y u i o p
a s d f g h j k l
z x c v b n m 
123 ☺  space 



9:41 AM

100%

Alexis Kay

calling mobile...



mute



keypad



speaker



add call

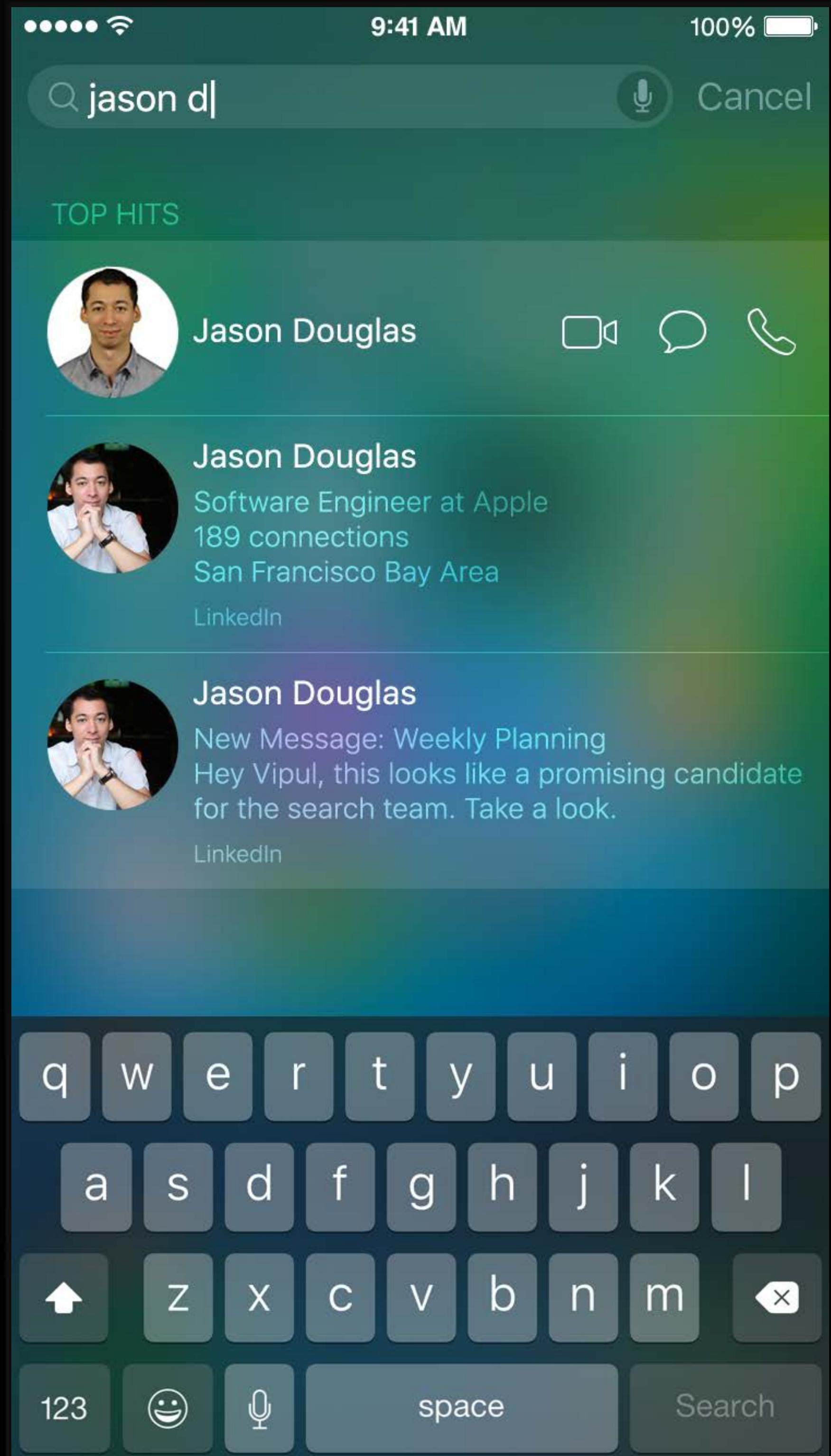


FaceTime



contacts





◀ Back to Search

9:41 AM

100% 



...



Jason Douglas

Software Engineer at Apple



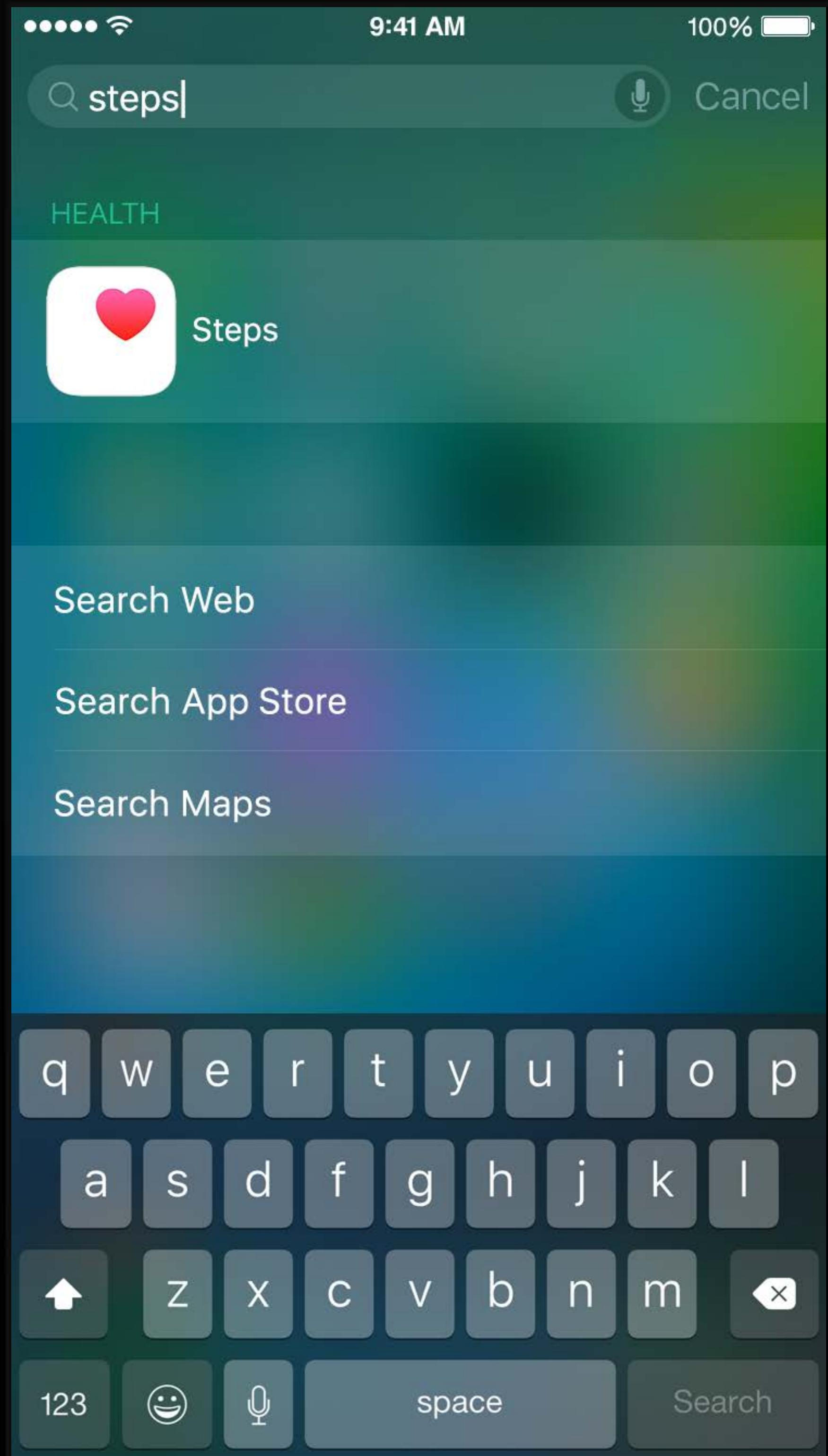
Potential Candidate

 Tue, June 2, 2015

Hey Vipul - this looks like a promising candidate for the search team. Take a look.

<https://www.linkedin.com/profile/view?id=1234>

Reply



◀ Back to Search

9:41 AM

100% 

◀ Fitness

Steps

Day

Week

Month

Year

Steps

Daily Average: 9,785

1,998 steps

Today, 9:30 PM

30,000



Show on Dashboard



Show All Data



Add Data Point



Share Data



Unit

steps

Step count is the number of steps you take throughout the day. Pedometers and digital activity trackers can help you determine your



Dashboard



Health Data



Sources



Medical ID

App and Content Discovery

App and Content Discovery

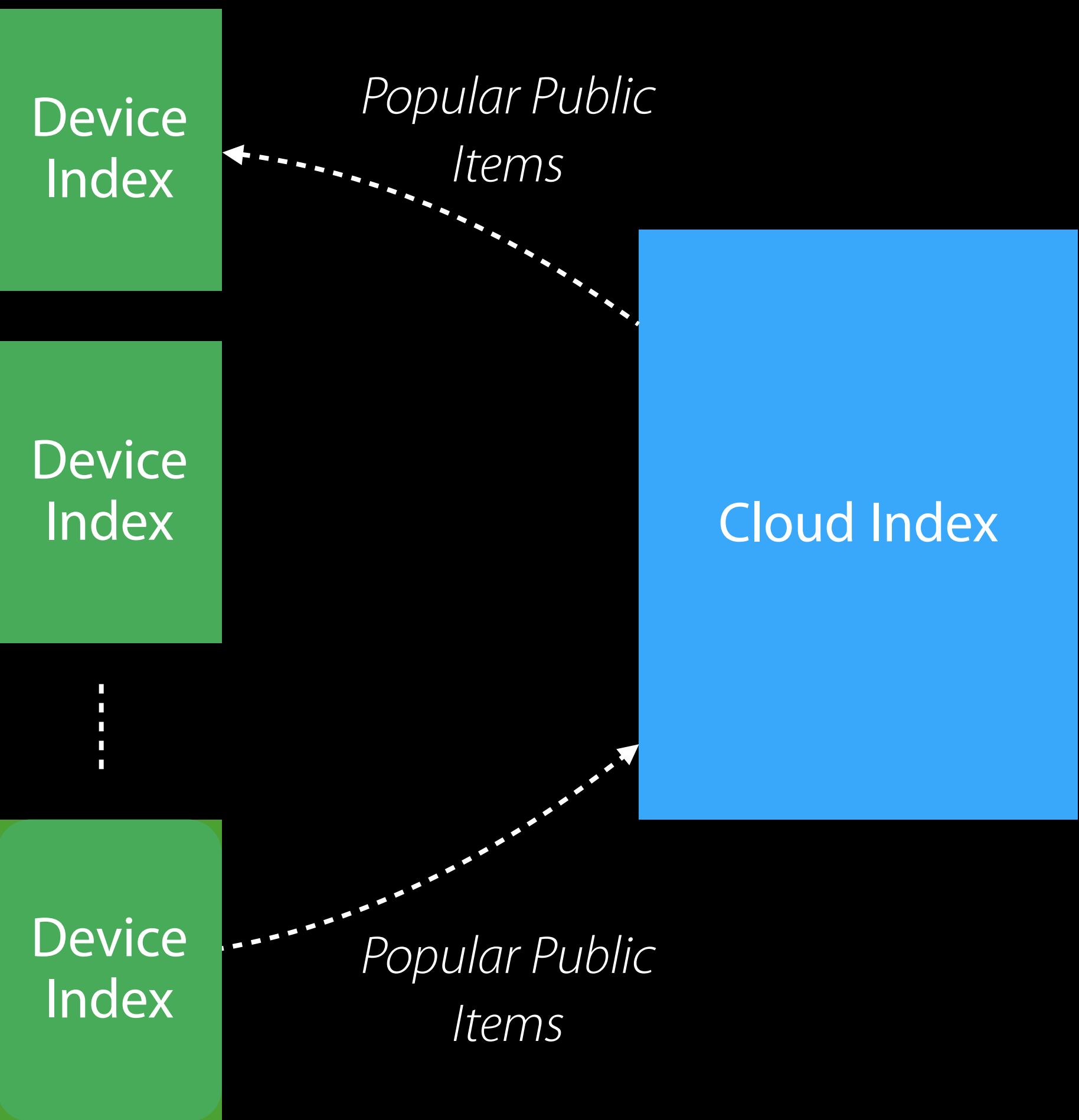
Deep links also in Apple's cloud index



App and Content Discovery

Deep links also in Apple's cloud index

Developers can tag content as public



App and Content Discovery

Deep links also in Apple's cloud index

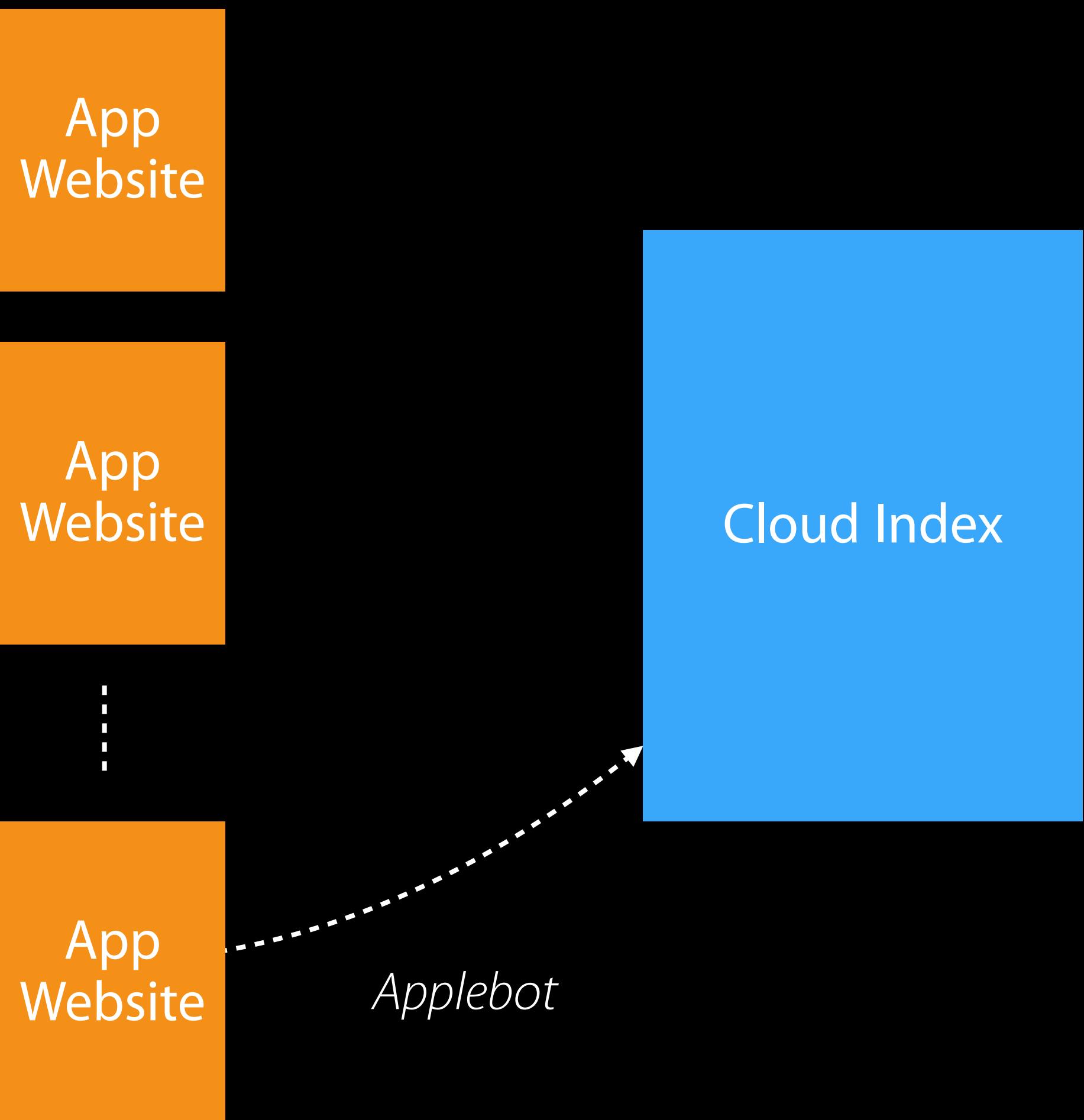
Developers can tag content as public

App and Content Discovery

Deep links also in Apple's cloud index

Developers can tag content as public

Apple finds deep links from the web



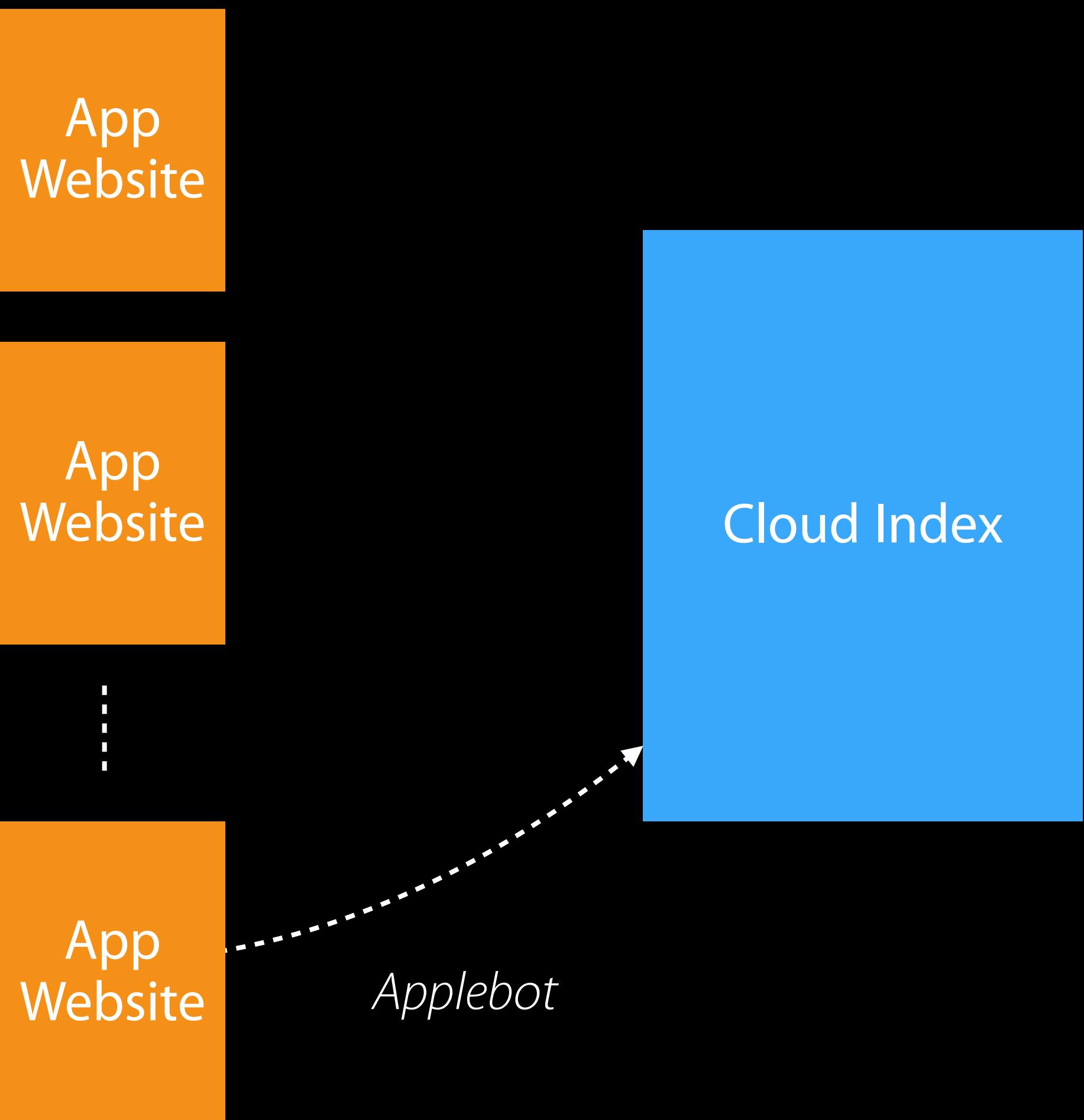
App and Content Discovery

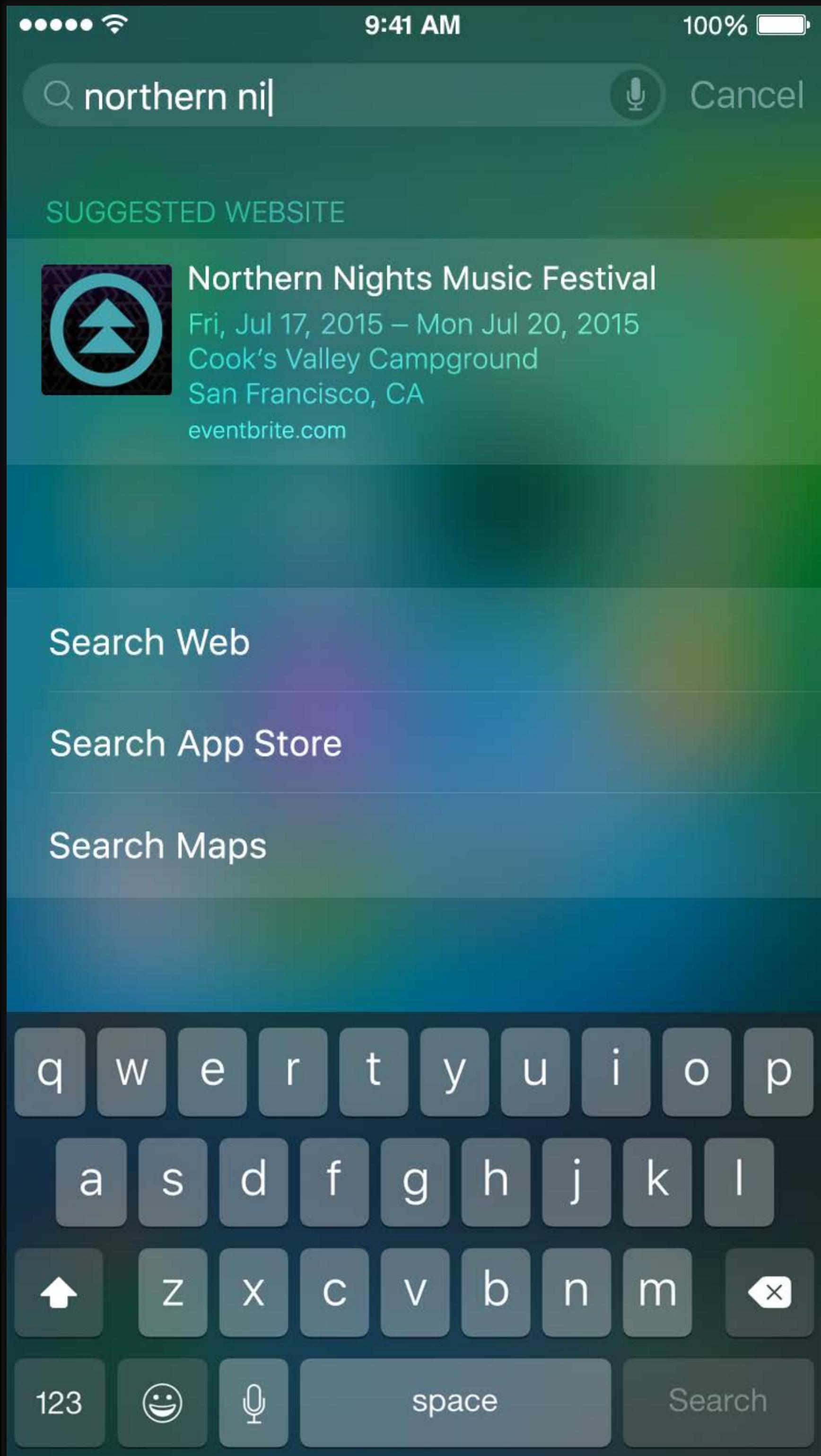
Deep links also in Apple's cloud index

Developers can tag content as public

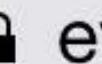
Apple finds deep links from the web

Seamlessly appear in iOS 9 Search





◀ Back to Search 9:41 AM 100% 

≡  eventbrite.com 

 Eventbrite - Local Events, Fun Things To Do Near Me
Eventbrite 
GET — On the App Store [View](#)

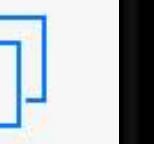
 

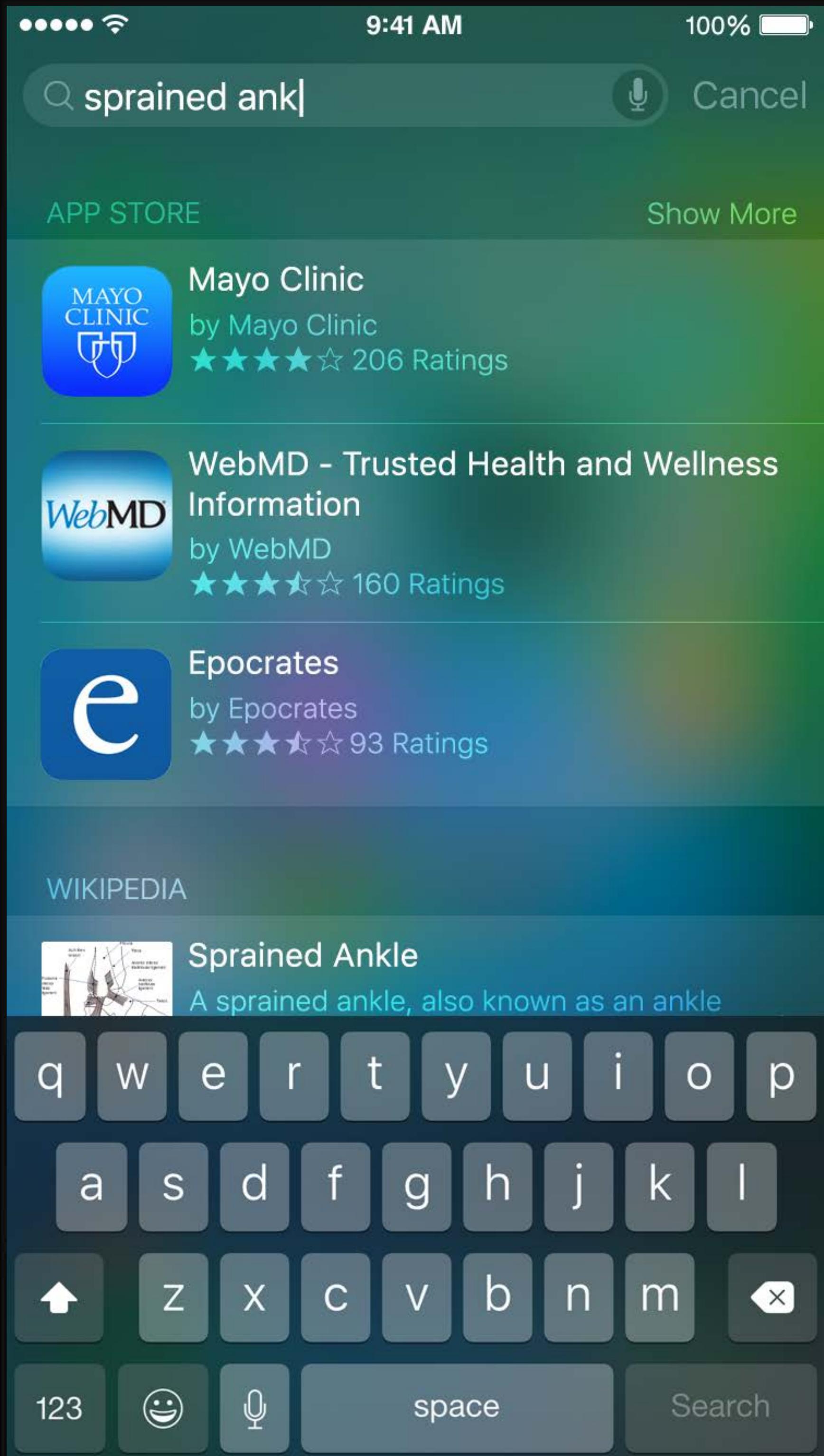
Northern Nights Music Festival

by Northern Nights Music Festival

Friday, July 17, 2015 at 12:00 PM –
Monday, July 20, 2015 at 10:00 AM (PDT)
[Cook's Valley Campground](#)
[83950 ROAD 442E](#)
[Piercy , CA 95587](#)

Ticket Type	Price	Qty
3-Day GA Festival Ticket More Info	\$241.83	<input type="button" value="0"/> 
3-Day VIP Festival Ticket More Info	\$330.45	<input type="button" value="0"/> 
3-Day VIP Upgrade More Info	\$117.50	<input type="button" value="0"/> 
Reserved Grove Camping - More Info	\$173.25	<input type="button" value="0"/> 

< >   



9:41 AM 100%

Cancel App Store  Store

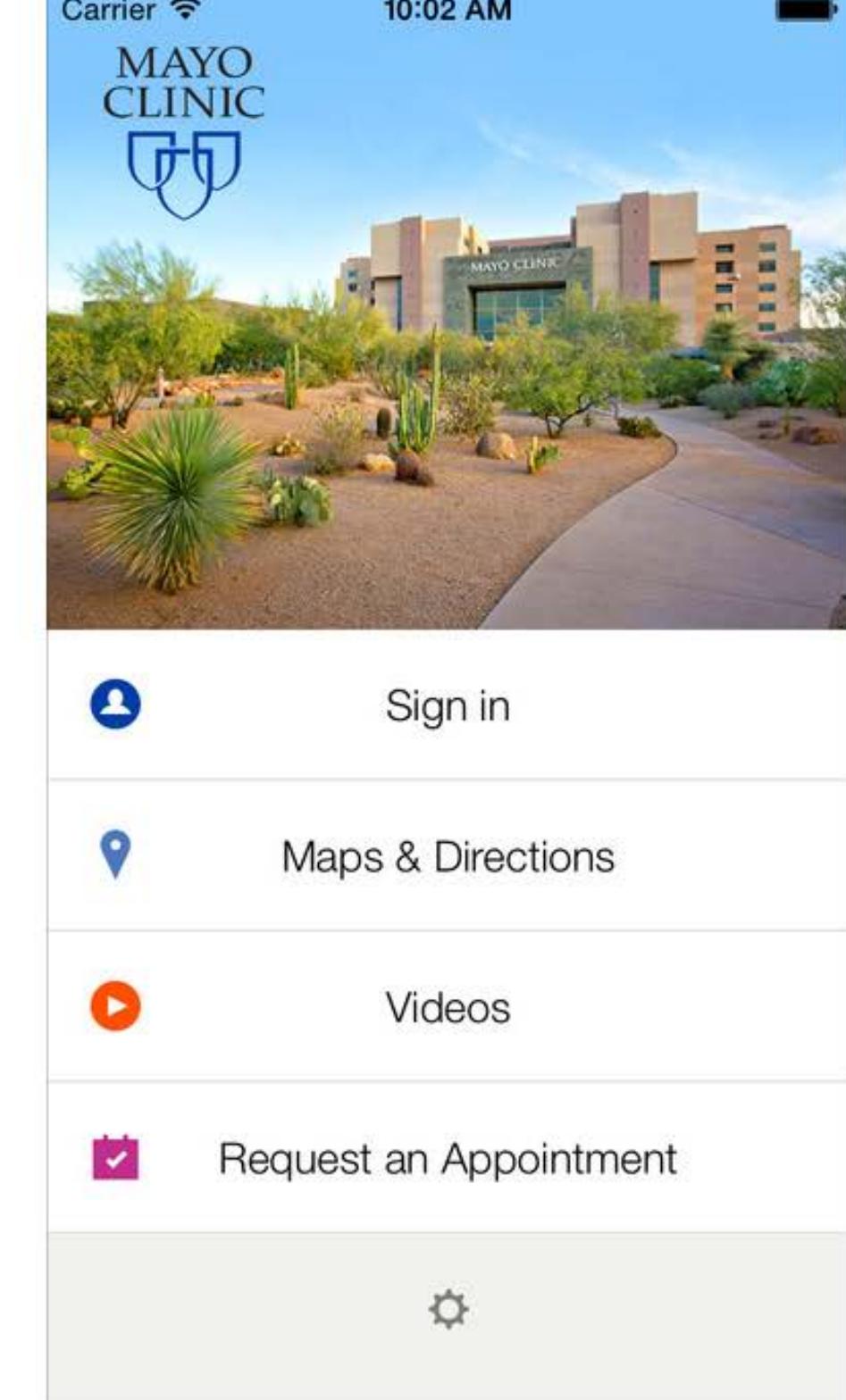
 Mayo Clinic
Mayo Clinic >

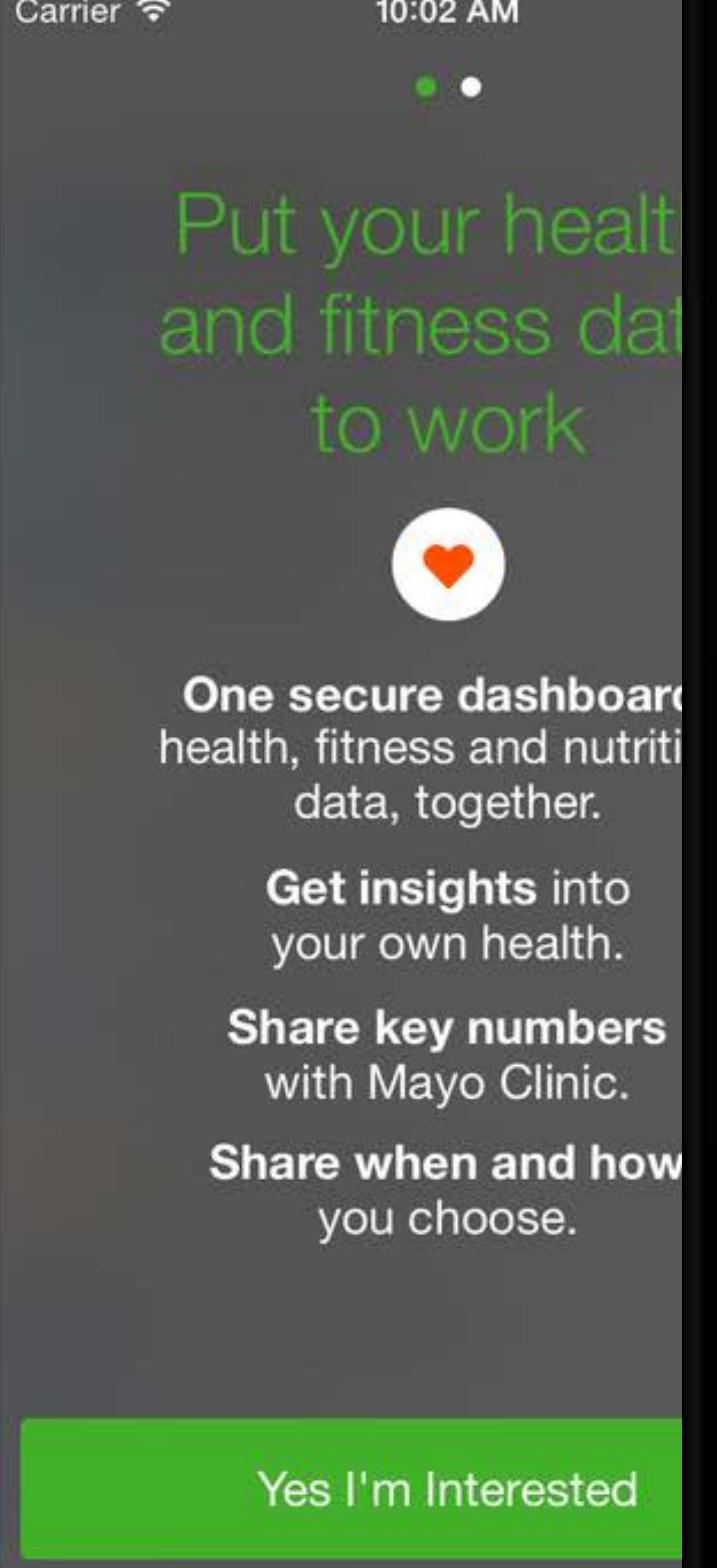
★★★★★ (206) 

Offers Apple Watch App

Details Reviews Related

iPhone





App Search

Three APIs

App Search

Three APIs



Viewed App Content

App Search

Three APIs



NSUserActivity

Viewed App Content



CoreSpotlight

Any App Content

App Search

Three APIs



Viewed App Content



Any App Content



App Content on Web

1 NSUserActivity

2 CoreSpotlight

3 Web Markup

4 Achieving Best Results

5 User Guidelines

NSUserActivity & CoreSpotlight

Dave Salim

NSUserActivity

Indexes viewed app content



Viewed App Content



Any App Content



App Content on Web

NSUserActivity

Indexes viewed app content



Viewed App Content



Any App Content



App Content on Web

NSUserActivity

Background

NSUserActivity

Background

Introduced in iOS 8

Used in Handoff

Create activities in specific parts of your app

Handle continuing incoming activities in your app

NSUserActivity and App Search

NEW

NSUserActivity and App Search

NEW

Activities can be designated as searchable

Add indexable metadata

Results in iOS Search and Safari

Revisit activity on search selection

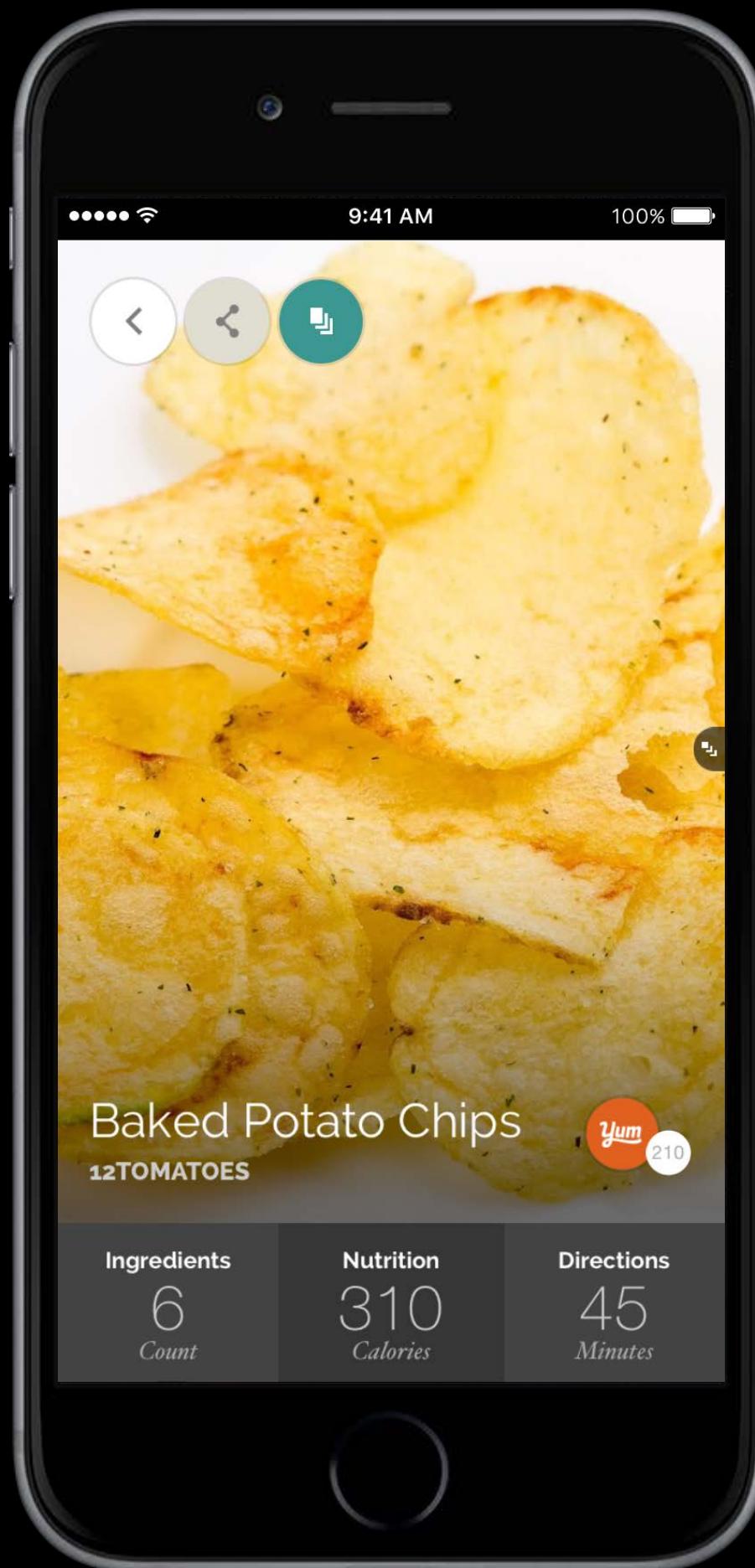


NSUserActivity

App search

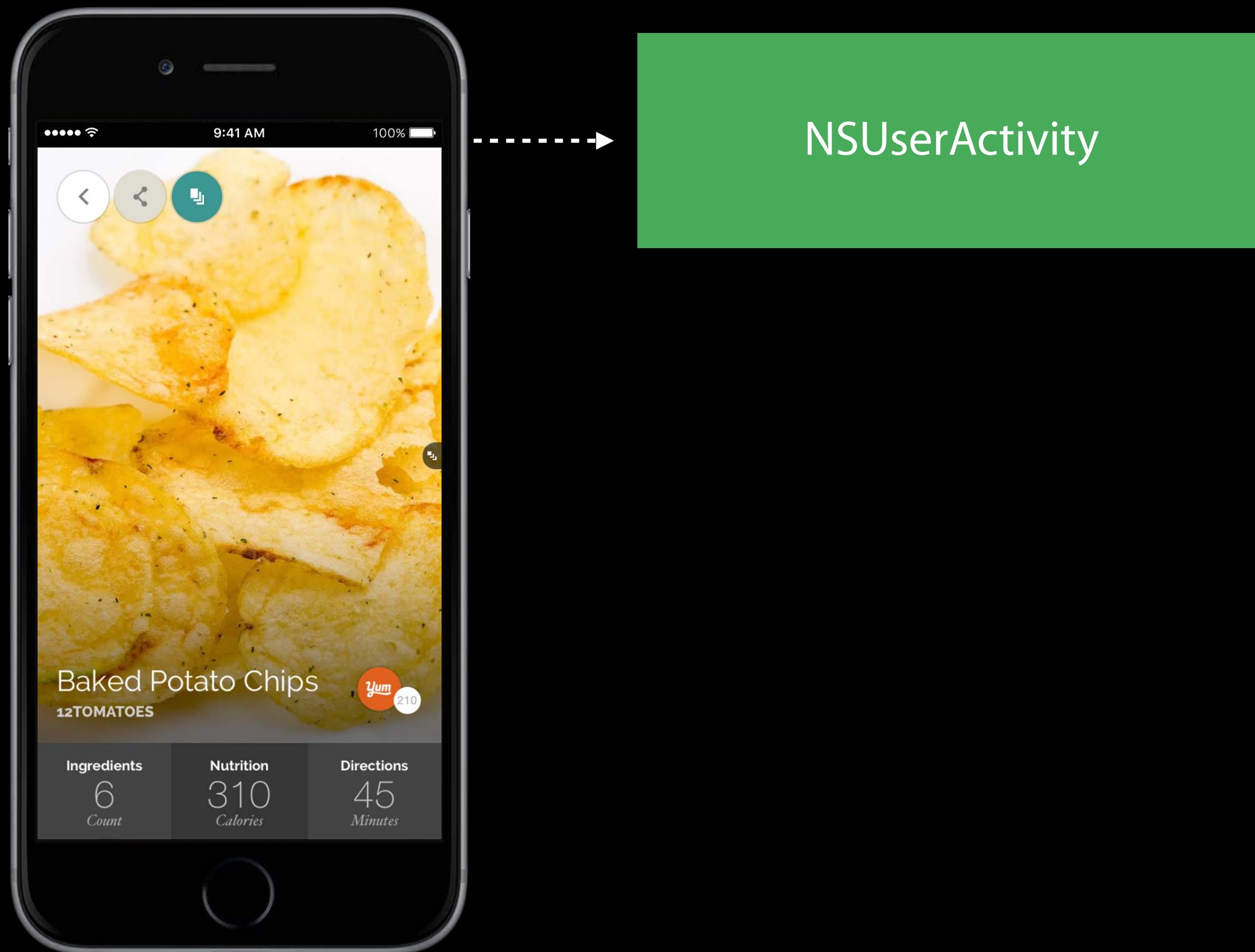
NSUserActivity

App search



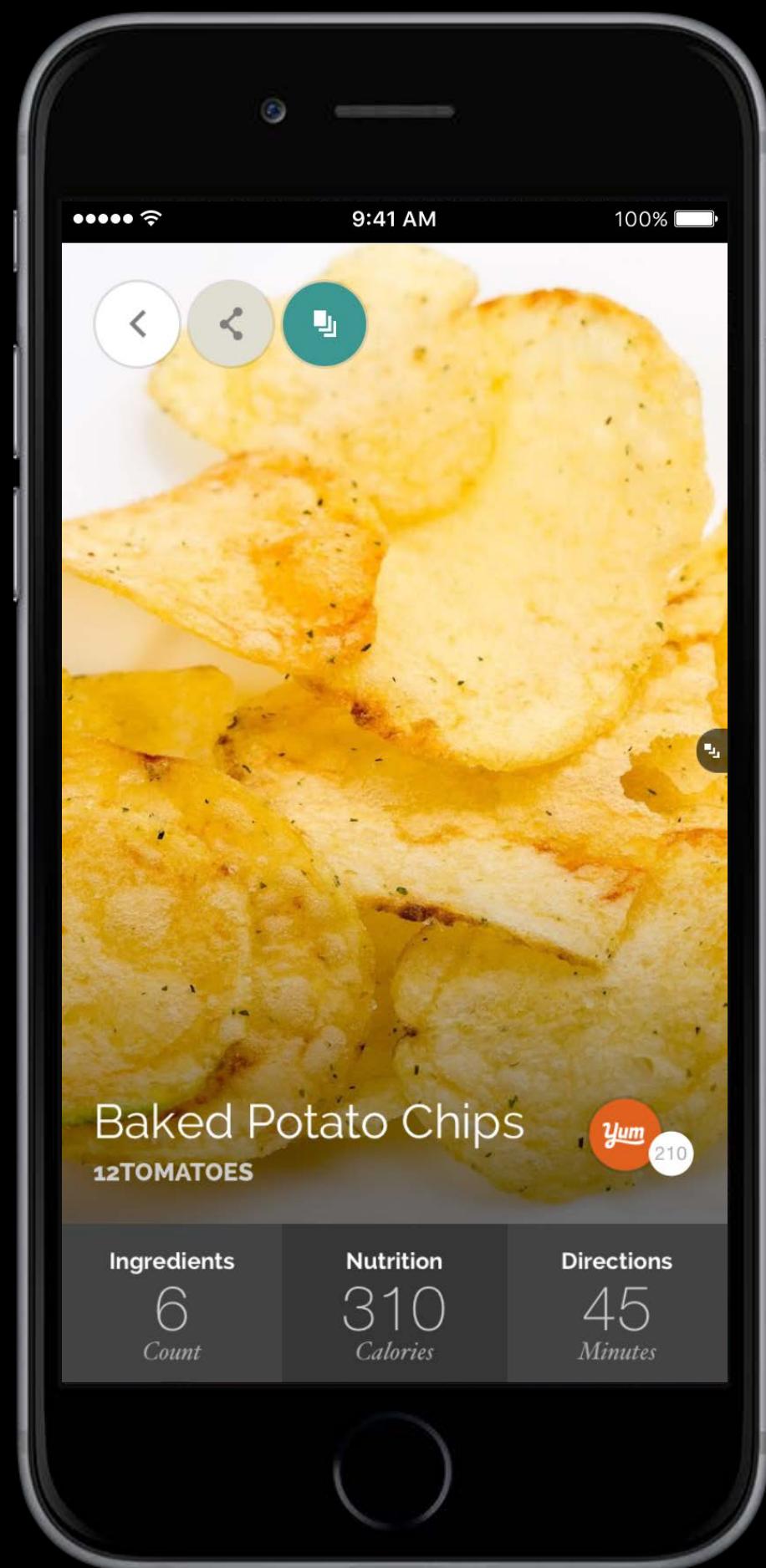
NSUserActivity

App search



NSUserActivity

App search



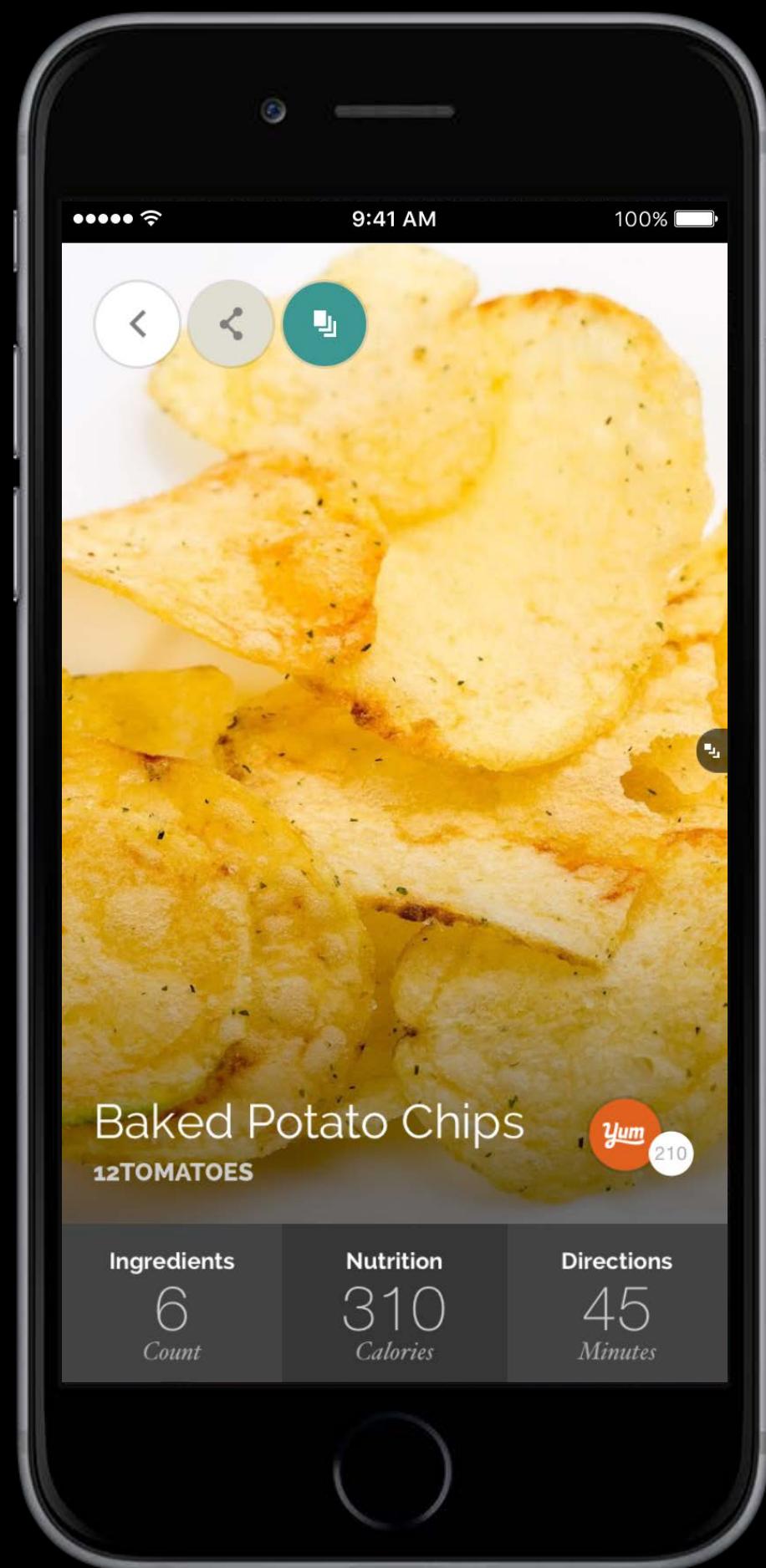
NSUserActivity



Metadata

NSUserActivity

App search



NSUserActivity

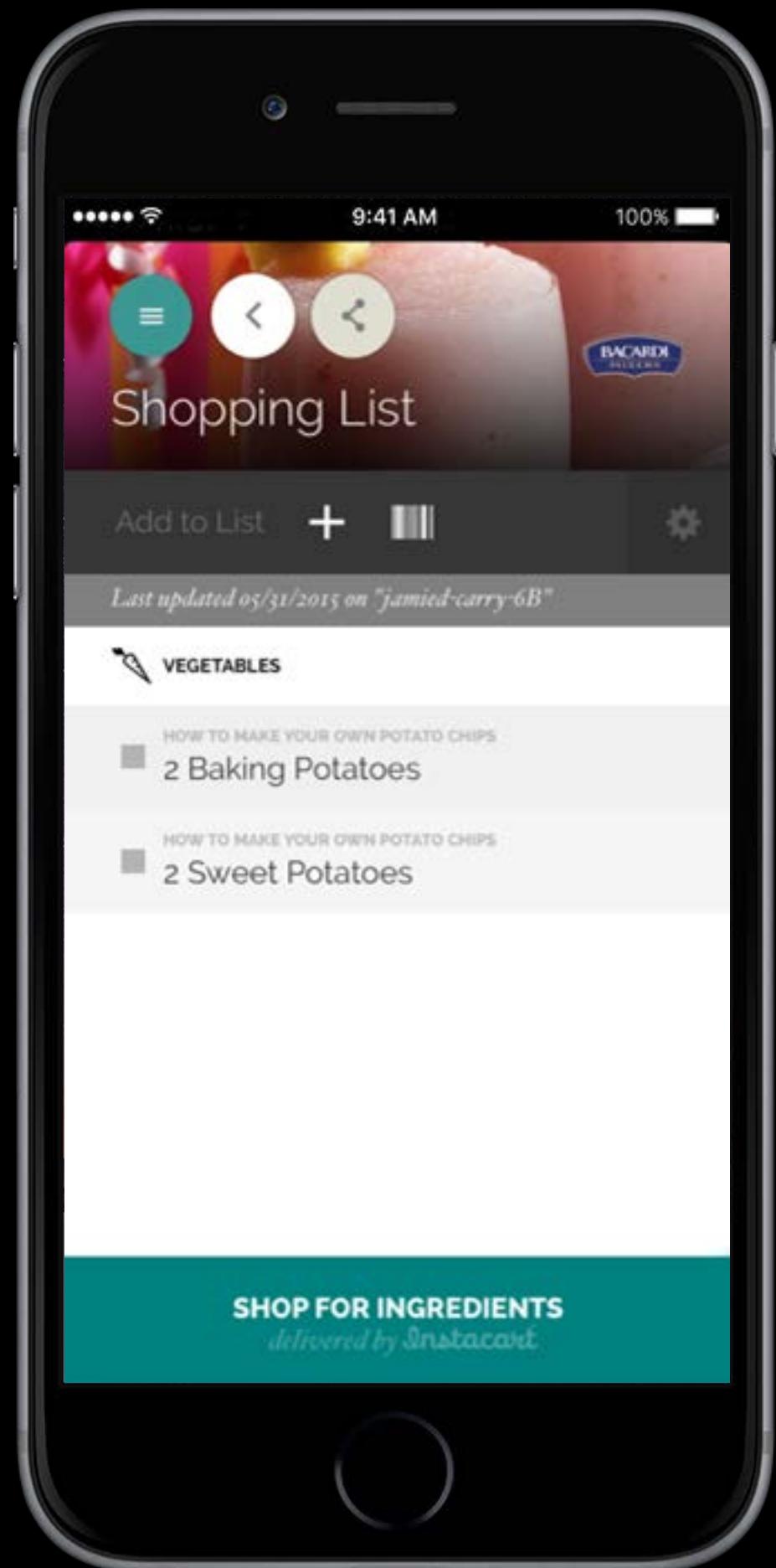
Metadata

On-Device Index

Item 1

NSUserActivity

App search

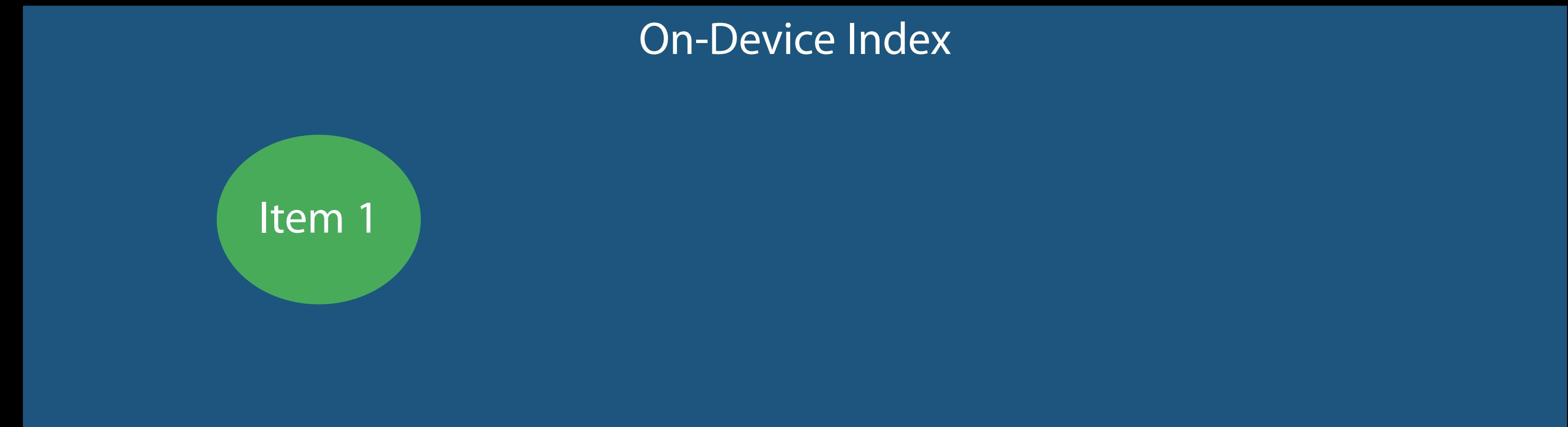
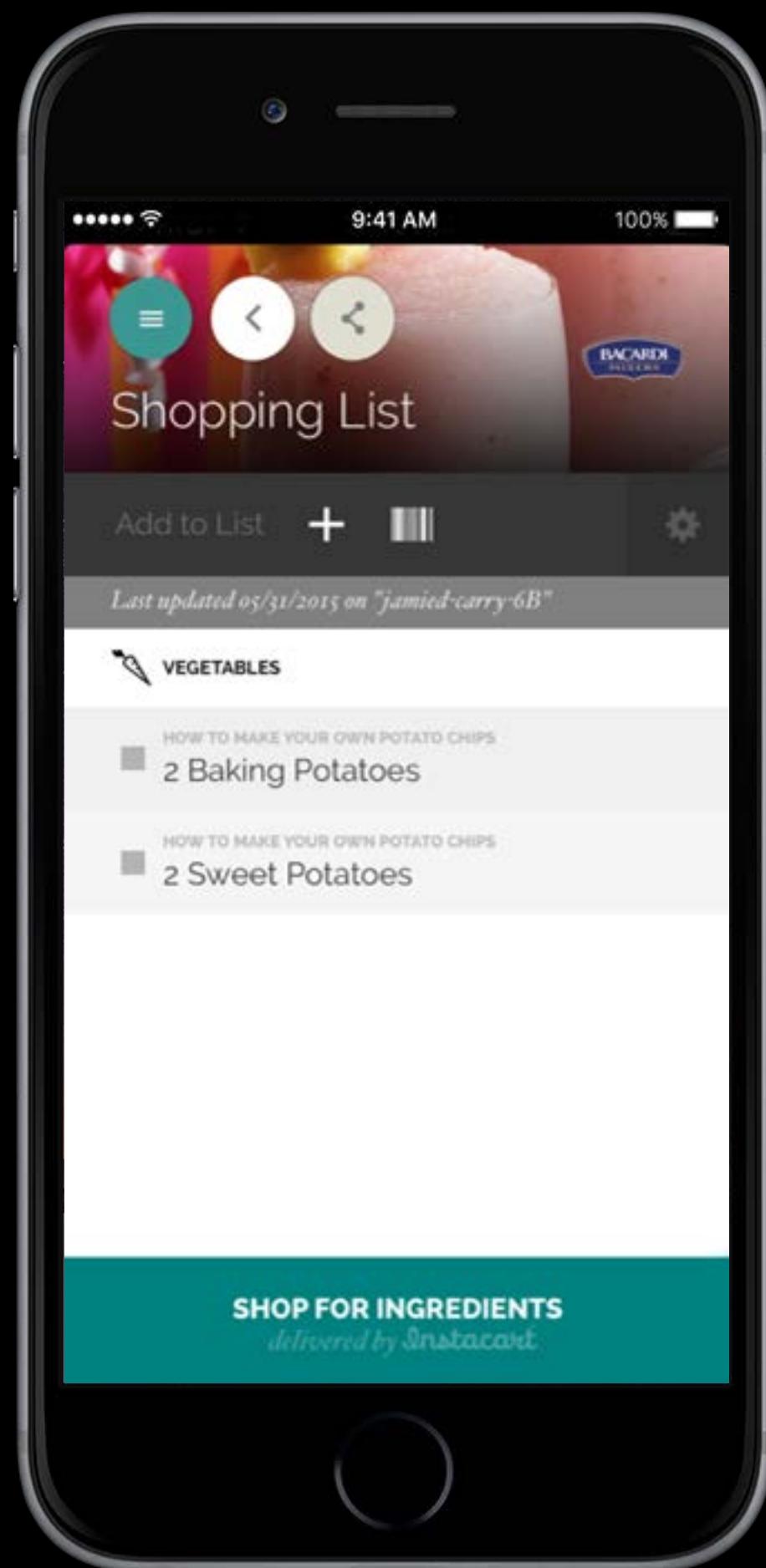


On-Device Index

Item 1

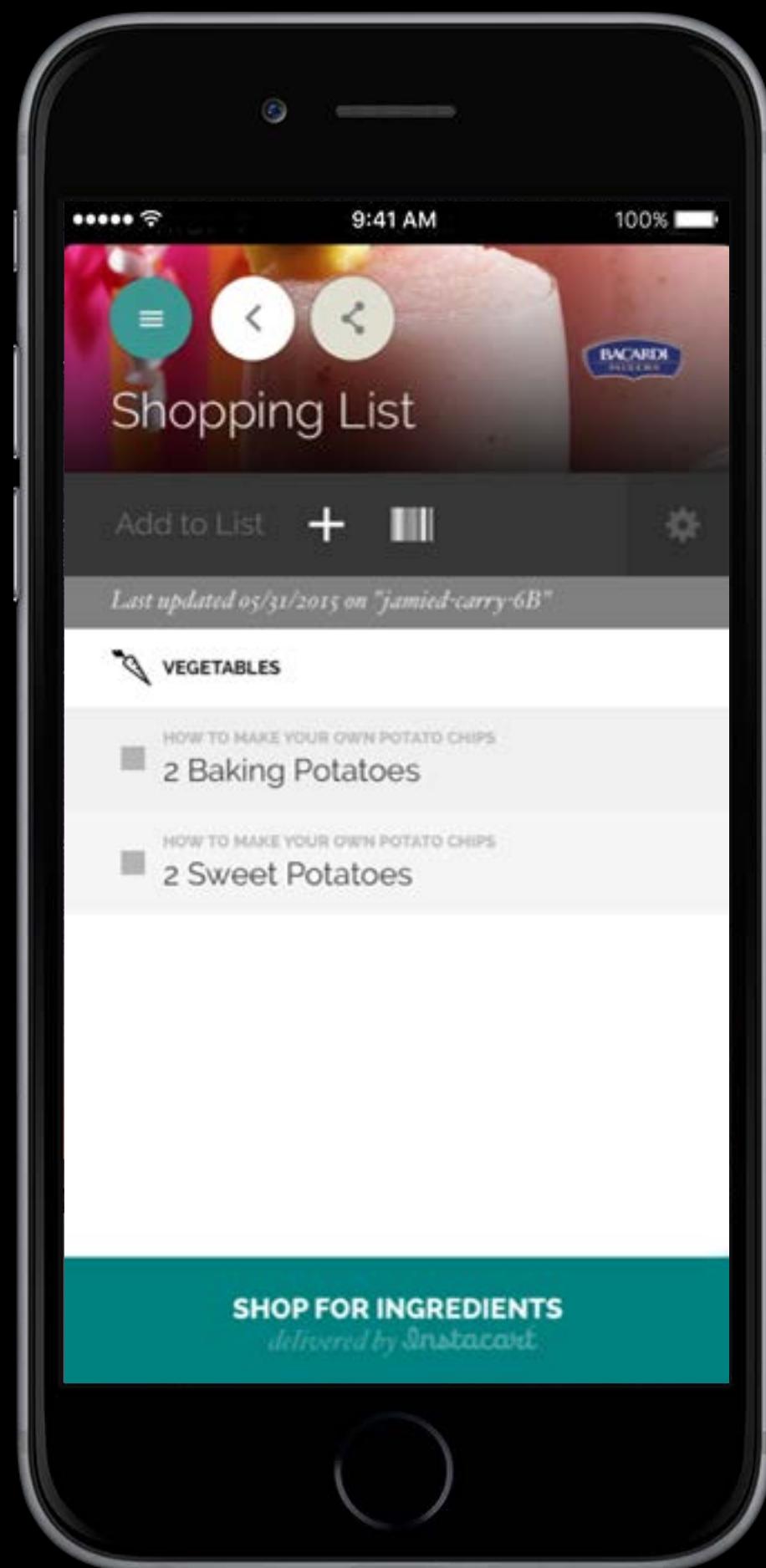
NSUserActivity

App search



NSUserActivity

App search



NSUserActivity

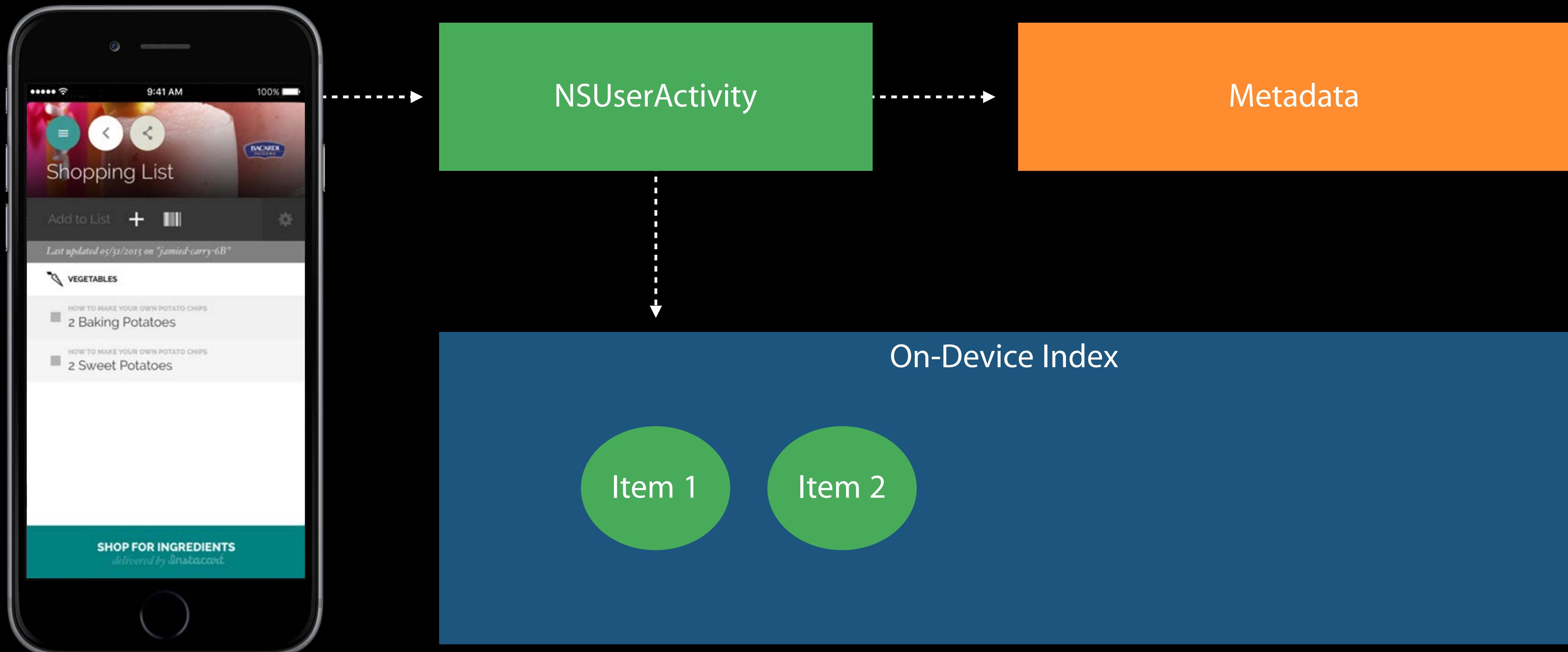
Metadata

On-Device Index

Item 1

NSUserActivity

App search



NSUserActivity API

NEW

NSUserActivity API

NEW

Enable Capabilities

```
var eligibleForHandoff: Bool  
var eligibleForSearch: Bool  
var eligibleForPublicIndexing: Bool
```

NSUserActivity API

NEW

Enable Capabilities

```
var eligibleForHandoff: Bool  
var eligibleForSearch: Bool  
var eligibleForPublicIndexing: Bool
```

Provide Attributes and Keywords

```
var title: String?  
var keywords: Set<String>  
var contentAttributeSet: CSSearchableItemAttributeSet?  
var expirationDate: NSDate
```

NSUserDefaults API

NEW

Enable Capabilities

```
var eligibleForHandoff: Bool  
var eligibleForSearch: Bool  
var eligibleForPublicIndexing: Bool
```

Provide Attributes and Keywords

```
var title: String?  
var keywords: Set<String>  
var contentAttributeSet: CSSearchableItemAttributeSet?  
var expirationDate: NSDate
```

Restoring on the Web

```
var webpageURL: NSURL?
```

Create Activity

NEW

Create Activity

NEW

```
var activity: NSUserActivity = NSUserActivity(activityType:  
    "com.yummly/browseRecipe")
```

Create Activity

NEW

```
var activity: NSUserActivity = NSUserActivity(activityType:  
"com.yummly/browseRecipe")
```

```
activity.title = "Baked Potato Chips"  
activity.userInfo = [{"id": "http://www.yummly.com/recipe/BPC-983195"}]
```

Create Activity

NEW

```
var activity: NSUserActivity = NSUserActivity(activityType:  
"com.yummly/browseRecipe")  
  
activity.title = "Baked Potato Chips"  
activity.userInfo = [{"id": "http://www.yummly.com/recipe/BPC-983195"}]
```

```
activity.eligibleForSearch = true
```

Create Activity

NEW

```
var activity: NSUserActivity = NSUserActivity(activityType:  
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activity.title = "Baked Potato Chips"  
activity.userInfo = [{"id": "http://www.yummly.com/recipe/BPC-983195"}]  
  
activity.eligibleForSearch = true  
  
activity.becomeCurrent()
```

9:41 AM 100%

potato

C Cancel

YUMMLY

Baked Potato Chips
From 12Tomatoes
45 min, 6 ingredients
210 Yums

Authentic Canadian Poutine Recipe
From Seasons and Suppers
60 min, 11 ingredients
114 Yums

Roasted Rosemary Dijon Potatoes
From Renee's Kitchen Adventures
35 mins, 6 ingredients
190 Yums

WIKIPEDIA

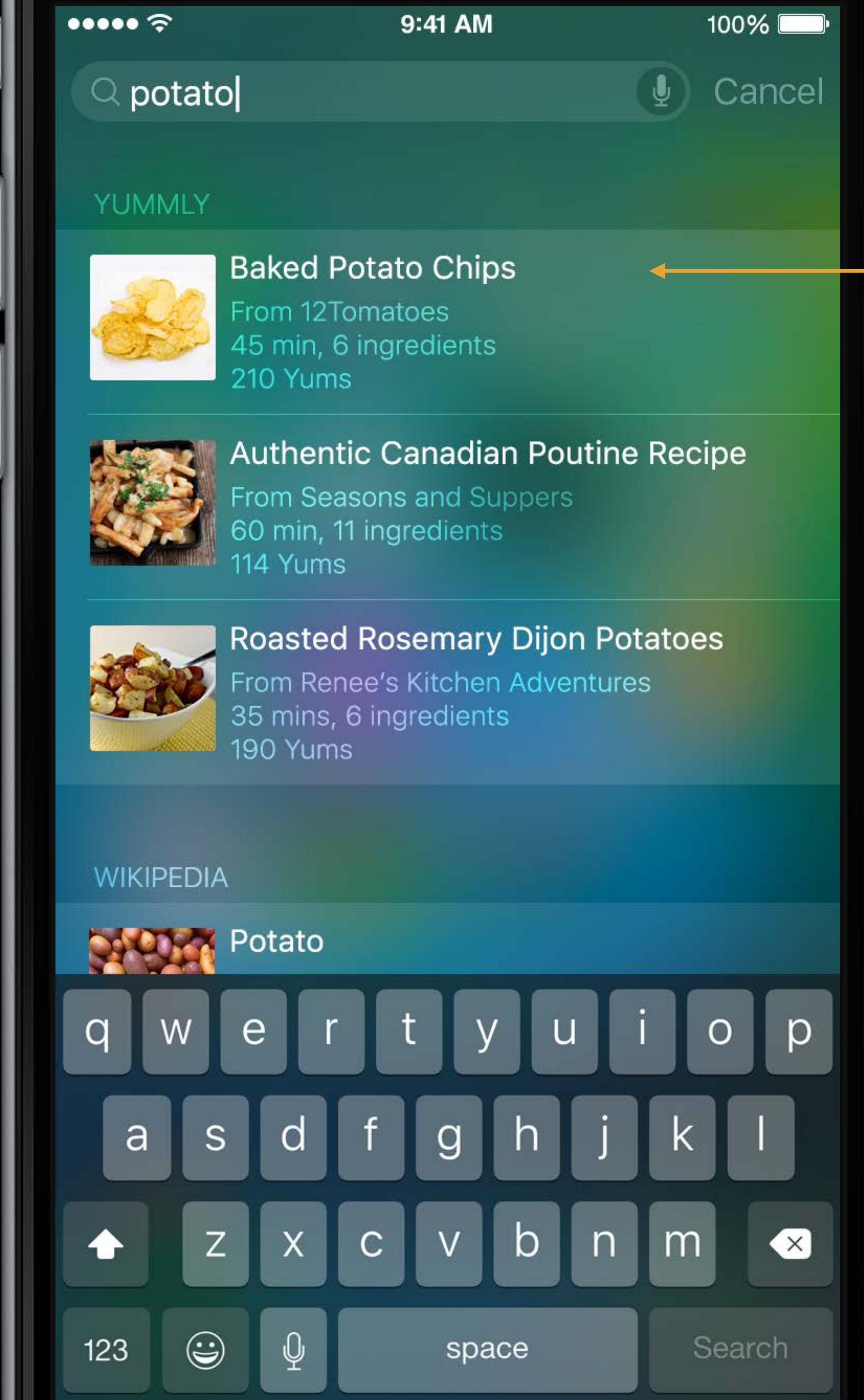
Potato

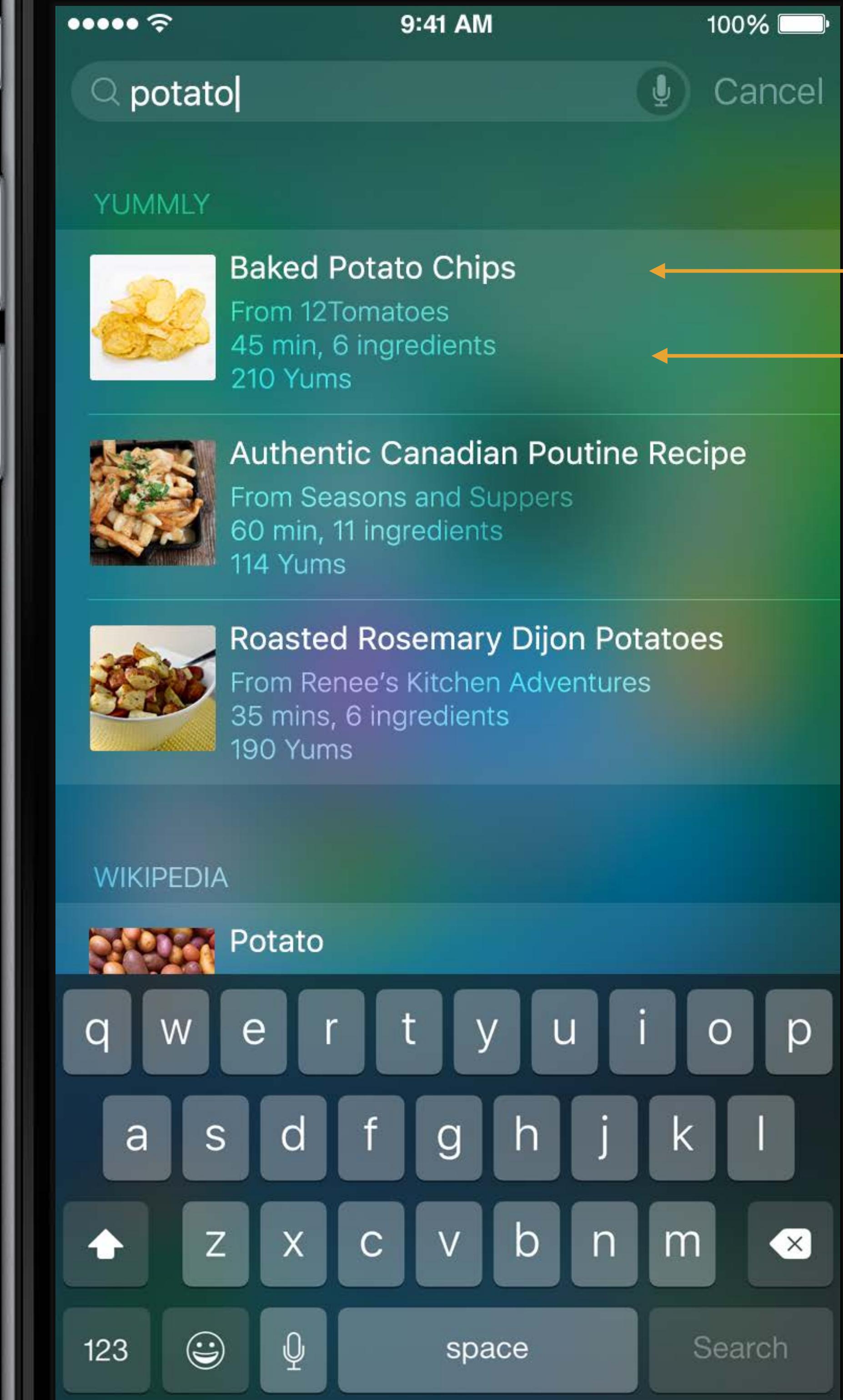
q w e r t y u i o p

a s d f g h j k l

z x c v b n m

123 ☺ space Search

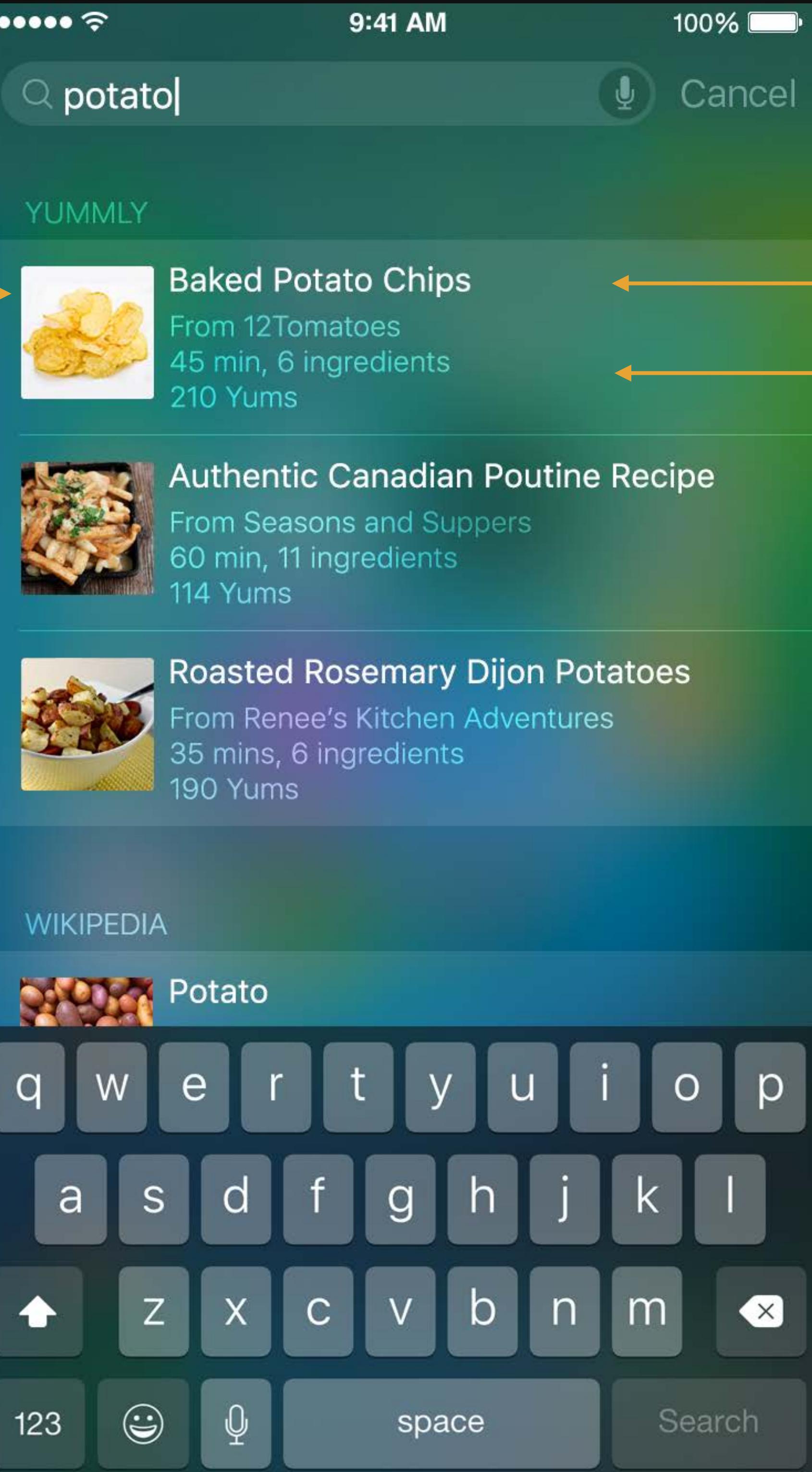




activity.title

contentAttributeSet.
contentDescription

contentAttributeSet.
thumbnailData



activity.title

contentAttributeSet.
contentDescription

Continue Activity

UIApplicationDelegate

```
func application(UIApplication, continueUserActivity: NSUserActivity, restorationHandler: [AnyObject]? -> Void) -> Bool {  
  
    return true  
}
```

Continue Activity

UIApplicationDelegate

```
func application(UIApplication, continueUserActivity userActivity:  
    NSUserActivity, restorationHandler: [AnyObject]? -> Void) -> Bool {  
  
    return true  
}
```

Continue Activity

UIApplicationDelegate

```
func application(UIApplication, continueUserActivity userActivity:  
    NSUserActivity, restorationHandler: [AnyObject]? -> Void) -> Bool {  
  
    if userActivity.activityType == "com.yummly/browseRecipe" {  
  
        // Restore state for userActivity and userInfo  
  
    }  
  
    return true  
}
```

••••• ⌘ 9:41 AM 100% ⚡

Q potato| ⌛ Cancel

YUMMLY

 Baked Potato Chips
From 12Tomatoes
45 min, 6 ingredients
210 Yums

 Authentic Canadian Poutine Recipe
From Seasons and Suppers
60 min, 11 ingredients
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 Roasted Rosemary Dijon Potatoes
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WIKIPEDIA

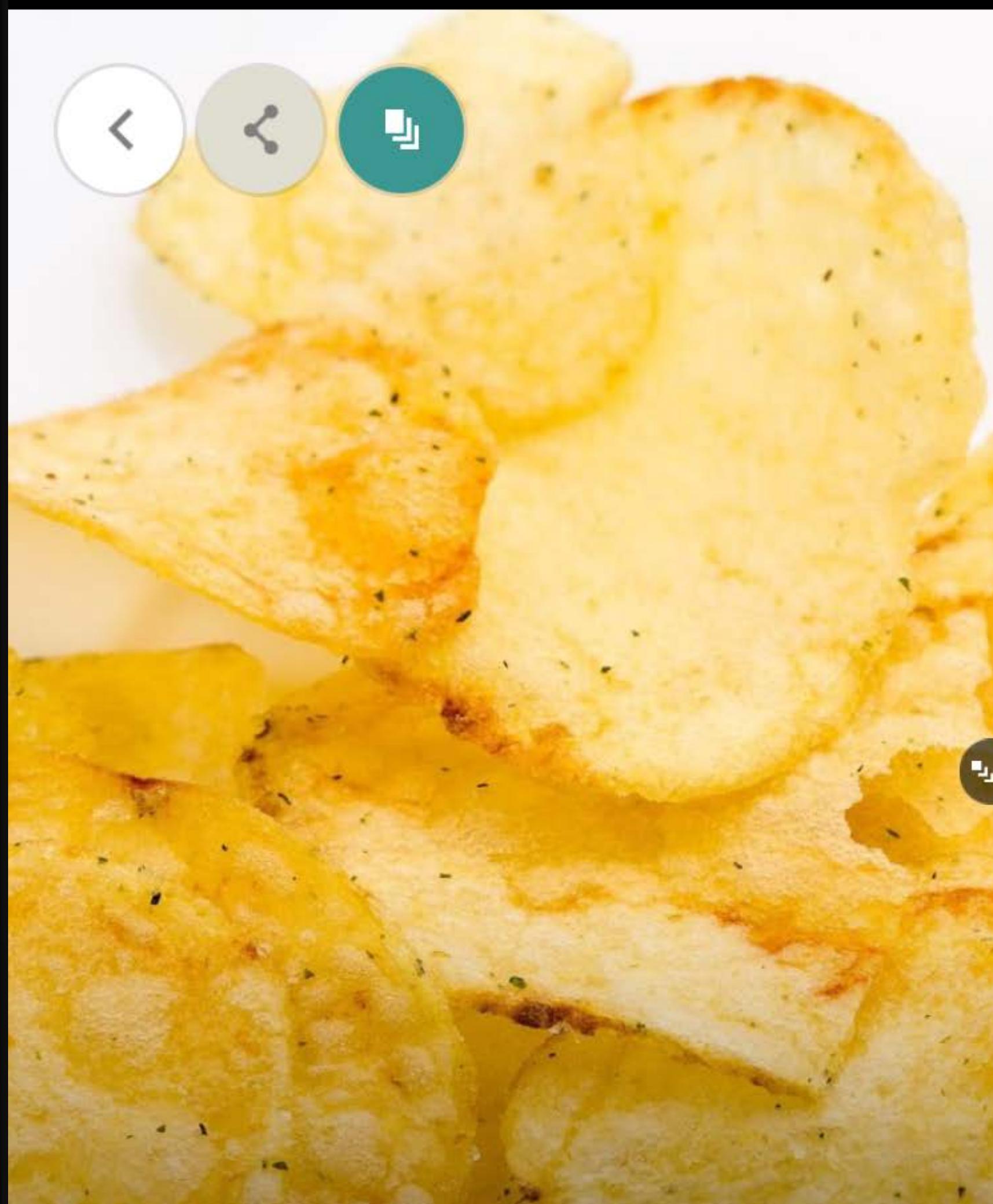
 Potato

q w e r t y u i o p
a s d f g h j k l
⇪ z x c v b n m ⌈
123 ☺ ⌛ space Search

◀ Back to Search

9:41 AM

100% 



Baked Potato Chips

12 TOMATOES



210

Ingredients

6
Count

Nutrition

310
Calories

Directions

45
Minutes

NSUserActivity and Public Indexing

NEW

NSUserActivity and Public Indexing

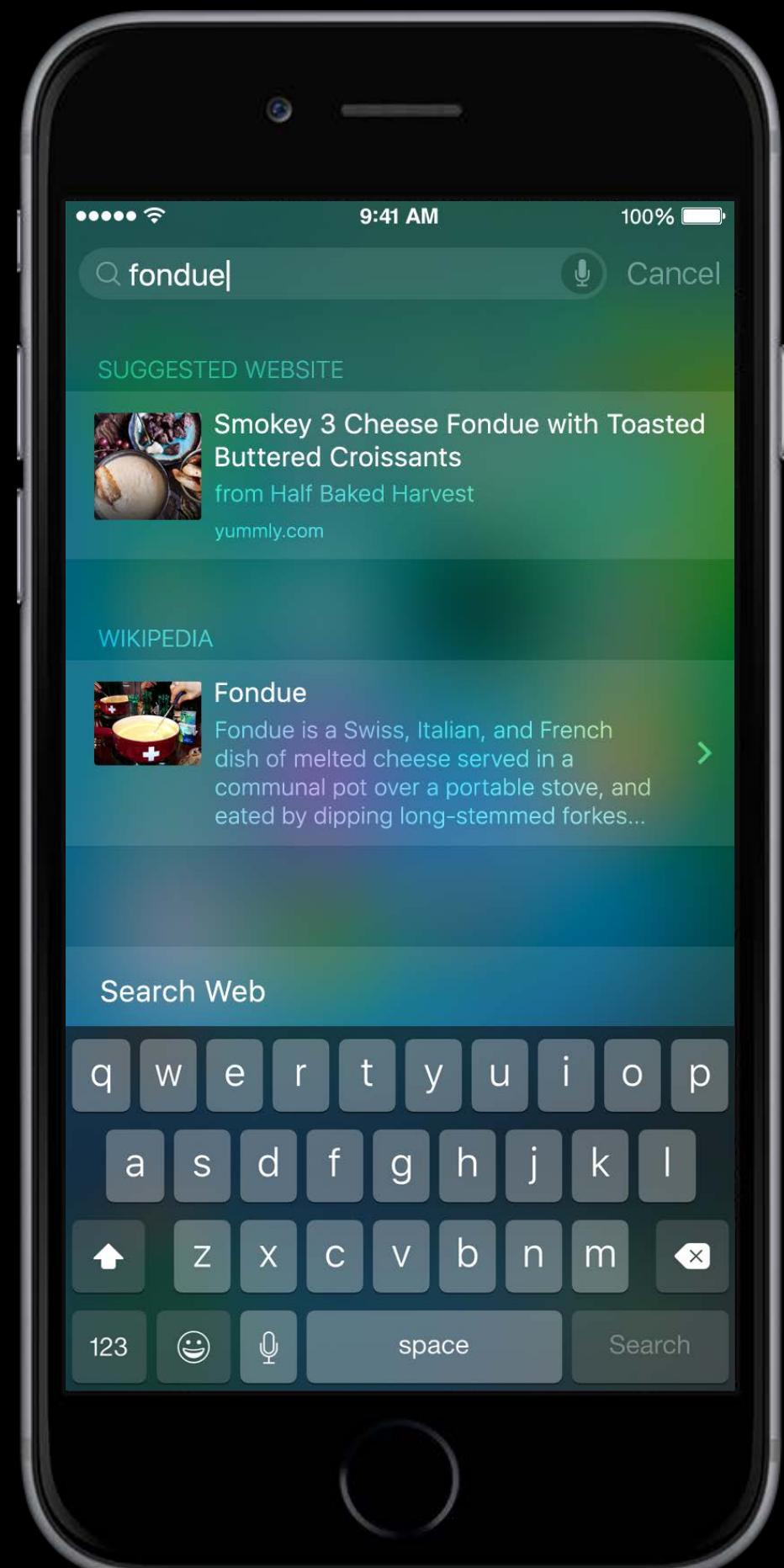
NEW

Activities can be designated as public

Multiple users engage with device results

Popular public results available to other users

Results in Search and Safari (if URL included)



NSUserActivity and Public Indexing

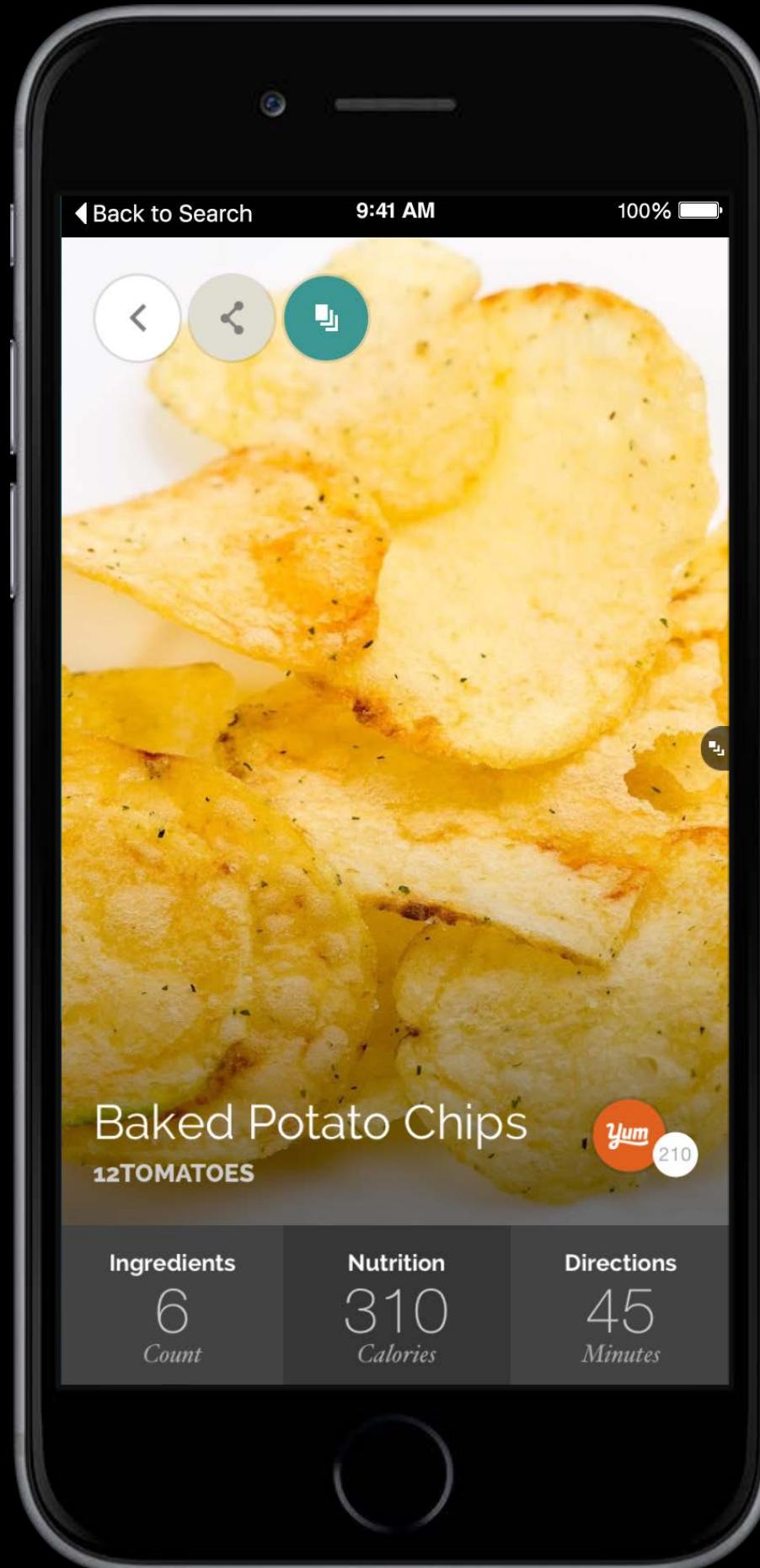
NEW



User 1

NSUserActivity and Public Indexing

NEW

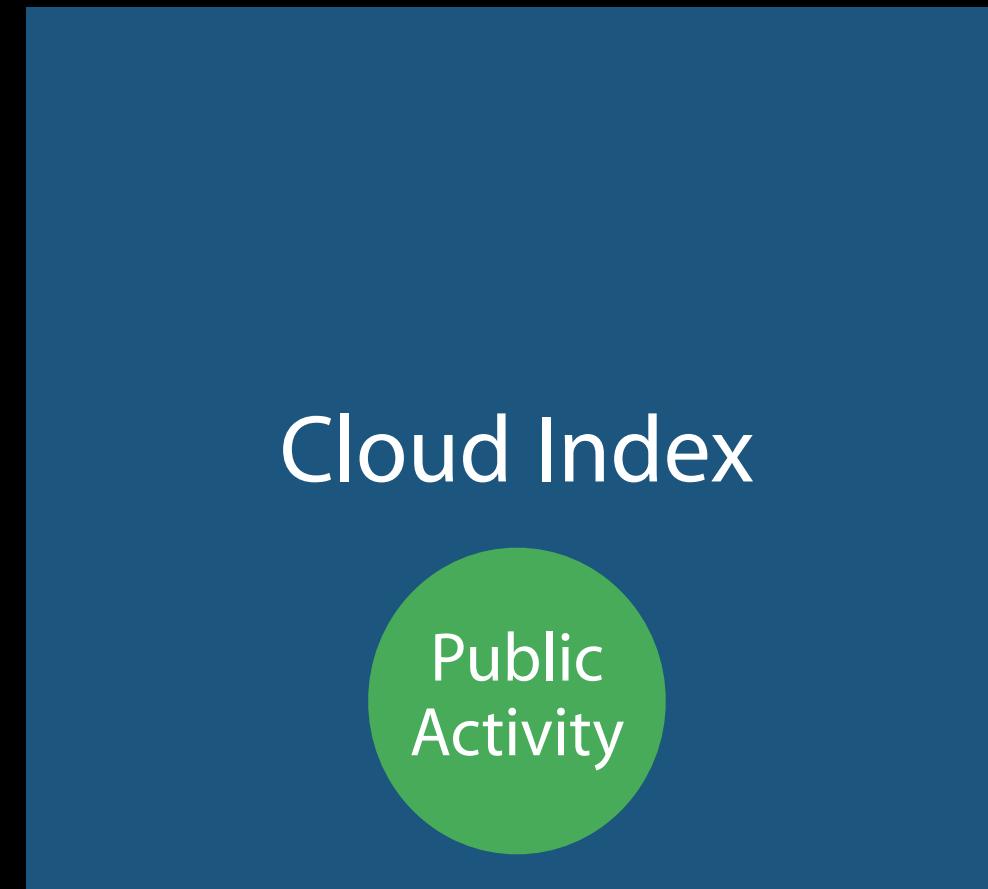
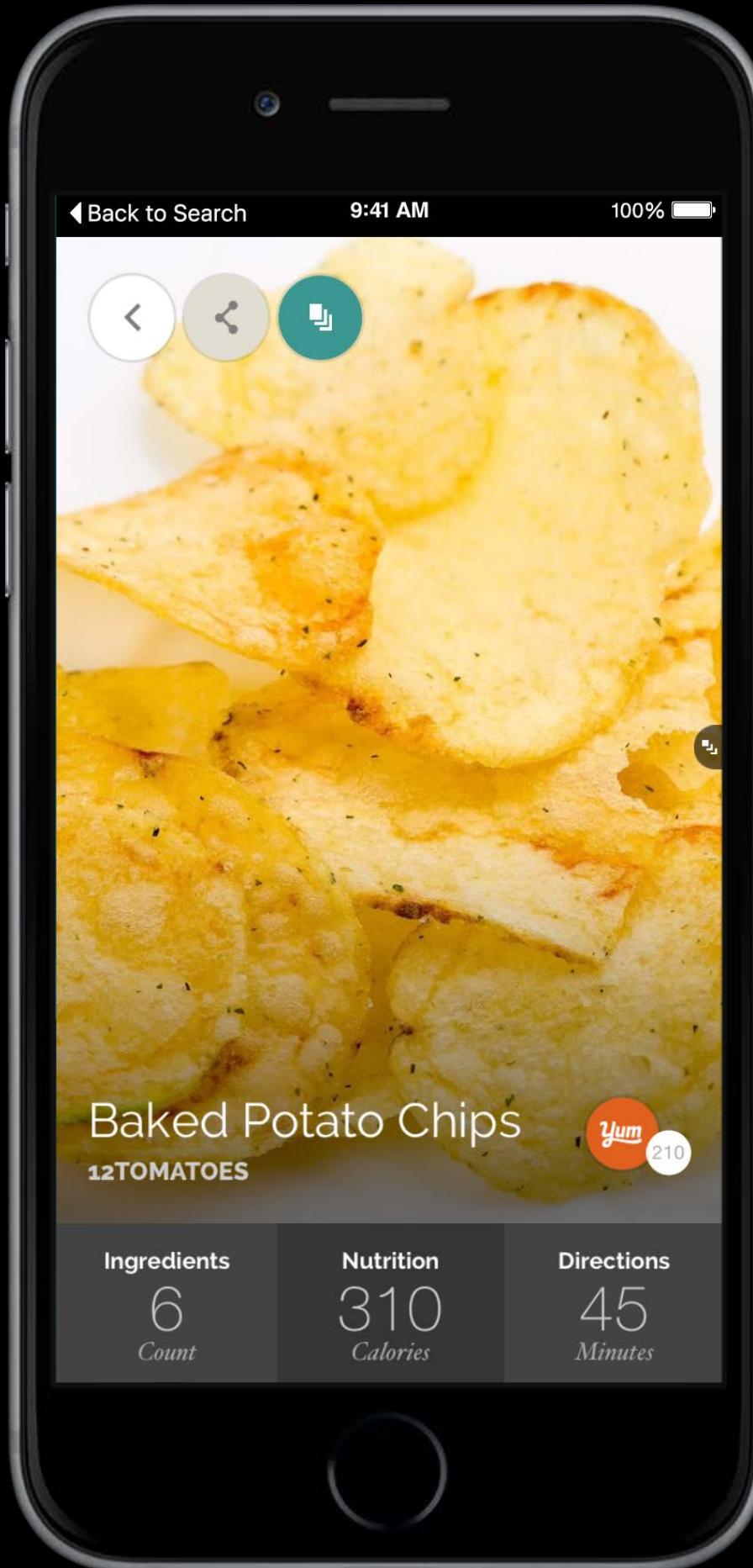


User 1

Public
Activity

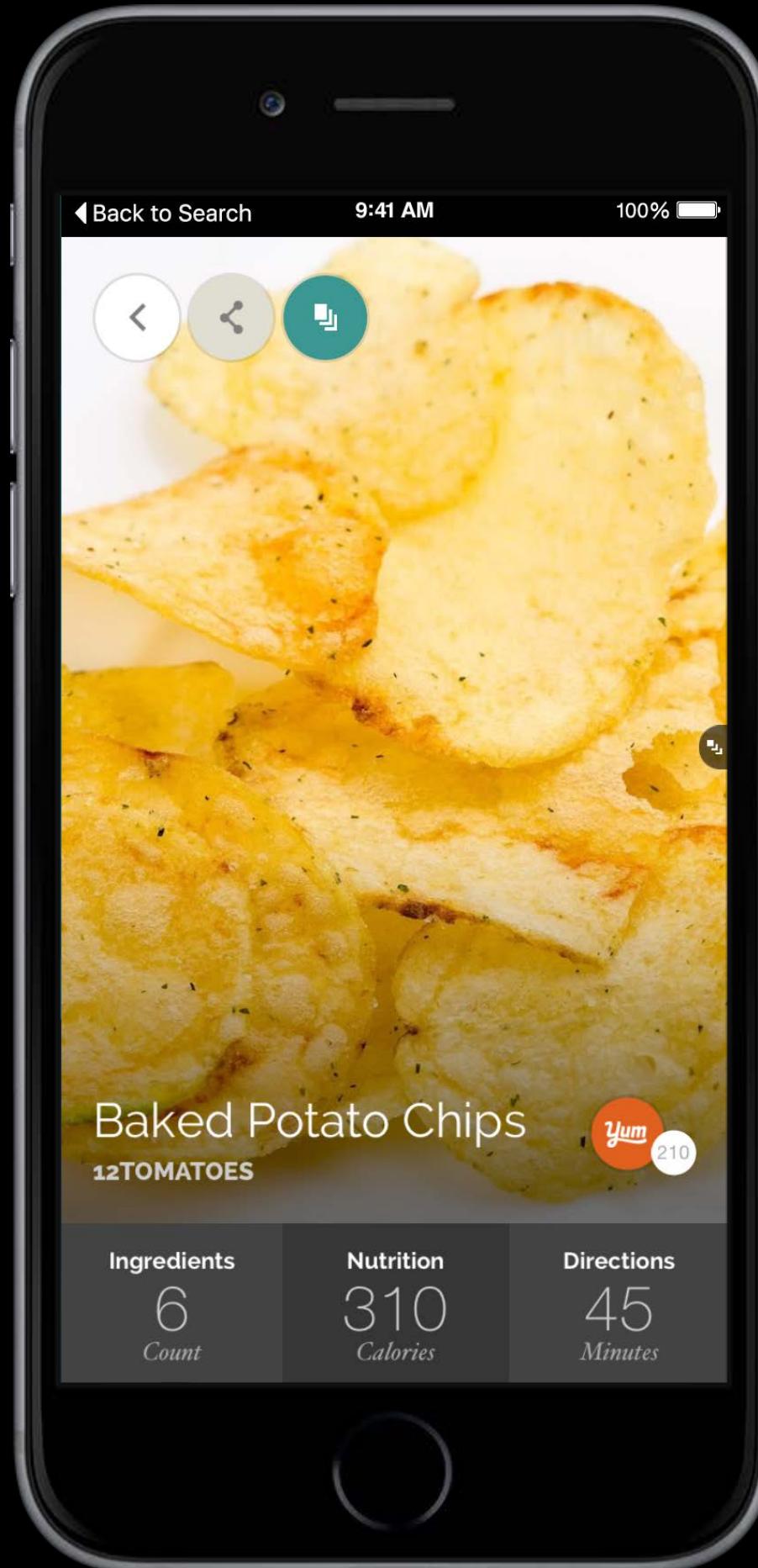
NSUserActivity and Public Indexing

NEW



NSUserActivity and Public Indexing

NEW



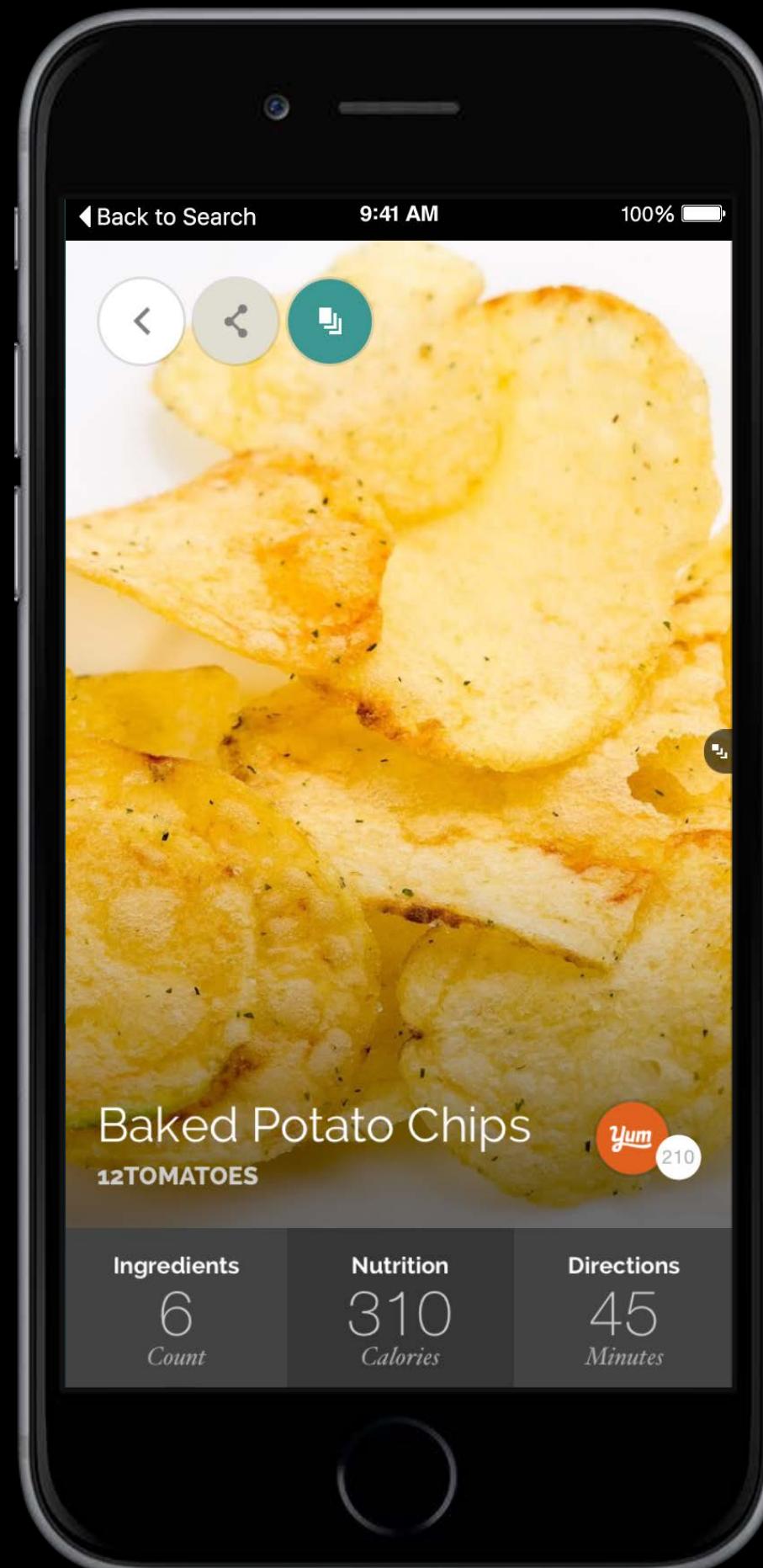
User 1



User 2

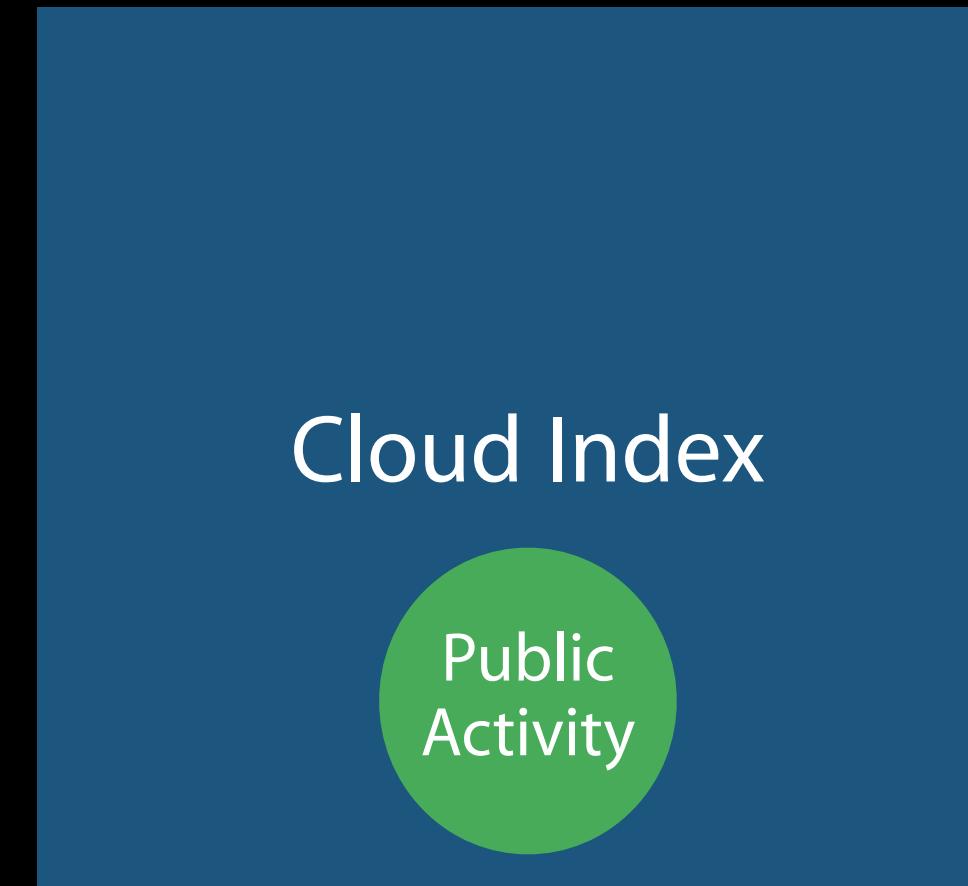
NSUserActivity and Public Indexing

NEW



User 1

Public
Activity



User 2

Public
Activity



User 3

Public
Activity

Designating Activities Public

```
var activity: NSUserActivity = NSUserActivity(activityType:  
“com.yummly/browseRecipe”)  
  
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activity.userInfo = [{"id": "http://www.yummly.com/recipe/BPC-983195"}]  
  
activity.eligibleForSearch = true  
  
activity.becomeCurrent()
```

Designating Activities Public

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activity.userInfo = [{"id": "http://www.yummly.com/recipe/BPC-983195"}]  
  
activity.eligibleForSearch = true  
  
activity.eligibleForPublicIndexing = true  
  
activity.becomeCurrent()
```

NSUserActivity and Public Indexing

Privacy

NSUserActivity and Public Indexing

Privacy

Activities are private by default

Designate “public” if searchable activity fields are solely public

Provisions to prevent user-specific activities from being indexed

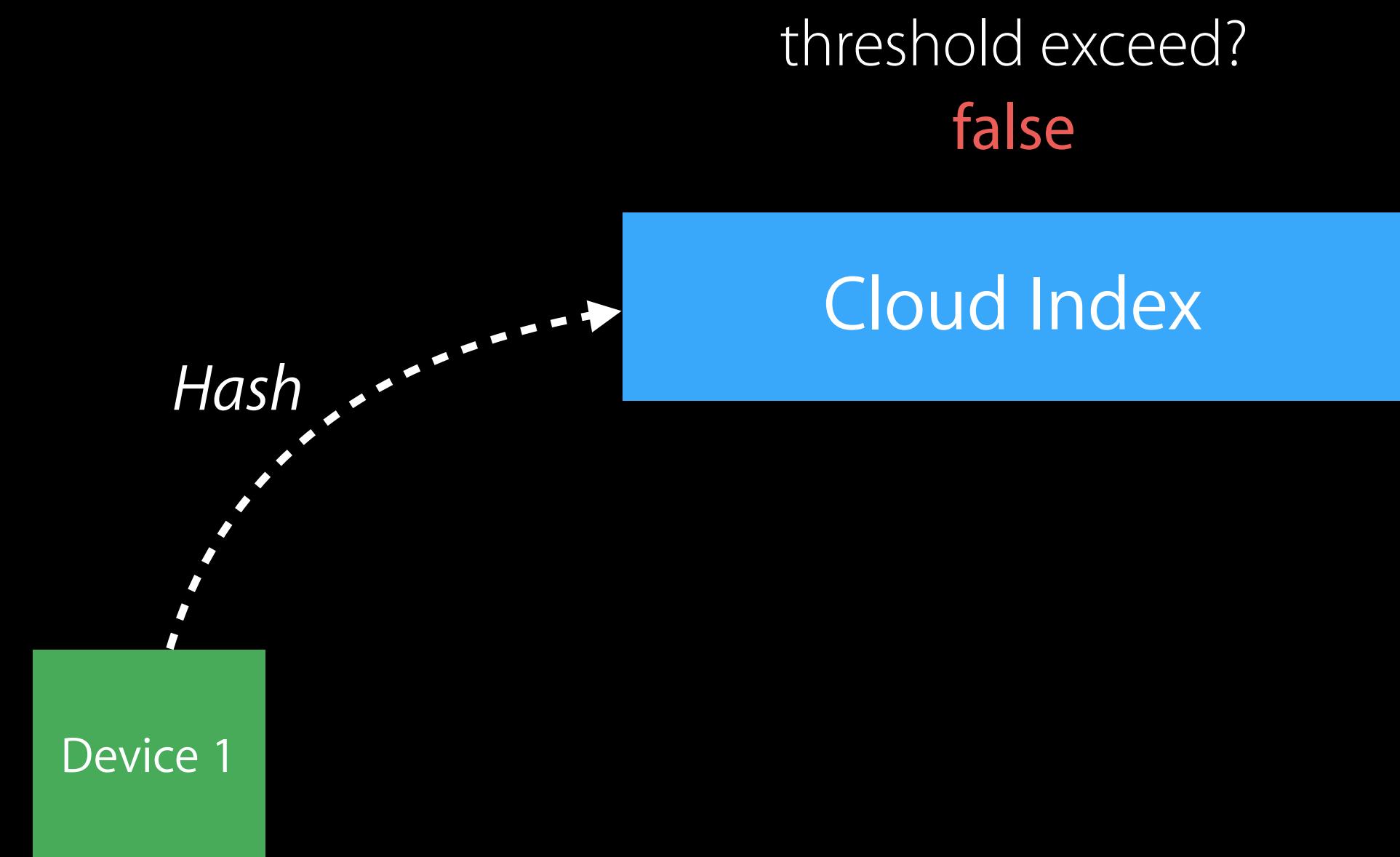
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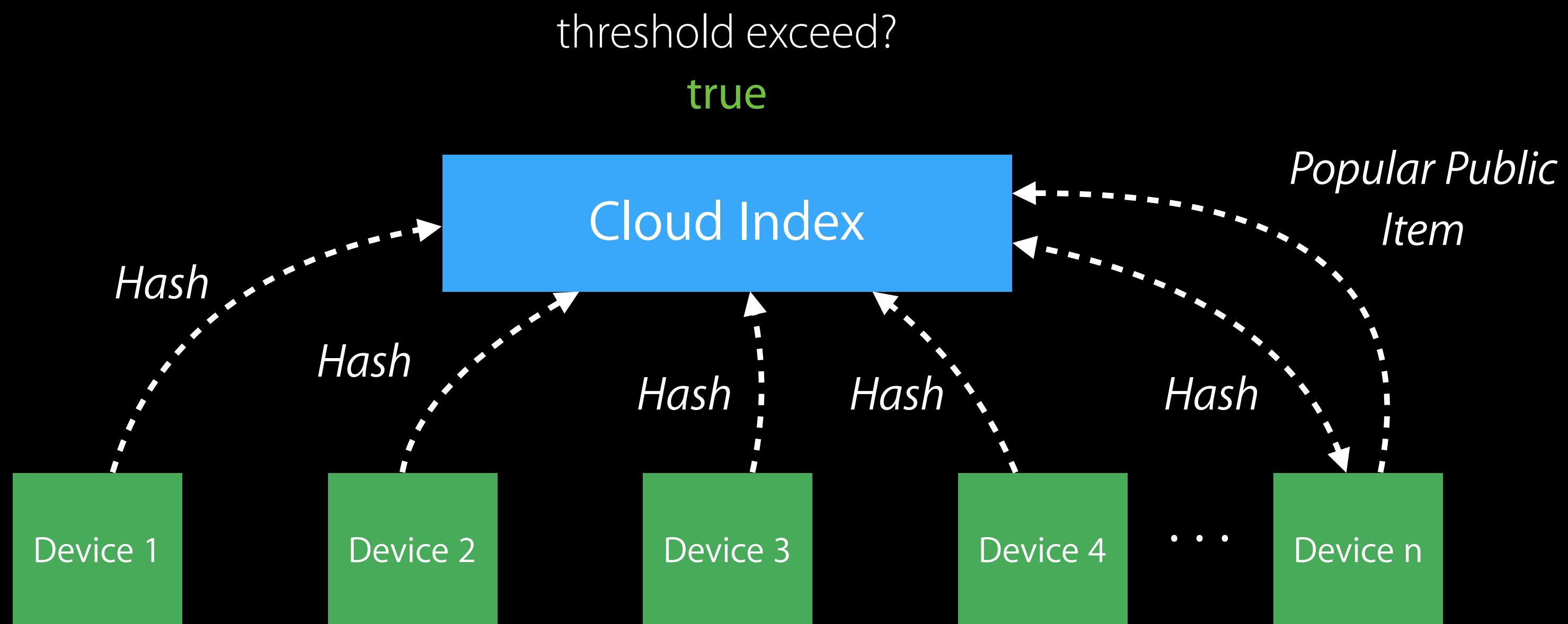
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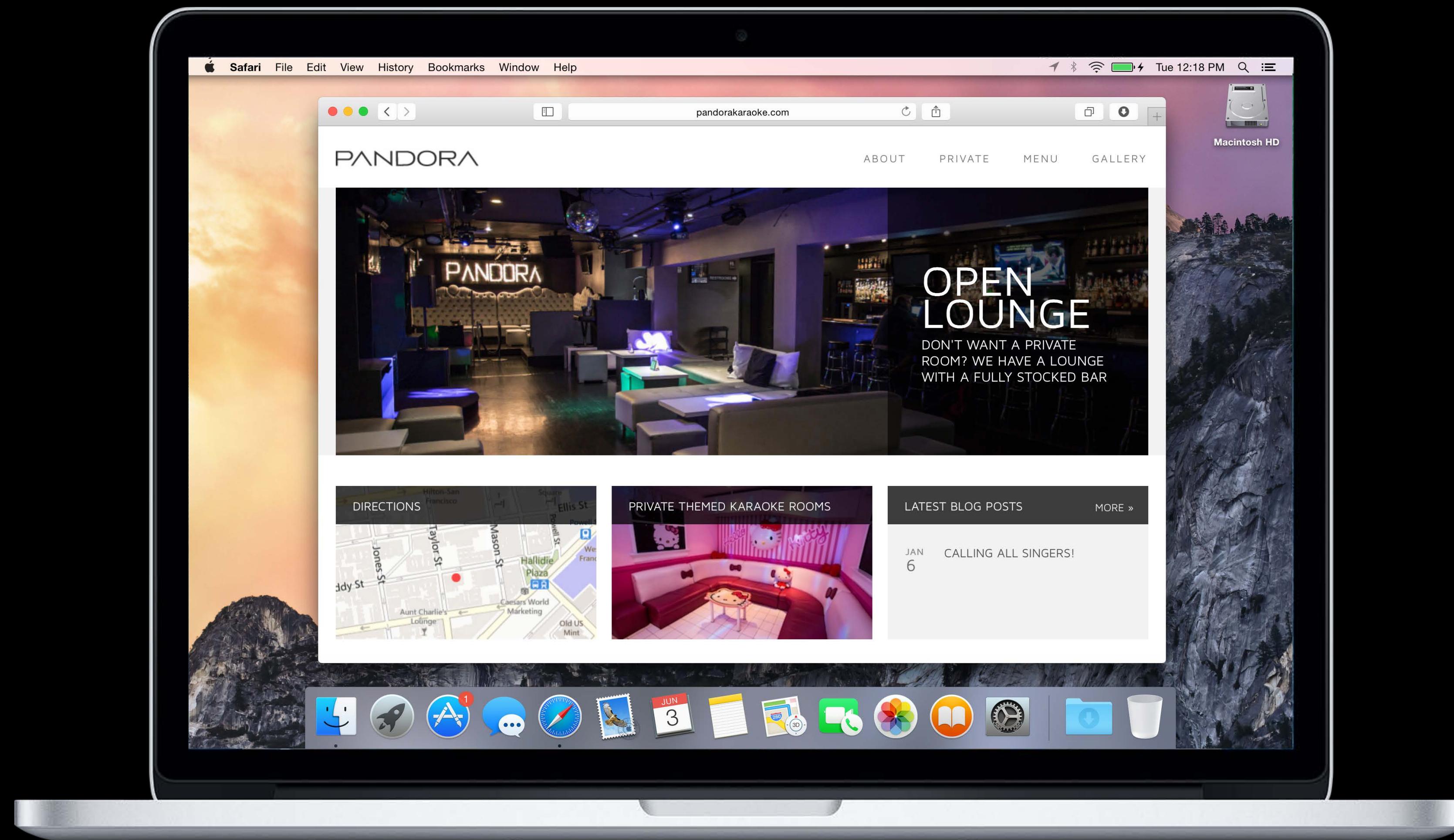


Additional Benefits

Additional Benefits

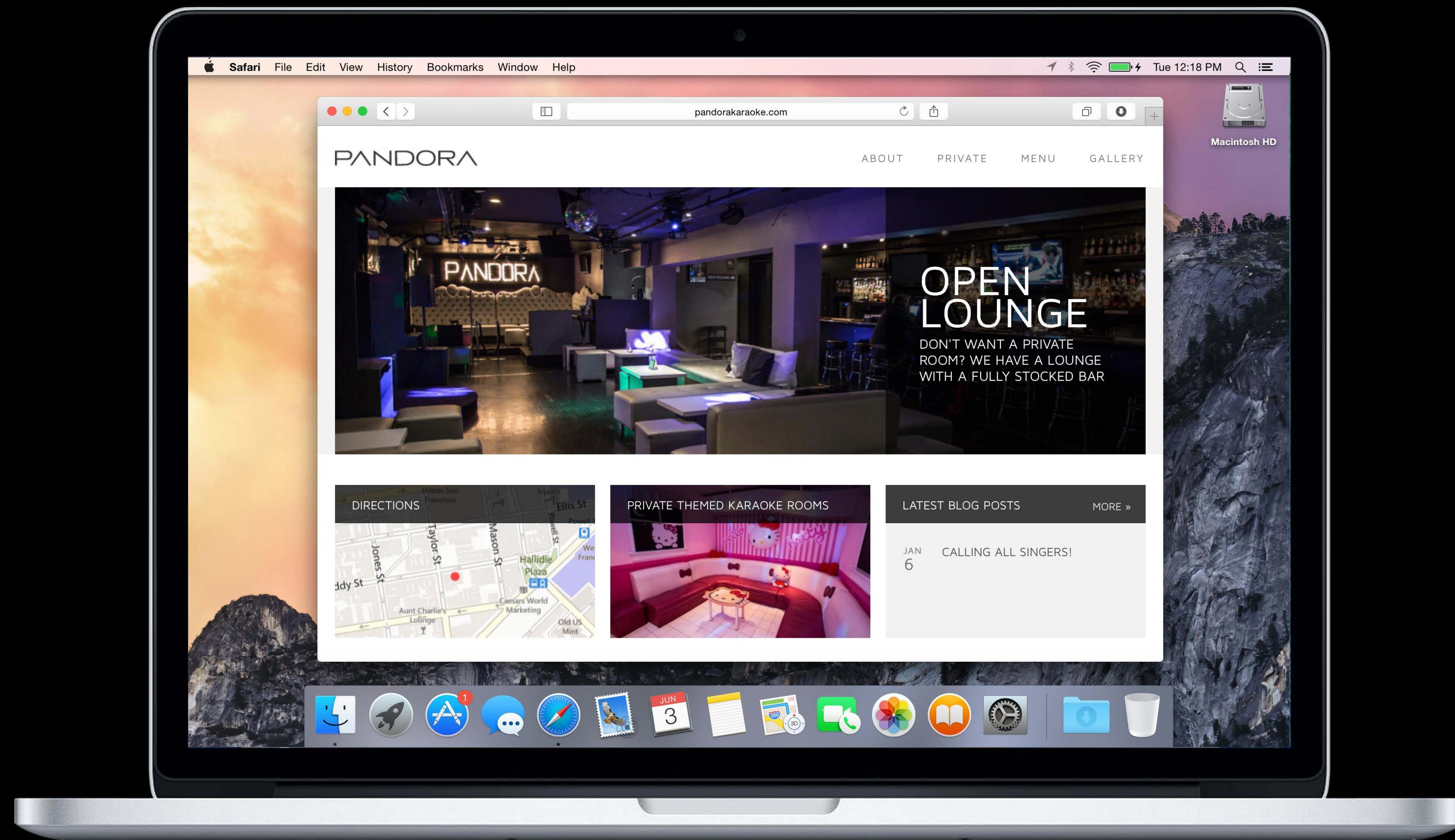
Additional Benefits

Handoff



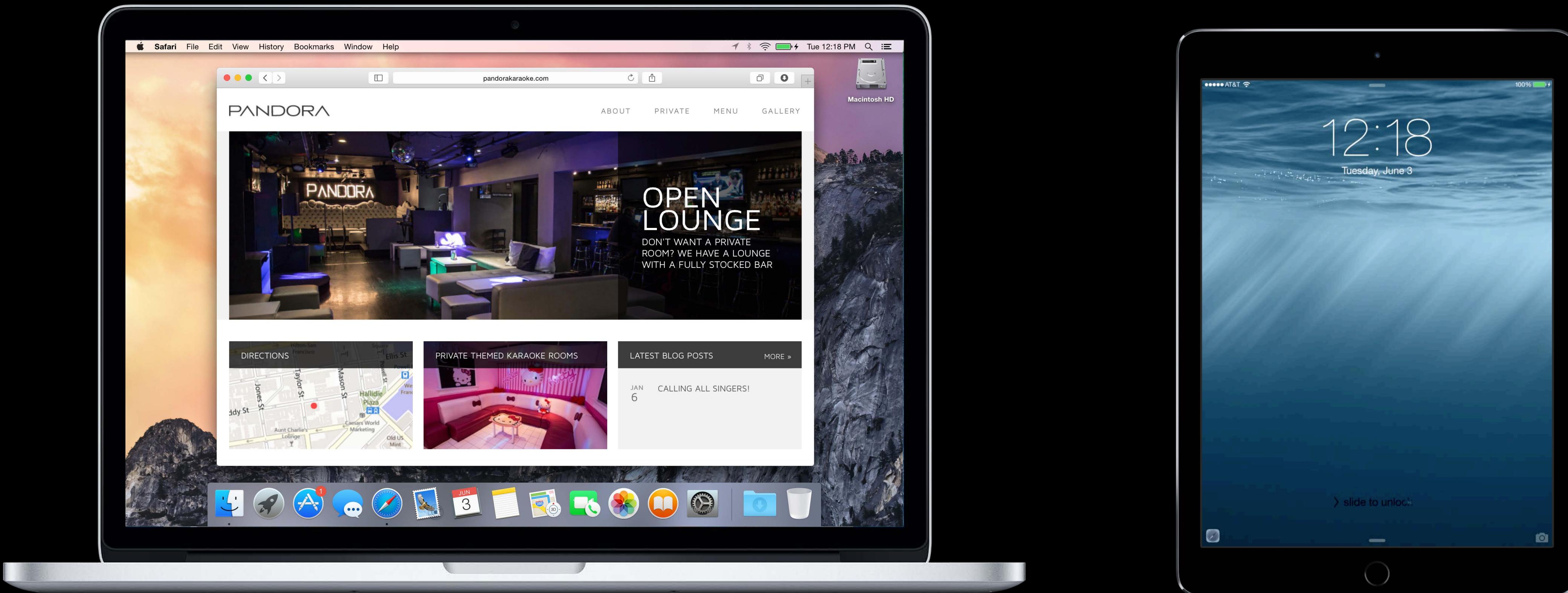
Additional Benefits

Handoff



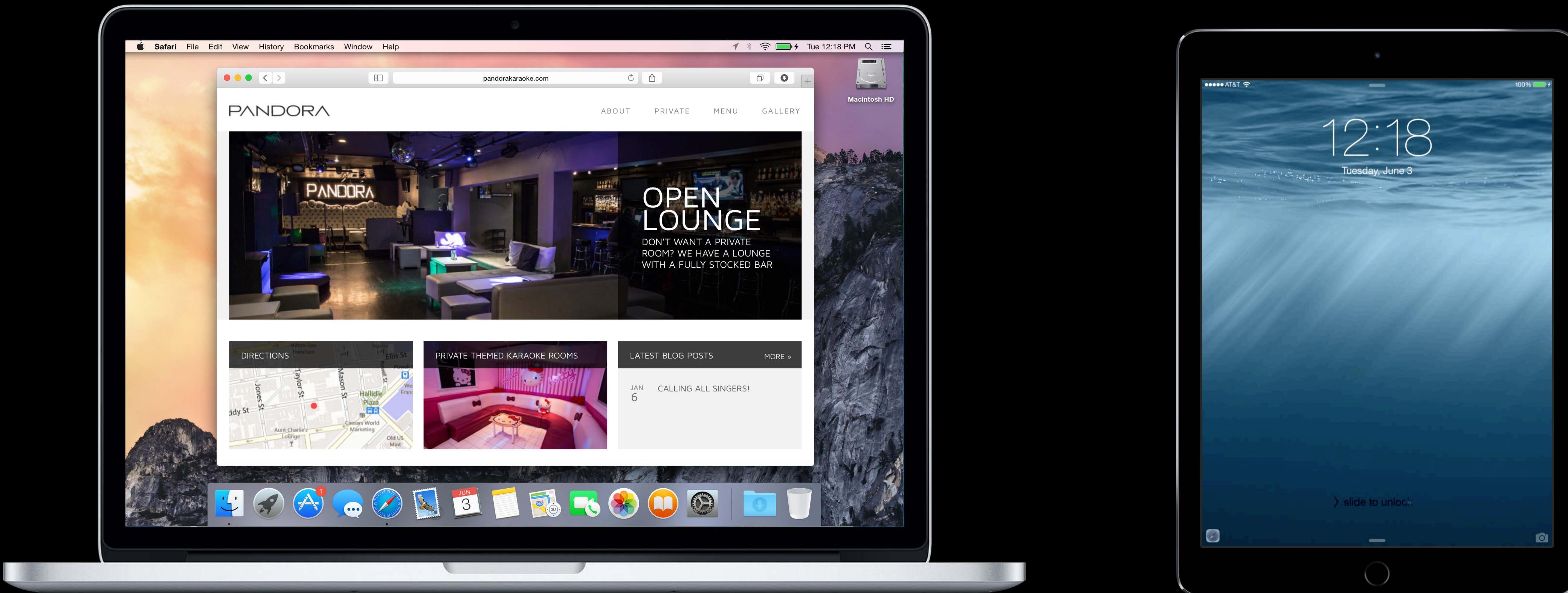
Additional Benefits

Handoff



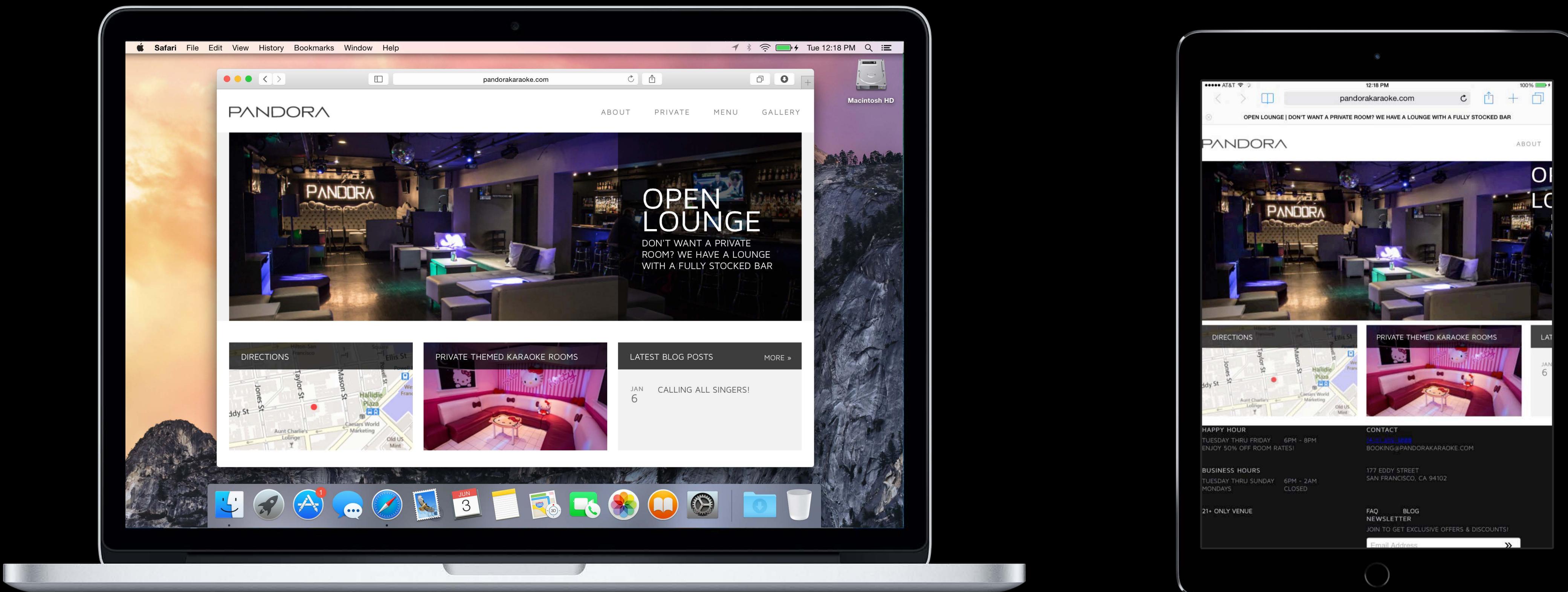
Additional Benefits

Handoff



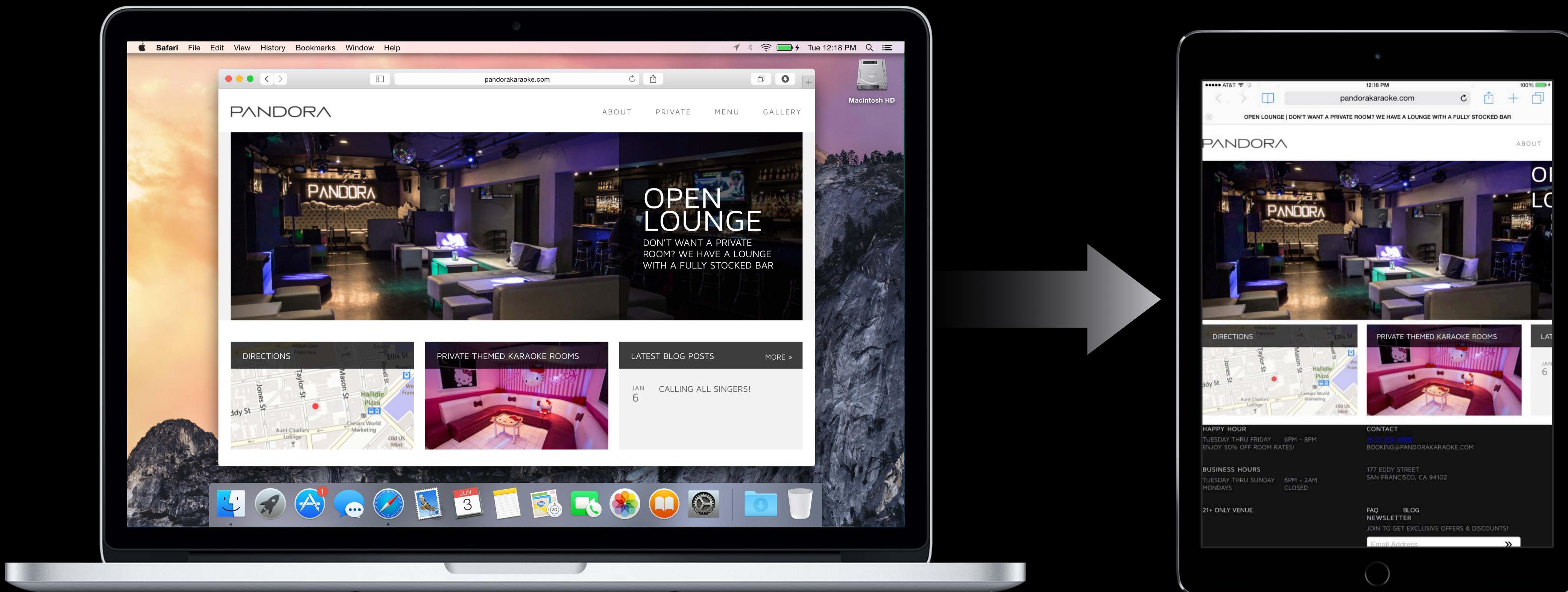
Additional Benefits

Handoff



Additional Benefits

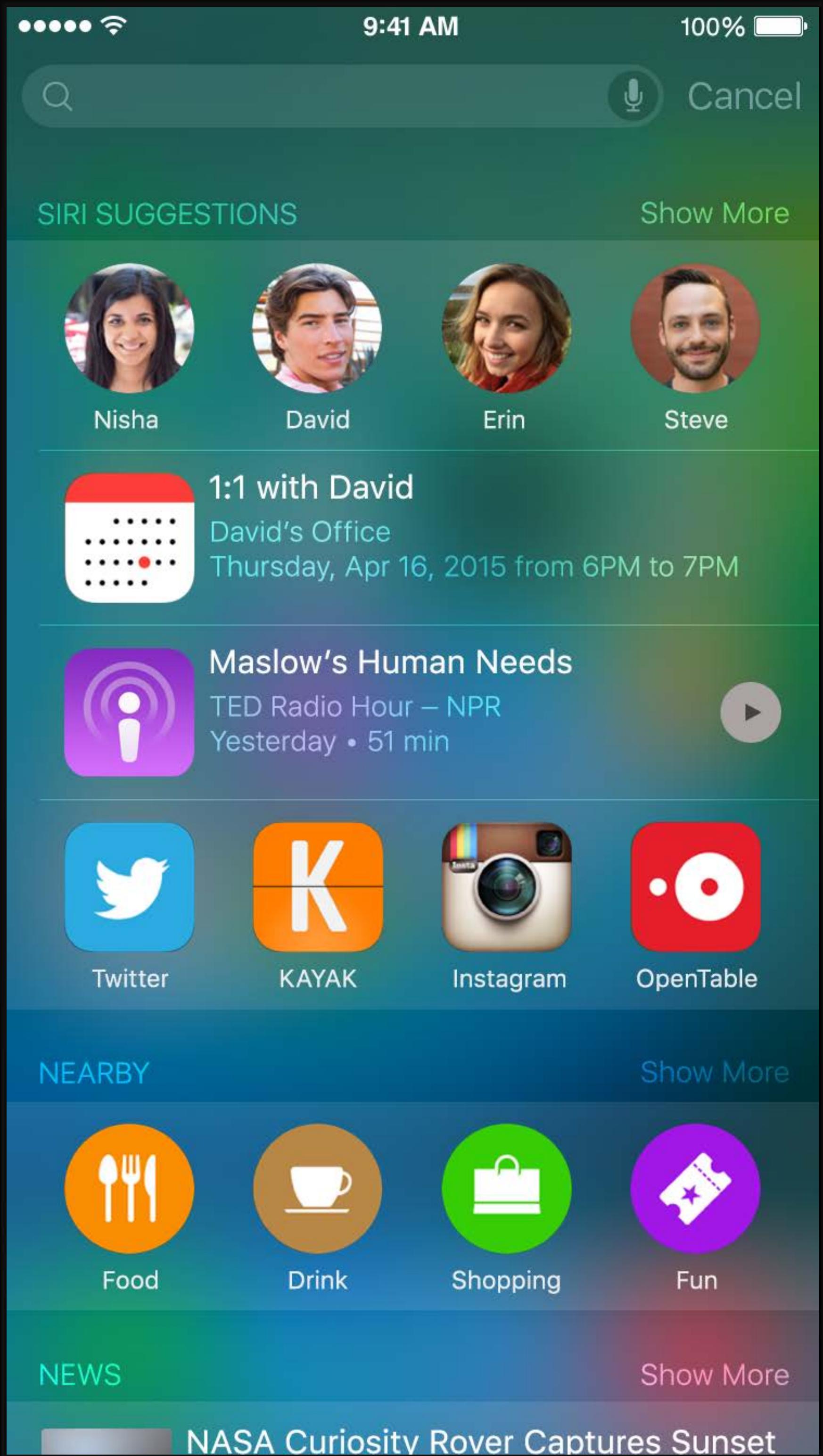
Handoff

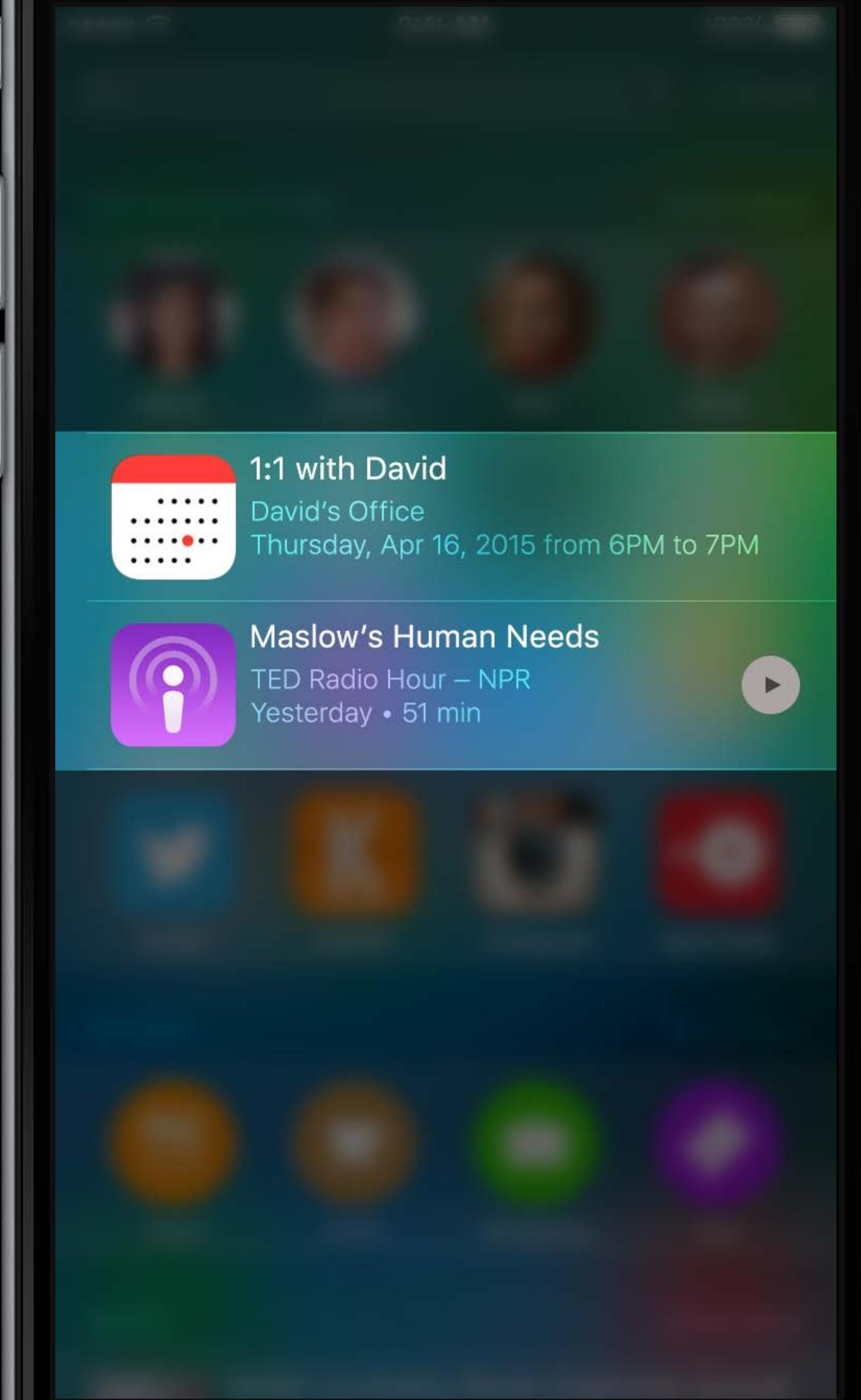


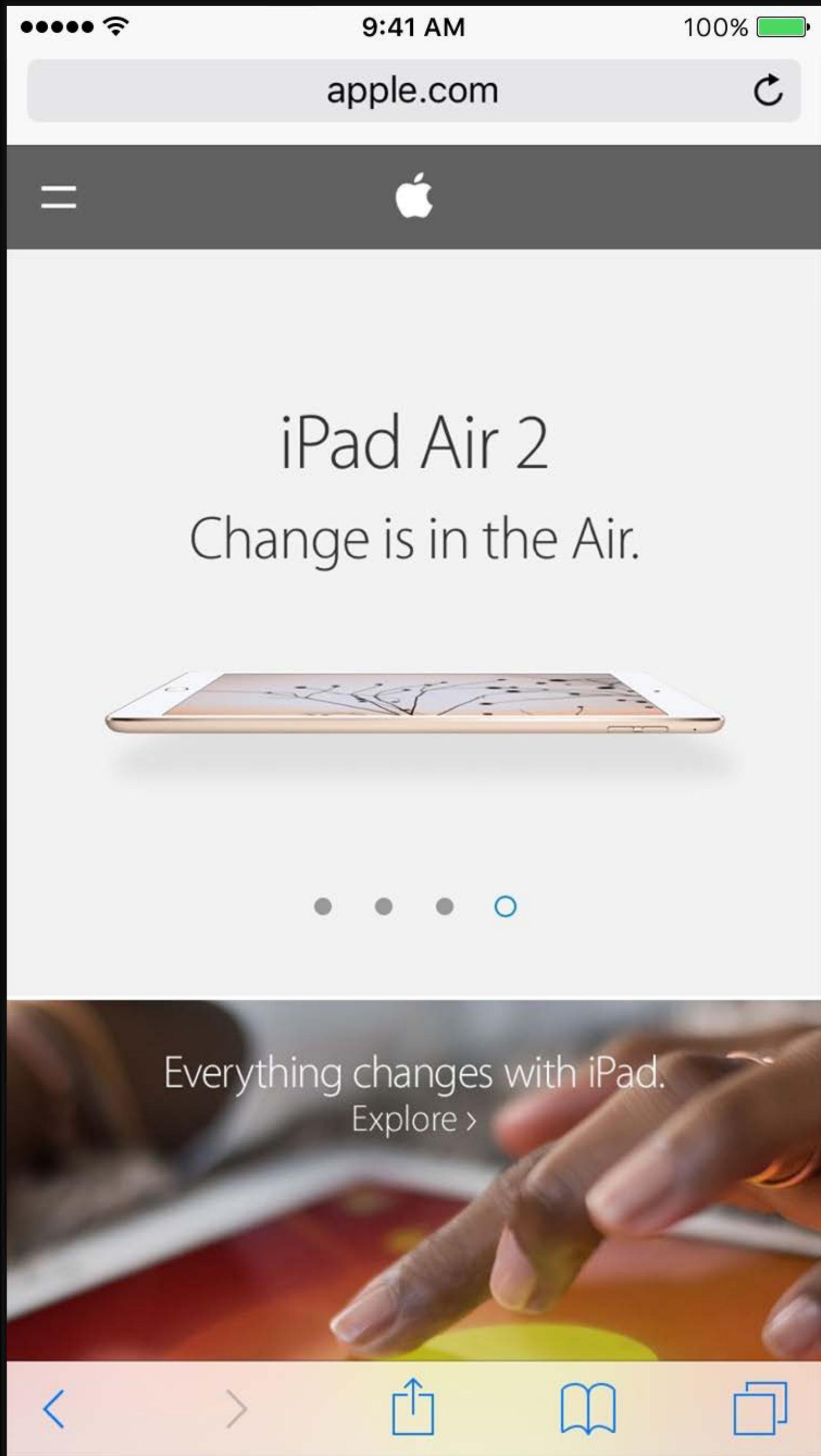
Additional Benefits

Siri suggestions and smart reminders











CoreSpotlight

Indexes any app content



Viewed App Content



Any App Content



App Content on Web

CoreSpotlight

Indexes any app content



Viewed App Content



Any App Content



App Content on Web

CoreSpotlight

Overview

NEW

CoreSpotlight

Overview

NEW

New Framework in iOS 9

For any app content

Methods to add, update, and delete items

Used by Messages, Mail, Calendar, and Notes

CoreSpotlight API

NEW

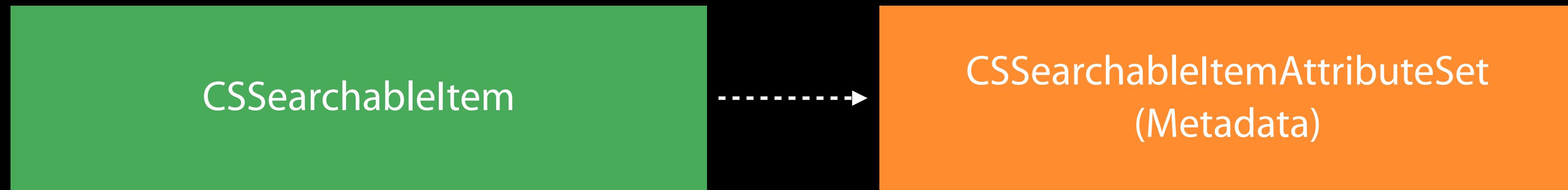
CoreSpotlight API

NEW

CSSearchableItem

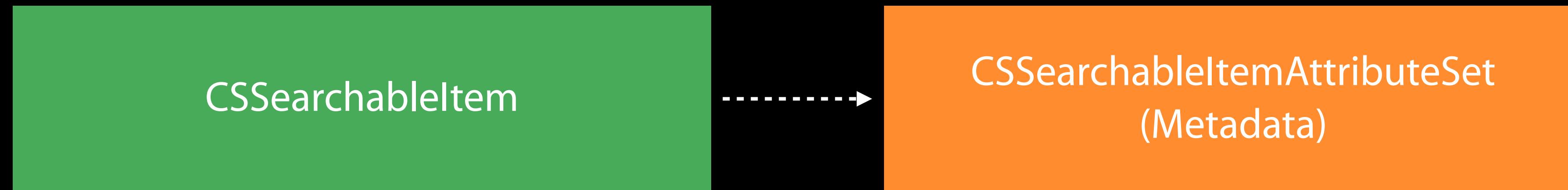
CoreSpotlight API

NEW



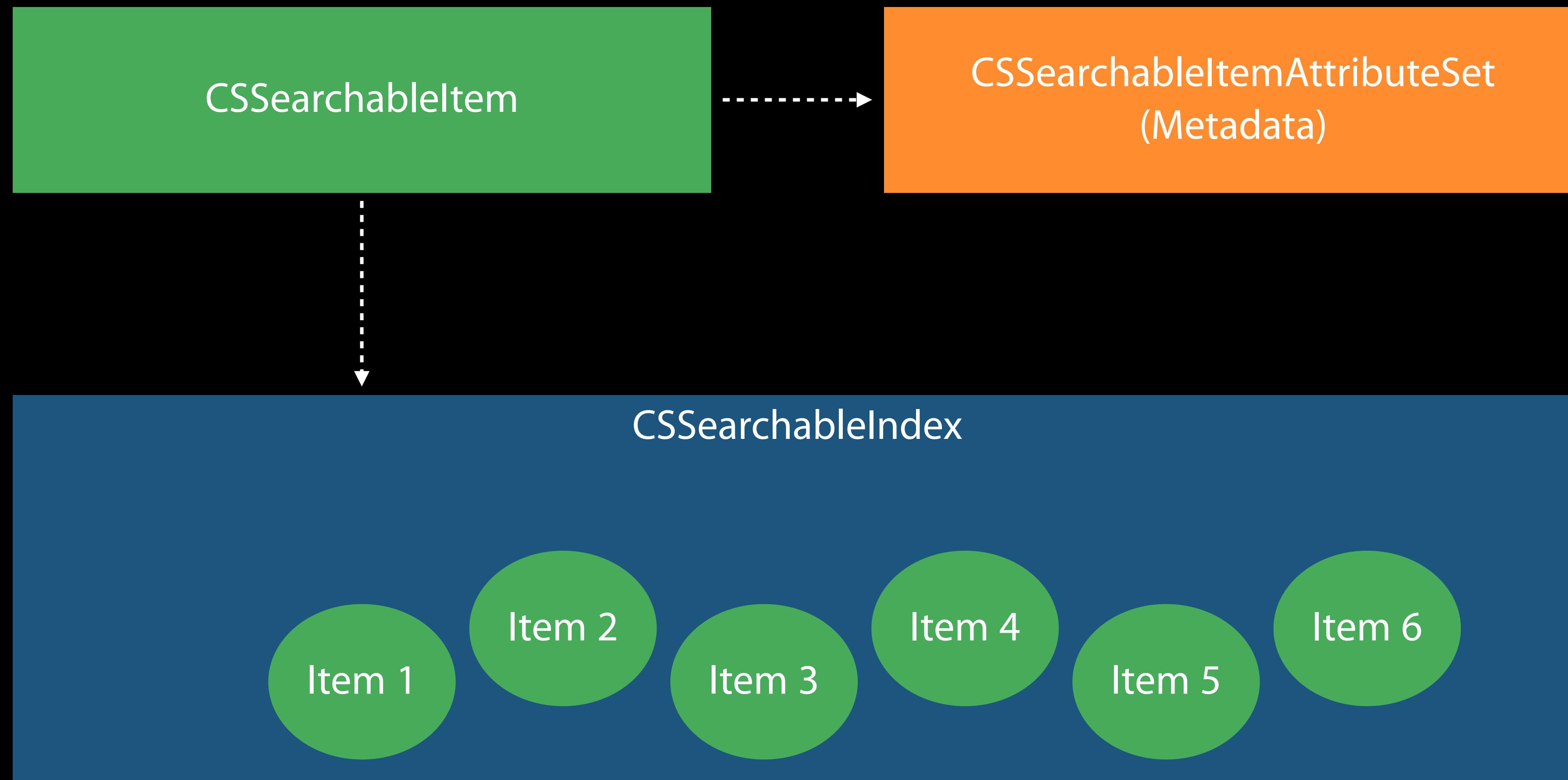
CoreSpotlight API

NEW



CoreSpotlight API

NEW



Create Item

Create Item

```
// Create attributeSet and populate with metadata
let attributeSet = CSSearchableItemAttributeSet(itemContentType: kUTTypeImage as
String)
```

Create Item

```
// Create attributeSet and populate with metadata
let attributeSet = CSSearchableItemAttributeSet(itemContentType: kUTTypeImage as
String)

attributeSet.title = "Haleakala Sunrise"
attributeSet.contentDescription = "May 12, 2015 Maui, Hawaii"
```

Create Item

```
// Create attributeSet and populate with metadata
let attributeSet = CSSearchableItemAttributeSet(itemContentType: kUTTypeImage as
String)

attributeSet.title = "Haleakala Sunrise"
attributeSet.contentDescription = "May 12, 2015 Maui, Hawaii"
```

```
// Create item with unique identifier; domainIdentifier used to group items
let item = CSSearchableItem(uniqueIdentifier: "1", domainIdentifier: "album-1",
attributeSet: attributeSet)
```

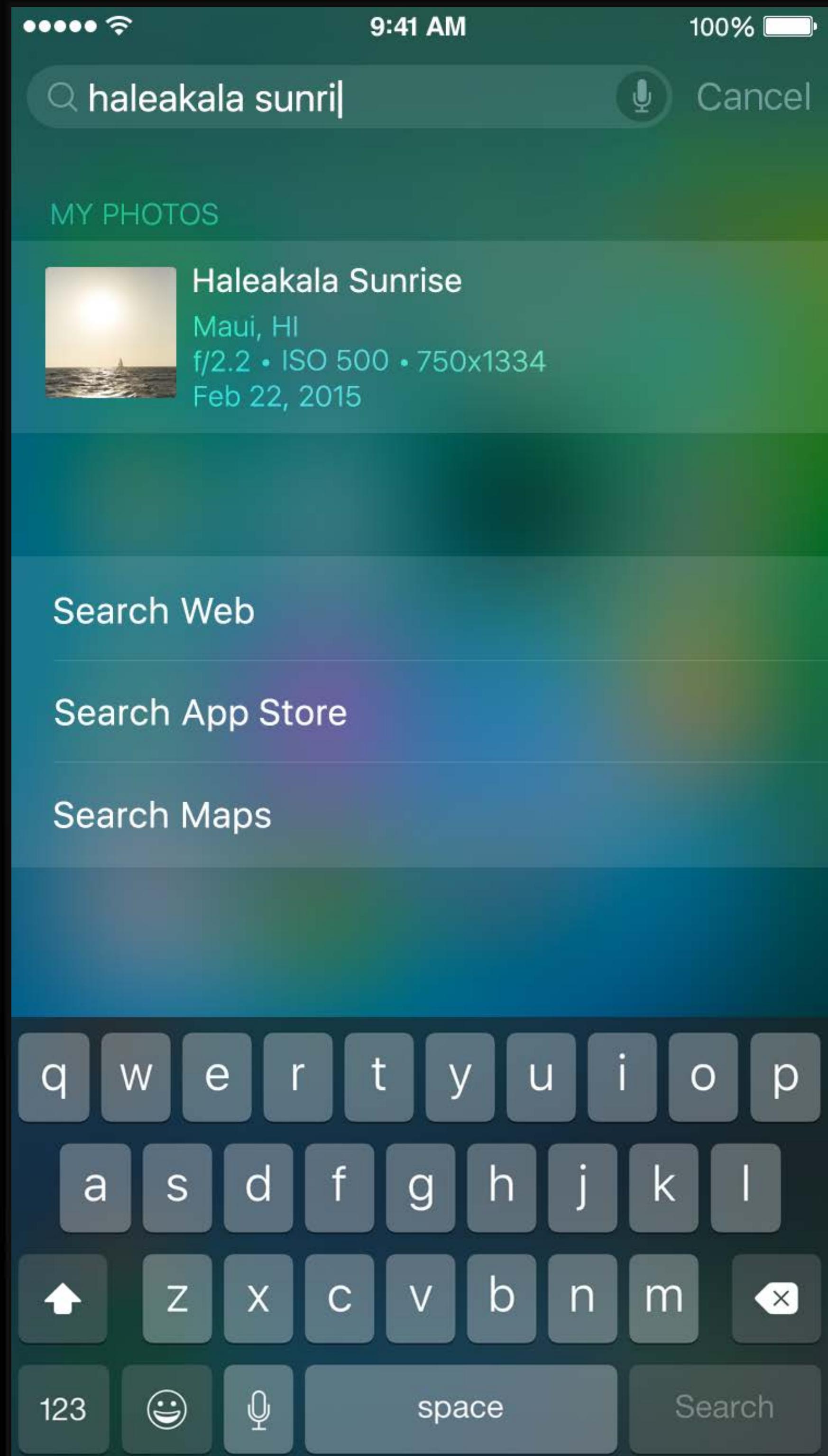
Create Item

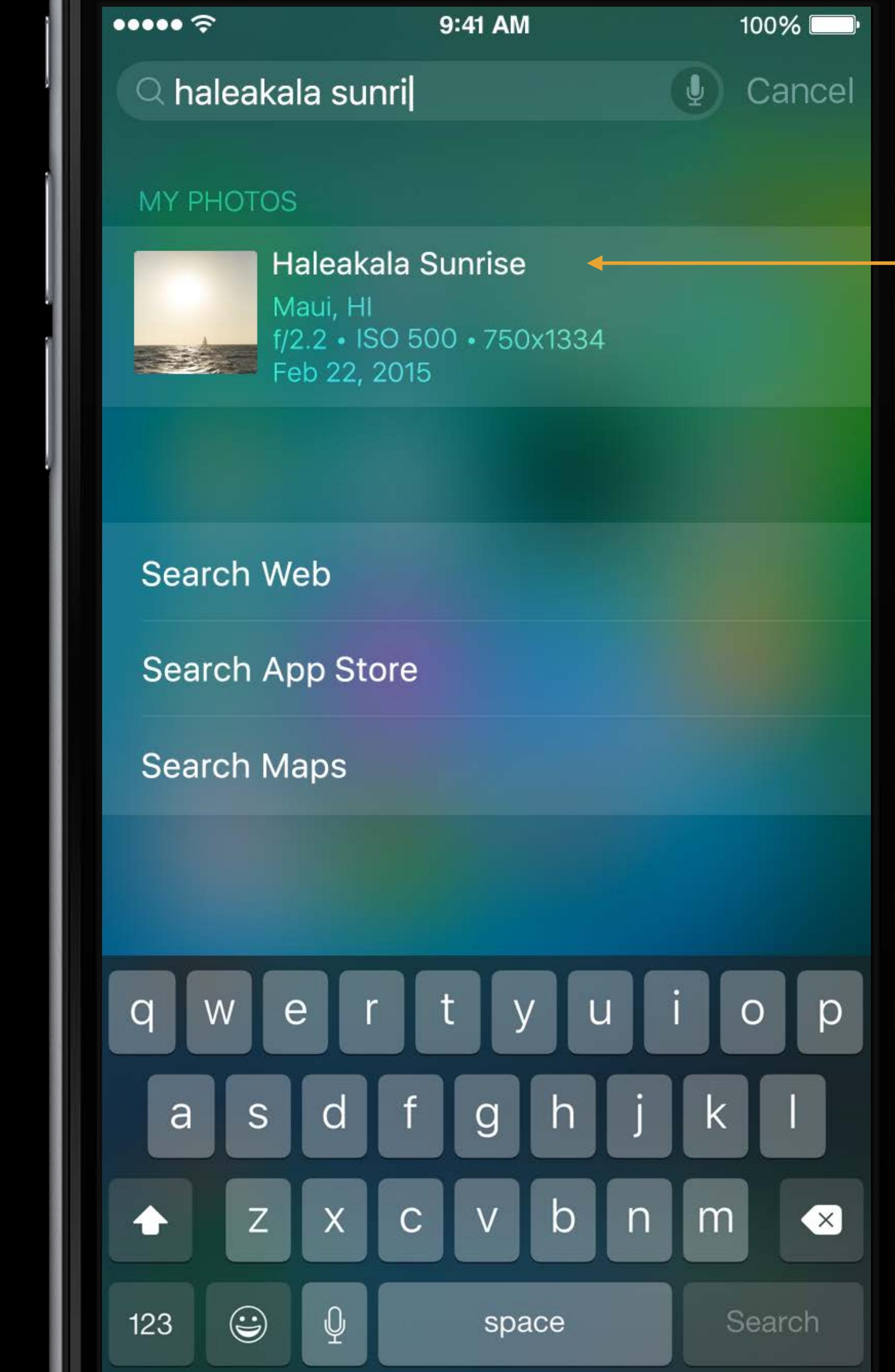
```
// Create attributeSet and populate with metadata
let attributeSet = CSSearchableItemAttributeSet(itemContentType: kUTTypeImage as String)

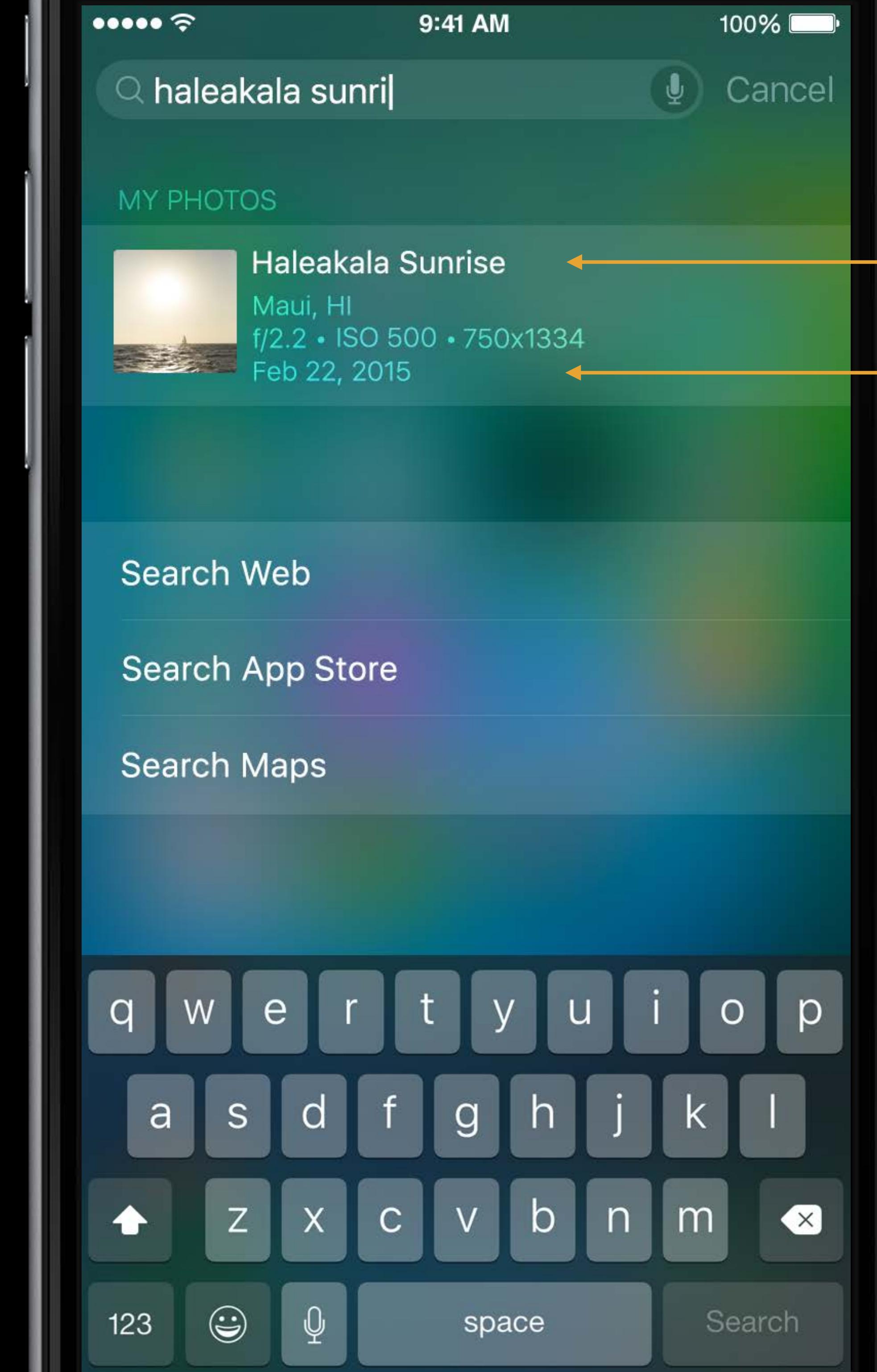
attributeSet.title = "Haleakala Sunrise"
attributeSet.contentDescription = "May 12, 2015 Maui, Hawaii"

// Create item with unique identifier; domainIdentifier used to group items
let item = CSSearchableItem(uniqueIdentifier: "1", domainIdentifier: "album-1",
attributeSet: attributeSet)

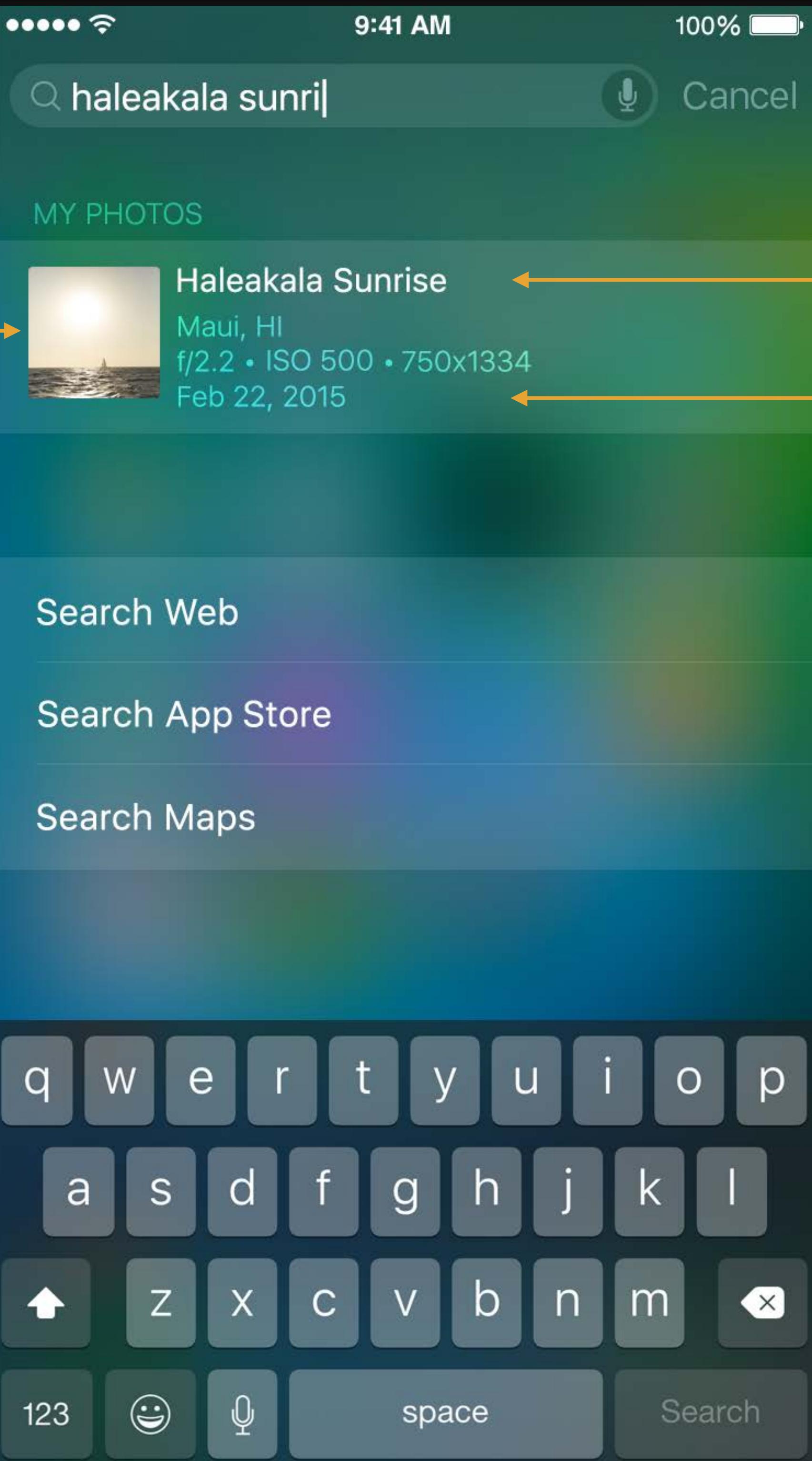
// Index item
CSSearchableIndex.defaultSearchableIndex().indexSearchableItems([item]) { error in
    if error != nil {
        print(error?.localizedDescription)
    } else {
        print("Item indexed!")
    }
}
```







attributeSet.
thumbnailData



attributeSet.title
attributeSet.contentDescription

Restore

Overview

NEW

NEW

Restore Overview

Implement UIApplication delegate

Same delegate method used for continuing NSUserActivity

Restore

Overview

NEW

NEW

Restore

Overview

```
// Application delegate called when CoreSpotlight result is tapped
func application(UIApplication, continueUserActivity: NSUserActivity,
restorationHandler: [AnyObject]? -> Void) -> Bool {

    return true
}
```

NEW

Restore

Overview

```
// Application delegate called when CoreSpotlight result is tapped
func application(UIApplication, continueUserActivity: NSUserActivity,
    restorationHandler: [AnyObject]? -> Void) -> Bool {

    if userActivity.activityType == CSSearchableItemActionType {

    }

    return true
}
```

Restore

Overview

NEW

```
// Application delegate called when CoreSpotlight result is tapped
func application(UIApplication, continueUserActivity userActivity: NSUserActivity,
restorationHandler: [AnyObject]? -> Void) -> Bool {

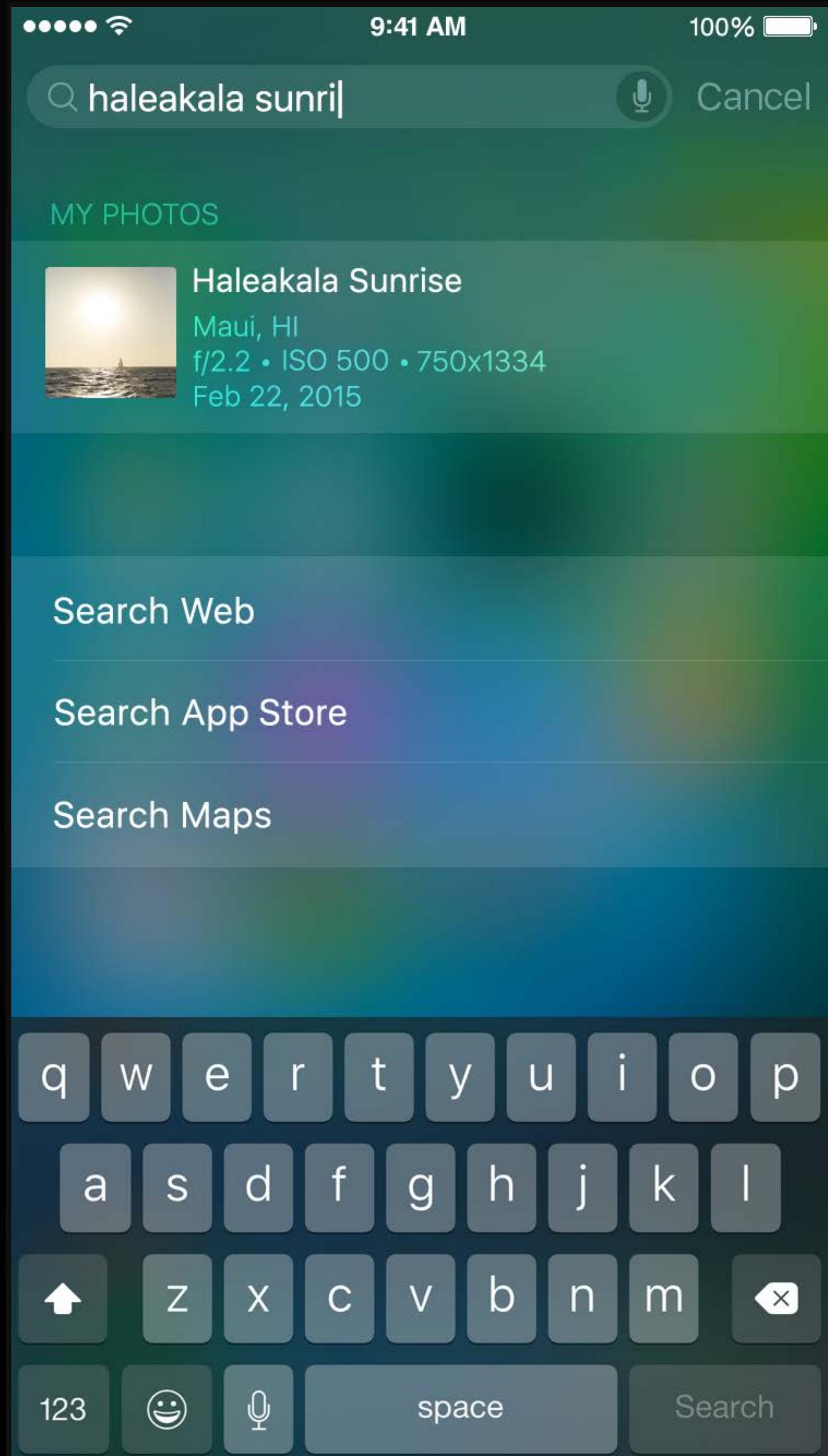
    if userActivity.activityType == CSSearchableItemActionType {

        let uniqueIdentifier = userActivity.userInfo?
            [CSSearchableItemActivityIdentifier] as? String

        // Use 'uniqueIdentifier'

    }

    return true
}
```



◀ Back to Search

9:41 AM

100% 



My Photos



Haleakala Sunrise

May 12, 2015 • Maui, Hawai'i

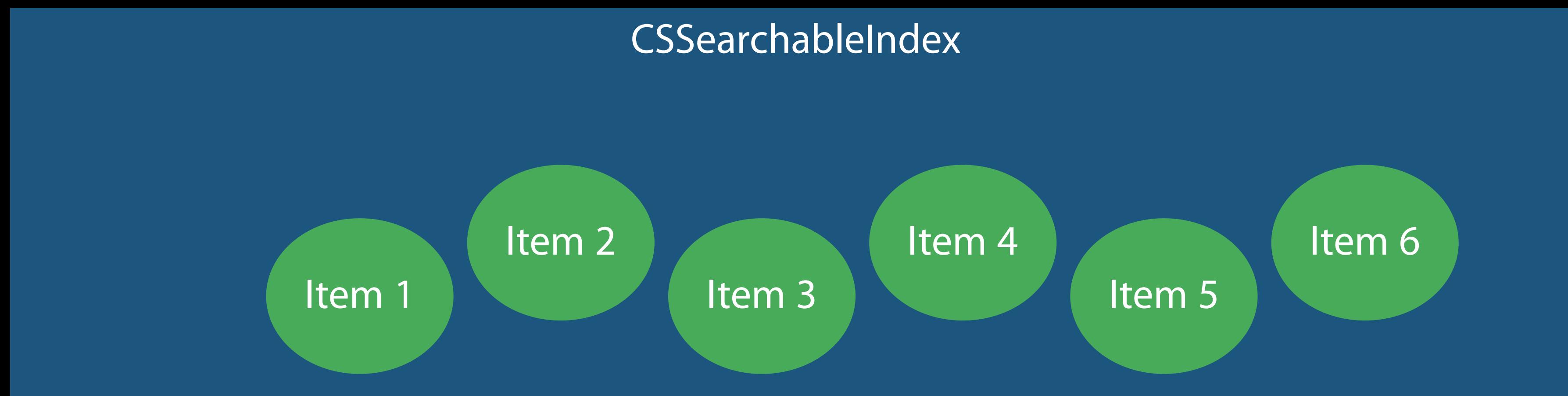


Update

NEW

Same method as adding item to index

```
func indexSearchableItems(items: [CSSearchableItem], completionHandler: ((NSError?) -> Void)?)
```



Update

NEW

Same method as adding item to index

```
func indexSearchableItems(items: [CSSearchableItem], completionHandler: ((NSError?) -> Void)?)
```

CSSearchableItem

CSSearchableIndex

Item 1

Item 2

Item 3

Item 4

Item 5

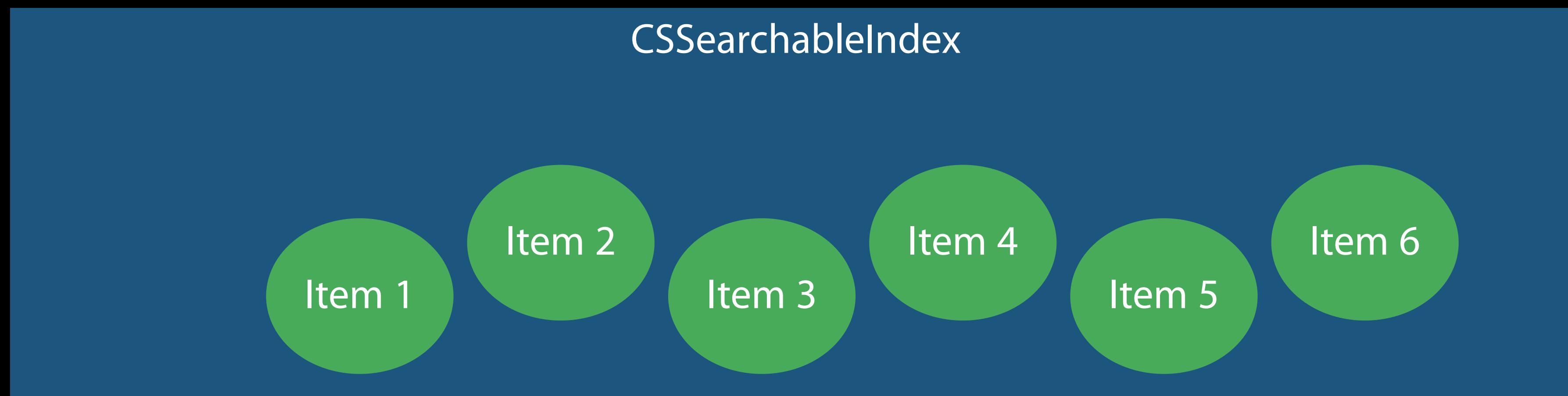
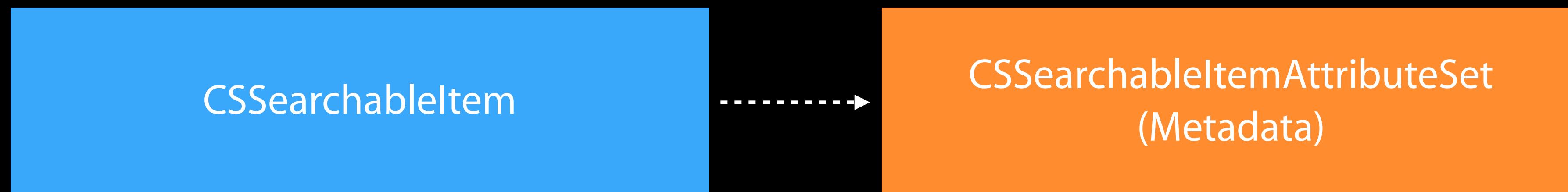
Item 6

Update

NEW

Same method as adding item to index

```
func indexSearchableItems(items: [CSSearchableItem], completionHandler: ((NSError?) -> Void)?)
```

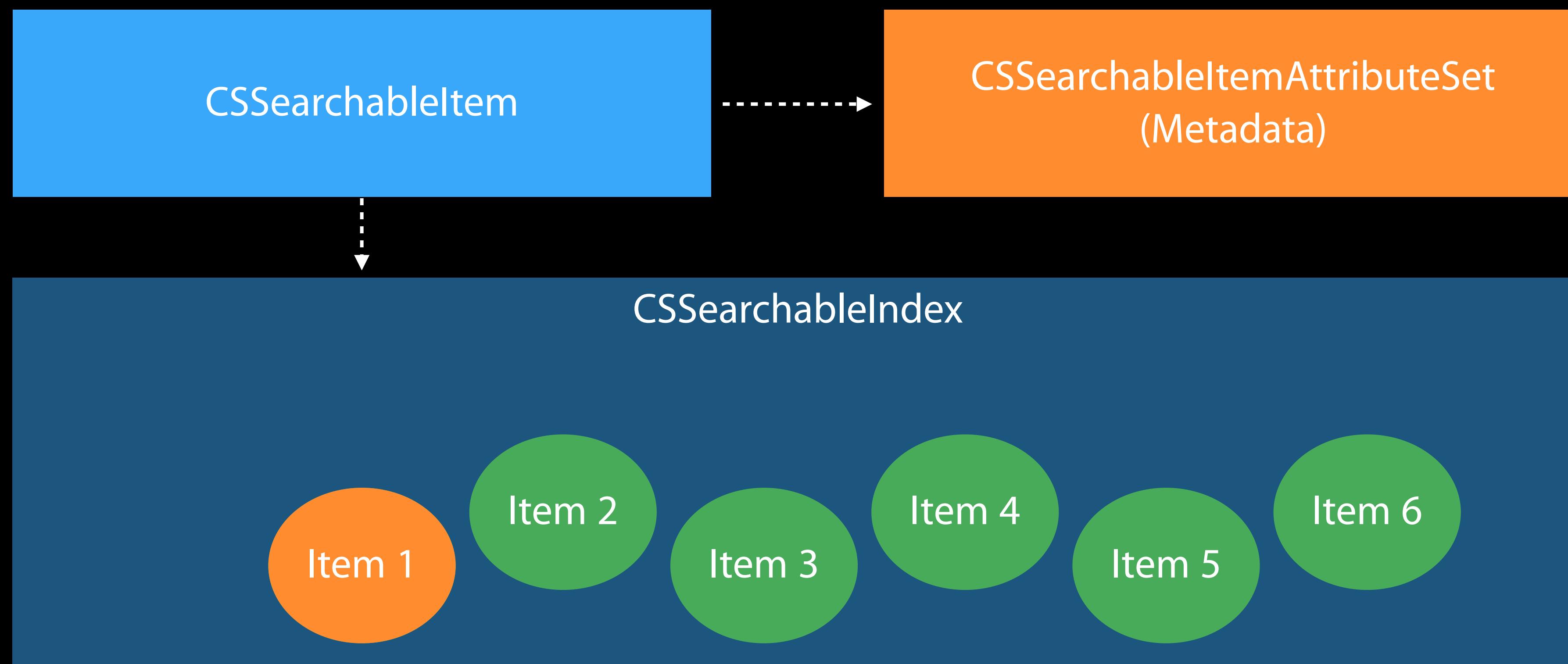


Update

NEW

Same method as adding item to index

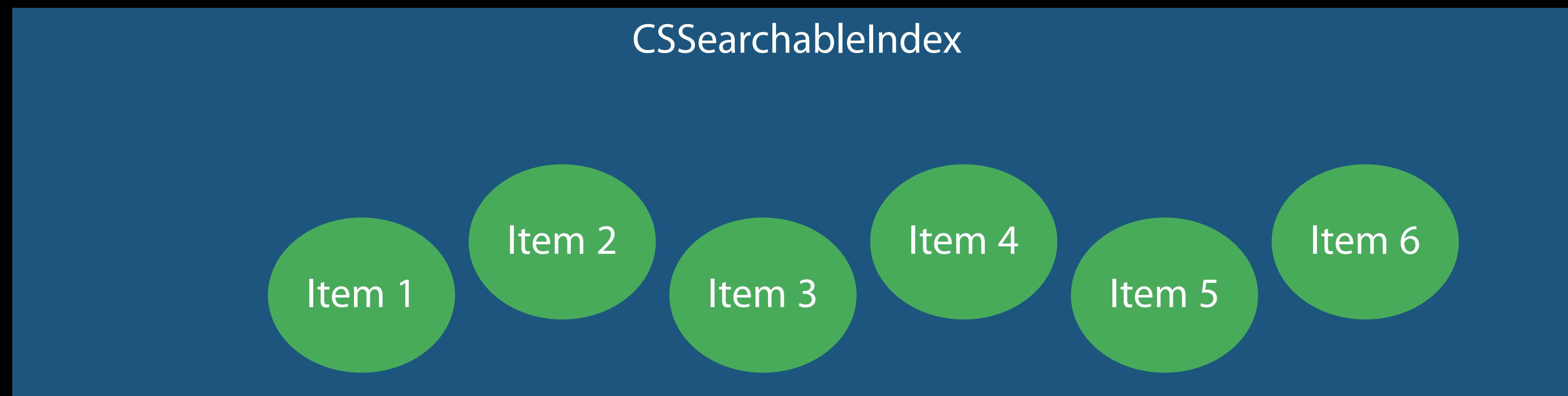
```
func indexSearchableItems(items: [CSSearchableItem], completionHandler: ((NSError?) -> Void)?)
```



Delete Identifiers

NEW

```
func deleteSearchableItemsWithIdentifiers(identifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```

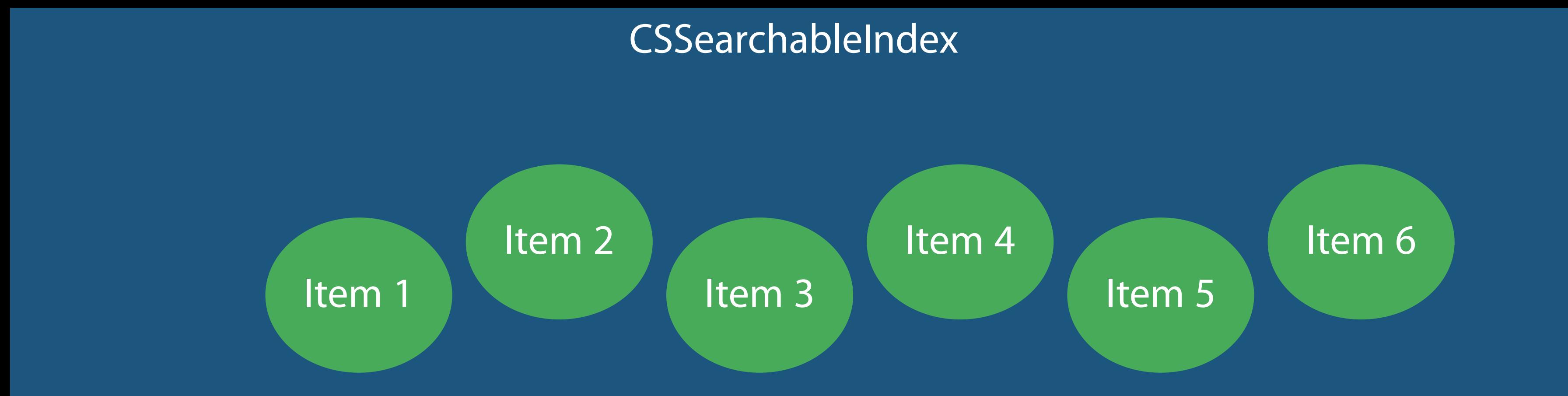


Delete Identifiers

NEW

```
func deleteSearchableItemsWithIdentifiers(identifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```

```
identifiers = ["1", "4", "5"]
```

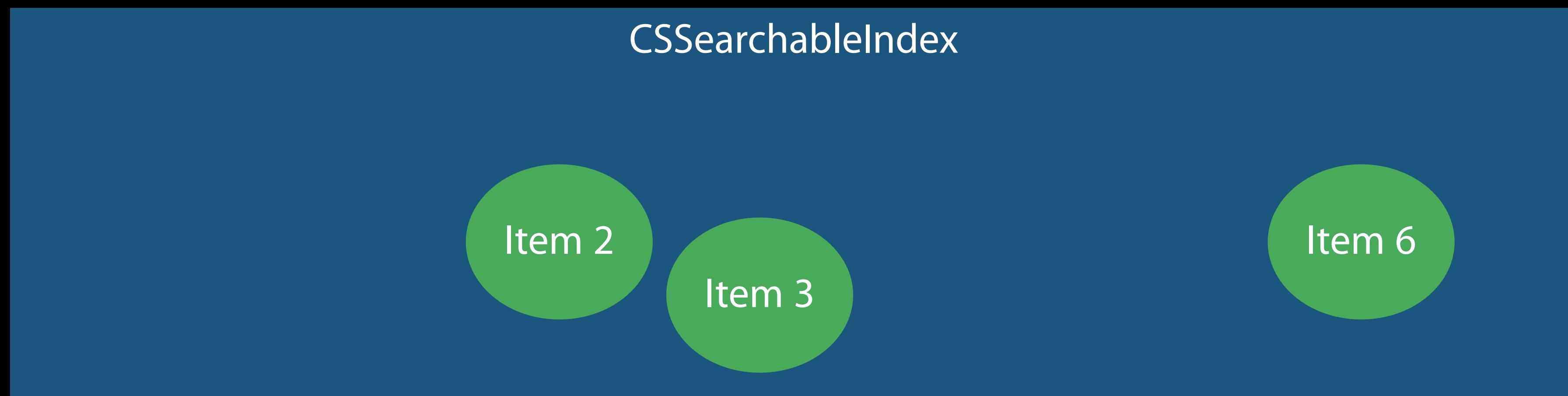


Delete Identifiers

NEW

```
func deleteSearchableItemsWithIdentifiers(identifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```

```
identifiers = ["1", "4", "5"]
```

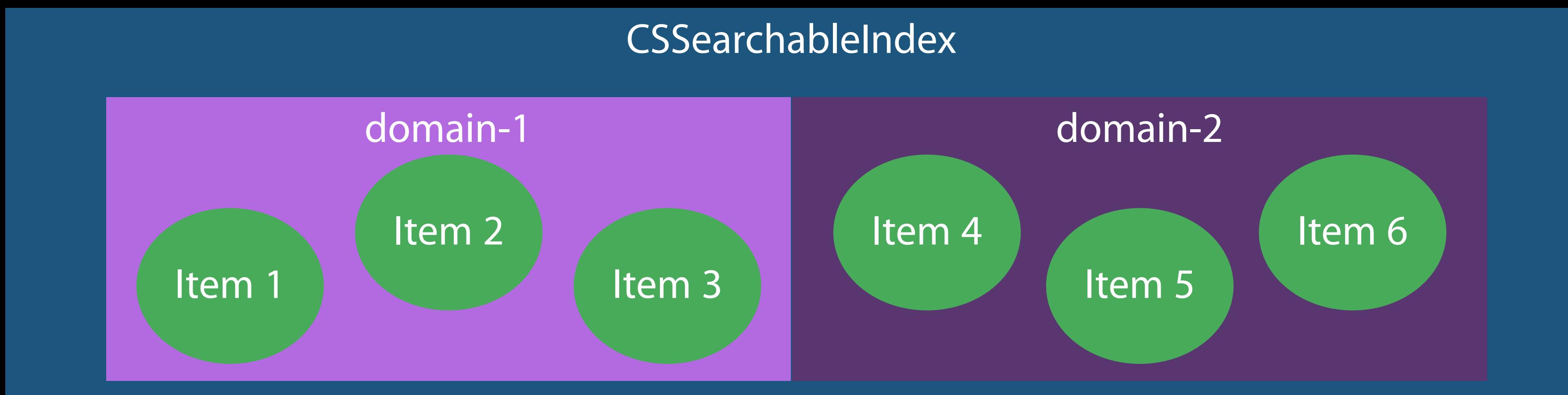


Delete

DomainIdentifier

NEW

```
func deleteSearchableItemsWithDomainIdentifiers(domainIdentifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```



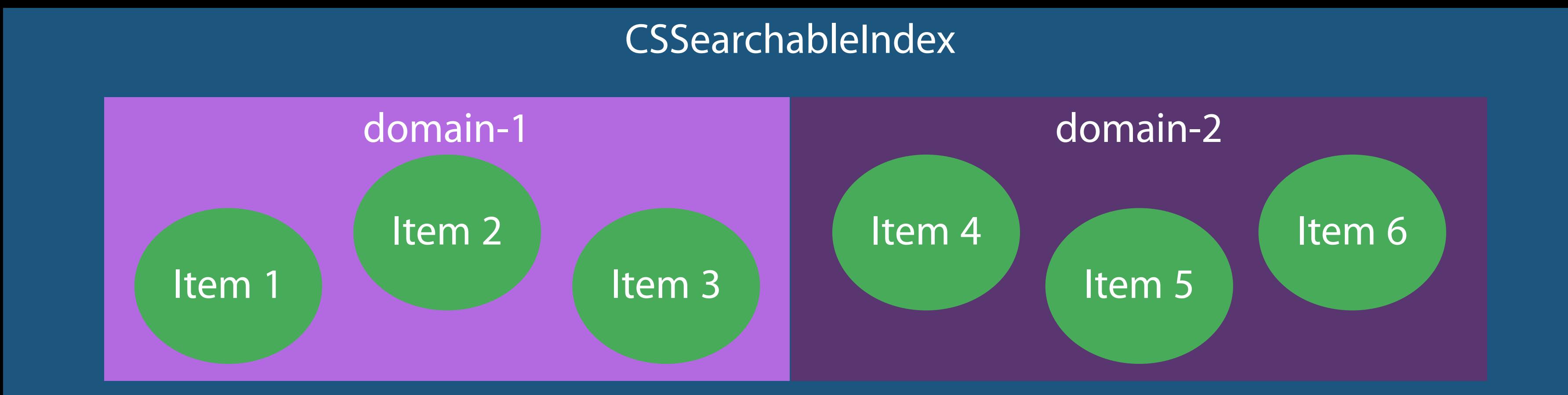
Delete

DomainIdentifier

NEW

```
func deleteSearchableItemsWithDomainIdentifiers(domainIdentifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```

```
domainIdentifiers = ["domain-2"]
```



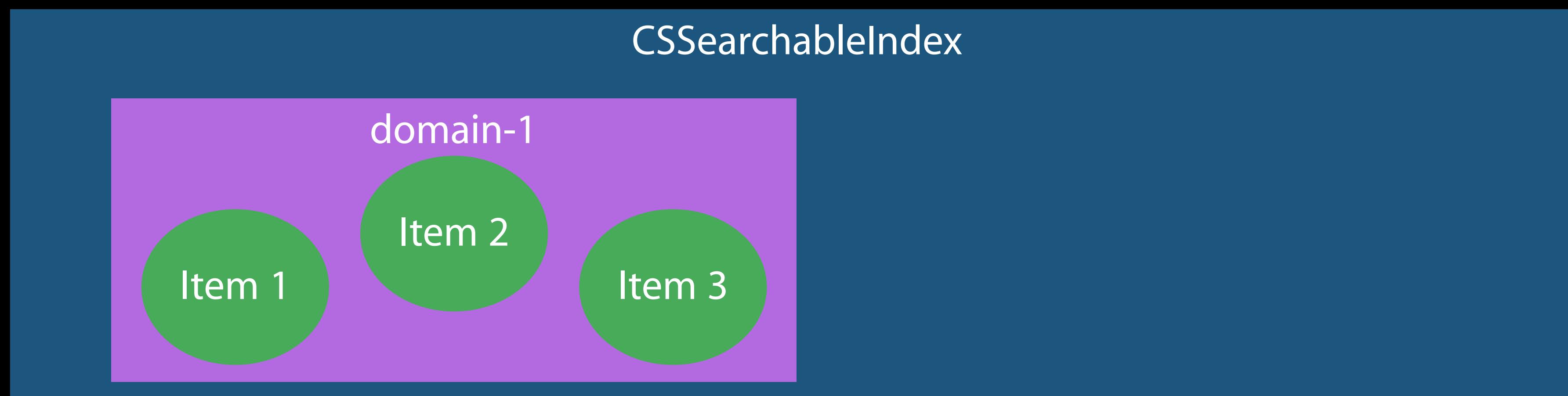
Delete

DomainIdentifier

NEW

```
func deleteSearchableItemsWithDomainIdentifiers(domainIdentifiers: [String],  
completionHandler: ((NSError?) -> Void)?)
```

```
domainIdentifiers = ["domain-2"]
```

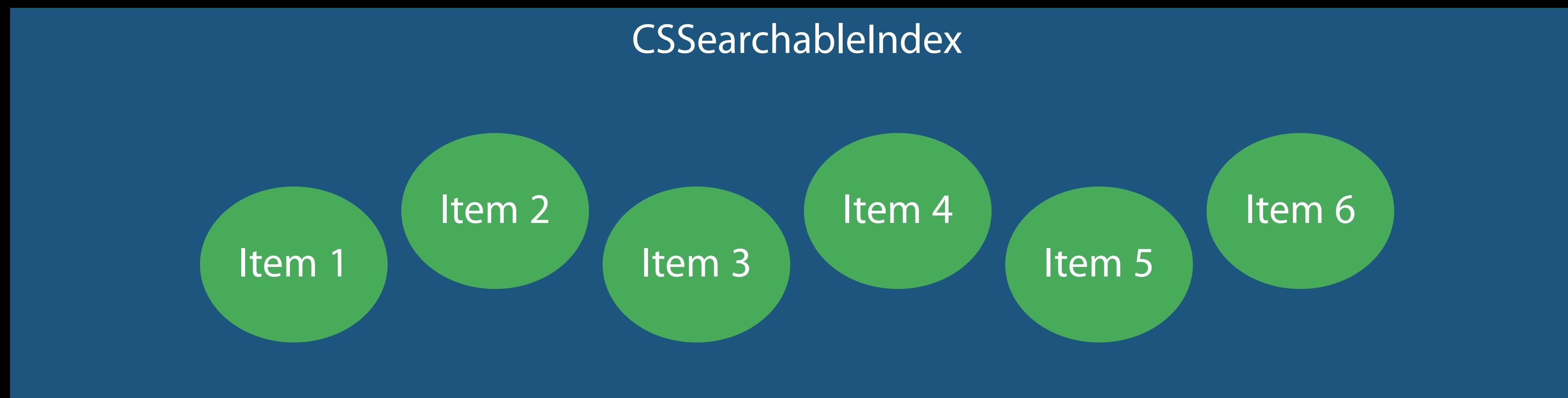


Delete

All

NEW

```
func  
deleteAllSearchableItemsWithCompletionHandler(completionHandler:  
((NSError?) -> Void)?)
```



Delete

All

NEW

```
func  
deleteAllSearchableItemsWithCompletionHandler(completionHandler:  
((NSError?) -> Void)?)
```

CSSearchableIndex

Demo

Overview

Photo viewer

Index photos by title

Search

Restore

NEW

Additional Features

Overview

NEW

Batching

CSSearchableIndexDelegate

Extension

Data Protection classes

Web Markup

Jason Douglas

Web Markup

Indexes app content on web



Viewed App Content



Any App Content



App Content on Web

Web Markup

Indexes app content on web



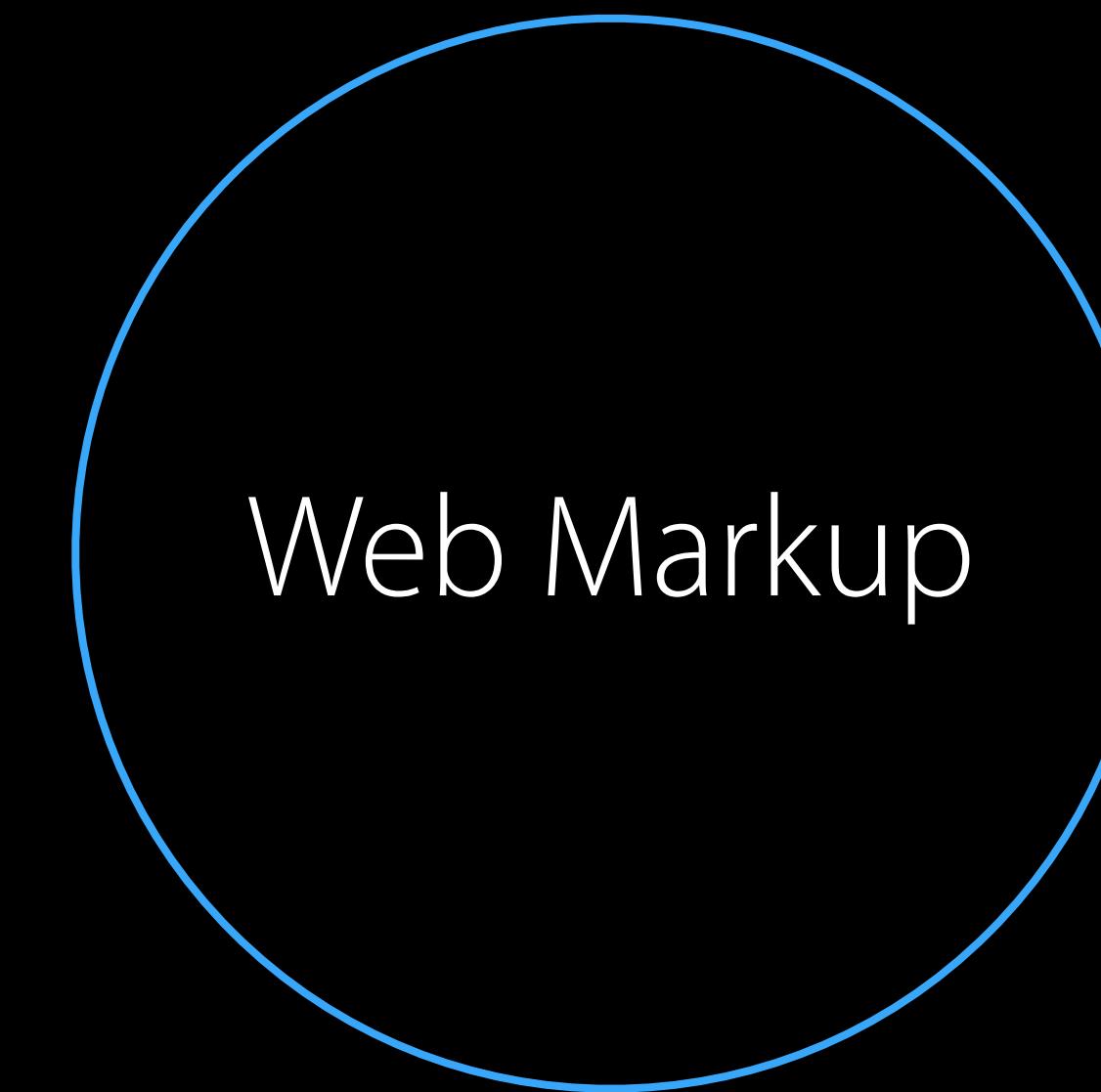
NSUserActivity

Viewed App Content



CoreSpotlight

Any App Content



Web Markup

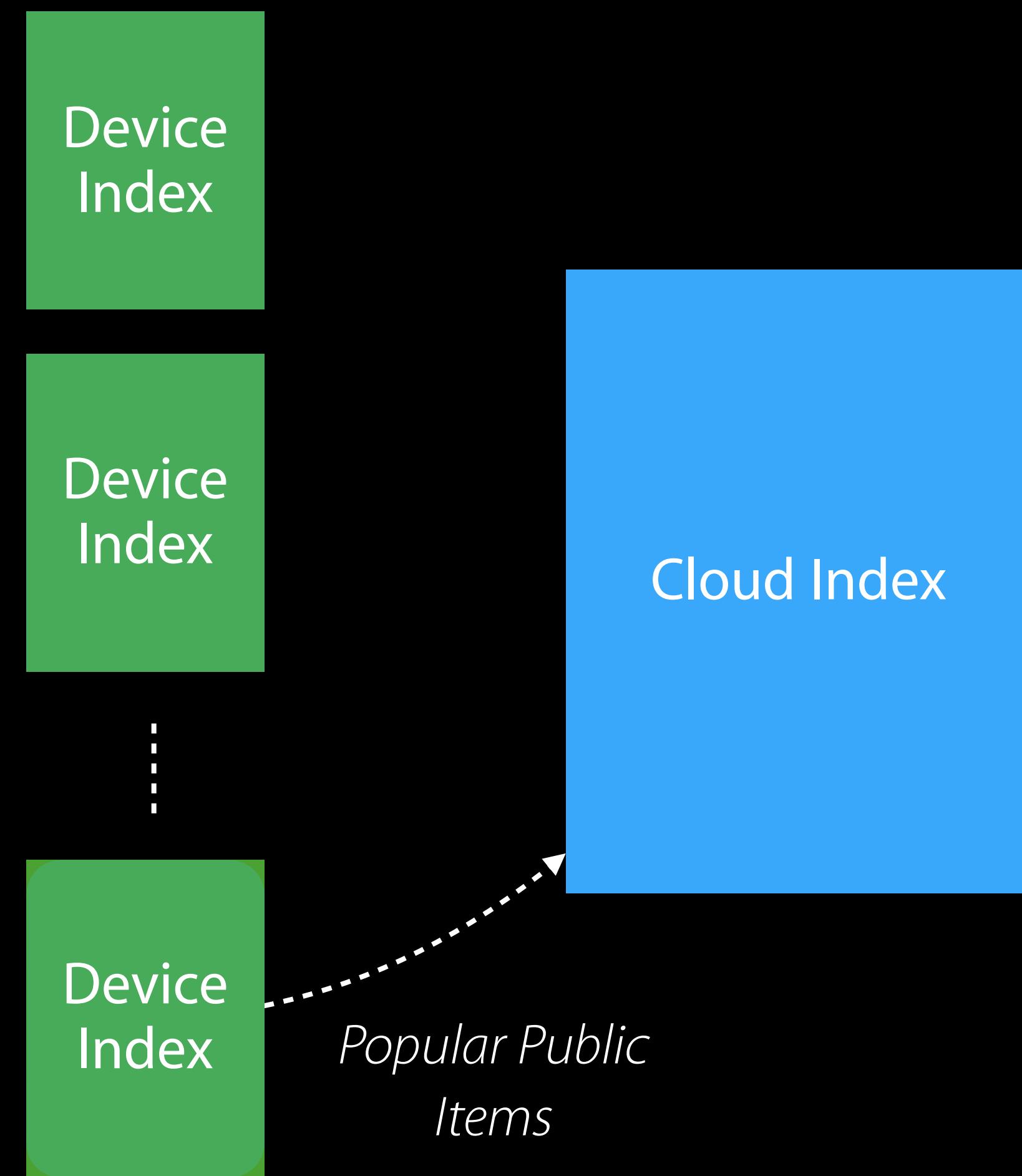
App Content on Web

Indexing Web Content

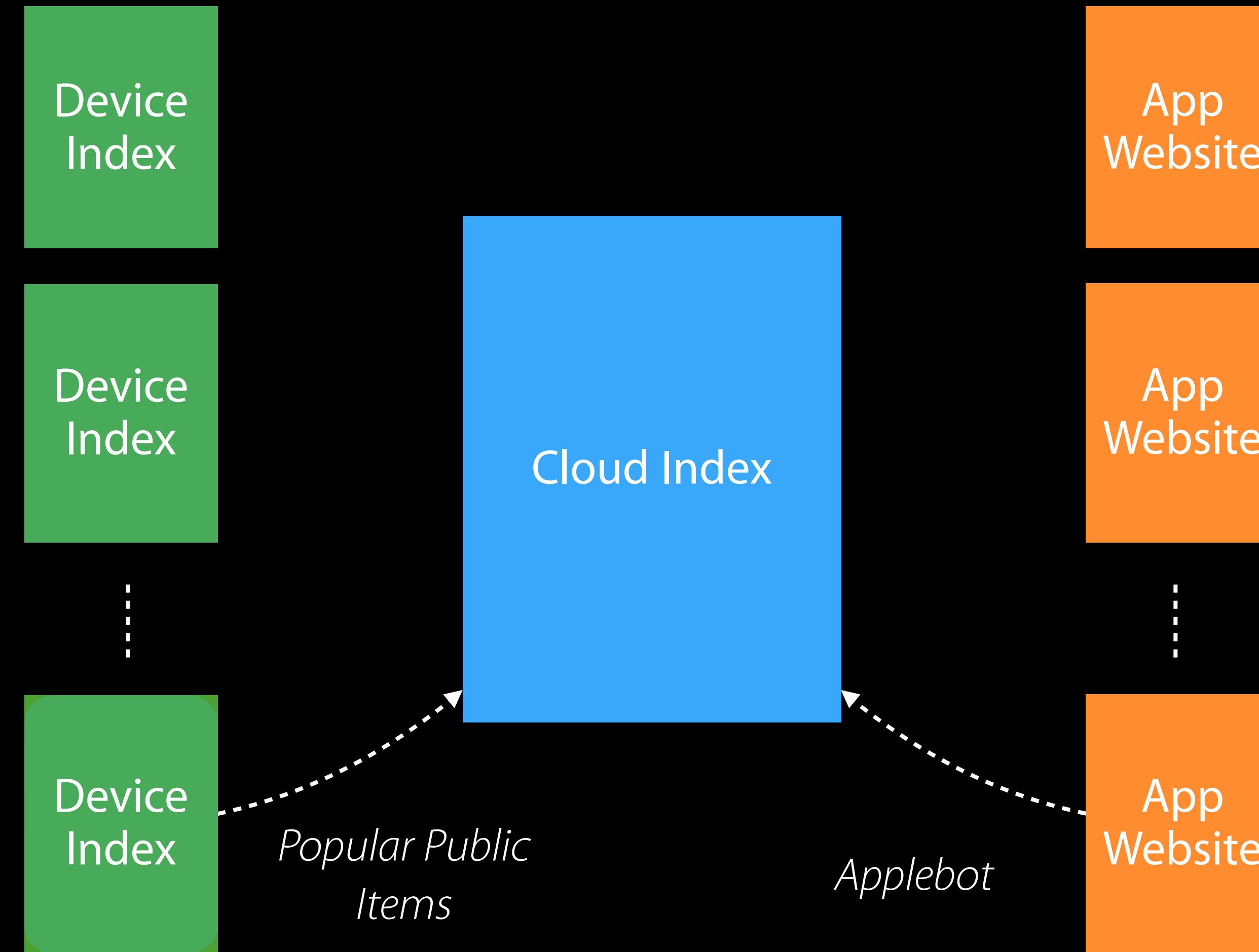
The content driving your app may live on the web, not locally inside the app

Deep linked pages from your app's website are indexed for app search

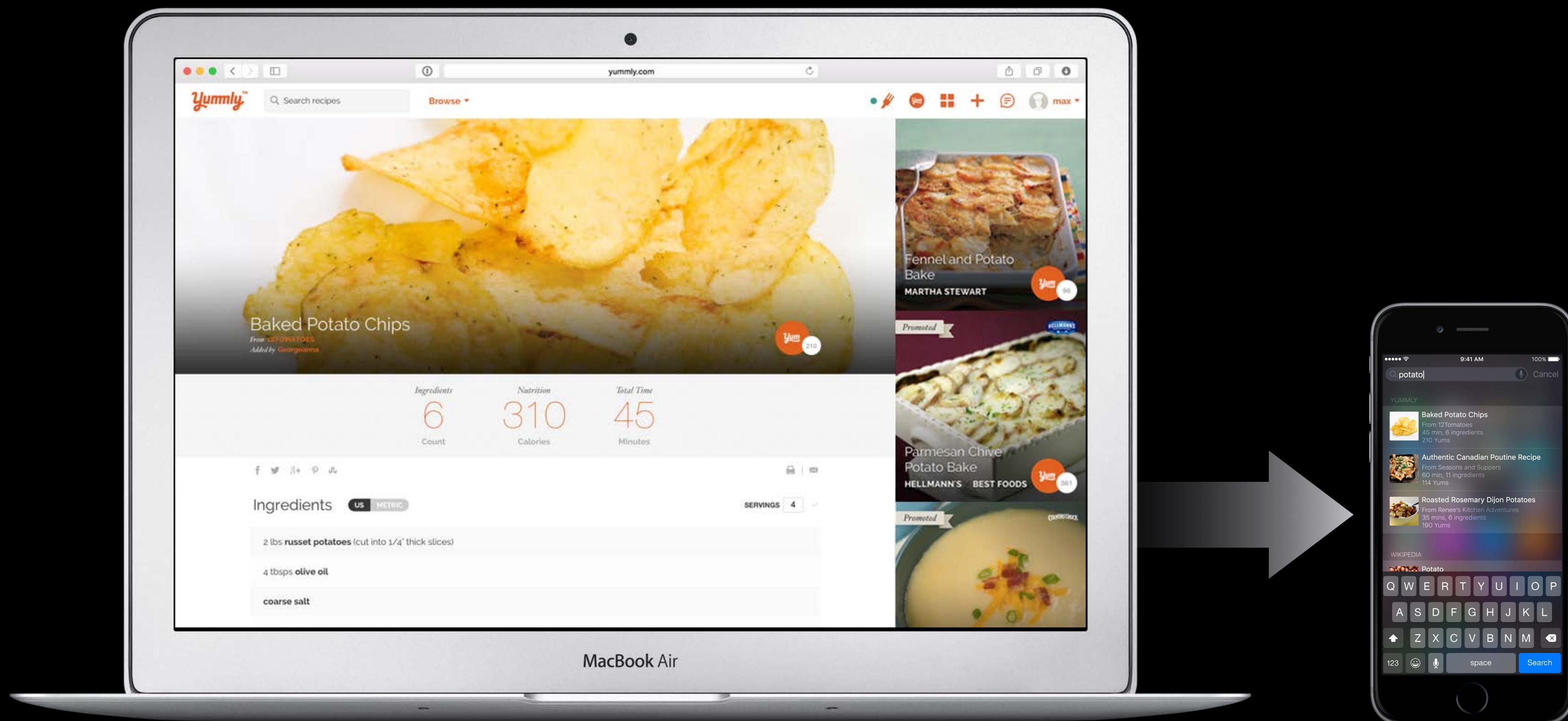
Indexing Web Content



Indexing Web Content



Indexing Web Content



9:41 AM 100%

Q potato| Cancel

YUMMLY

 Baked Potato Chips
From 12Tomatoes
45 min, 6 ingredients
210 Yums

 Authentic Canadian Poutine Recipe
From Seasons and Suppers
60 min, 11 ingredients
114 Yums

 Roasted Rosemary Dijon Potatoes
From Renee's Kitchen Adventures
35 mins, 6 ingredients
190 Yums

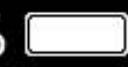
WIKIPEDIA

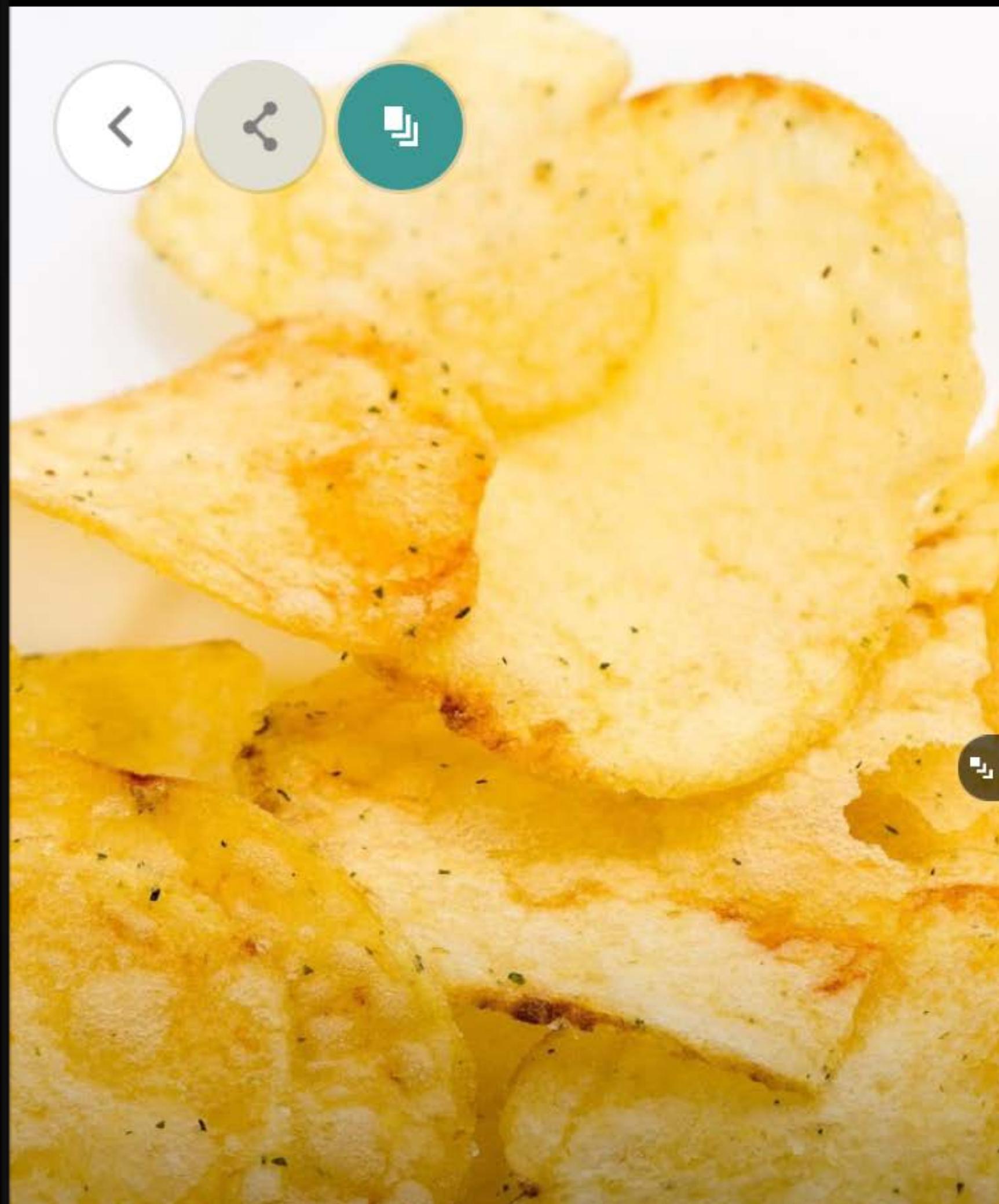
 Potato

Q W E R T Y U I O P
A S D F G H J K L
↑ Z X C V B N M ⌘
123 ☺ ⌊space⌋ Search

◀ Back to Search

9:41 AM

100% 



Baked Potato Chips

12 TOMATOES



210

Ingredients

6
Count

Nutrition

310
Calories

Directions

45
Minutes

Indexing Web Content

Enabling app search

Indexing Web Content

Enabling app search

1. Allow Apple to discover and index your app's website

Indexing Web Content

Enabling app search

1. Allow Apple to discover and index your app's website
2. Ensure your app's website contains markup for mobile deep links

Indexing Web Content

Enabling app search

1. Allow Apple to discover and index your app's website
2. Ensure your app's website contains markup for mobile deep links
3. Enable deep link handling for your app

Indexing Web Content

Enabling app search

1. Allow Apple to discover and index your app's website
2. Ensure your app's website contains markup for mobile deep links
3. Enable deep link handling for your app
4. Add markup for structured data (*optional, but highly recommended*)

apple.com

Localizable Information English (U.S.) ▾

App Video Preview and Screenshots ?

3.5-Inch 4-Inch 4.7-Inch 5.5-Inch iPad

4/4 Screenshots | Choose File | Delete All

Description ?

Make travel planning as mobile as you are with the Airbnb iPhone App! Airbnb opens the door to the world's most interesting places to stay and is the simplest way to earn money from your extra space. With over 600,000 listings in more than 34,000 cities, Airbnb connects you with the experience that's right for you.

Message hosts and guests, gush over your itinerary, explore fairytale destinations, and add unforgettable digs to your Wish List. Make that penthouse, yurt, or treehouse your next home...or open up your own space to travelers.

Keywords ?

airbnb, travel, accommodations, app

Support URL ?

<http://airbnb.com/help>

Marketing URL ?

<http://airbnb.com/mobile>

1717

apple.com

Localizable Information

English (U.S.)

App Video Preview and Screenshots

3.5-Inch 4-Inch 4.7-Inch 5.5-Inch iPad

4/4 Screenshots | Choose File | Delete All

Description

Make travel planning as mobile as you are with the Airbnb iPhone App! Airbnb opens the door to the world's most interesting places to stay and is the simplest way to earn money from your extra space. With over 600,000 listings in more than 34,000 cities, Airbnb connects you with the experience that's right for you.

Message hosts and guests, gush over your itinerary, explore fairytale destinations, and add unforgettable digs to your Wish List. Make that penthouse, yurt, or treehouse your next home...or open up your own space to travelers.

Keywords

airbnb, travel, accommodations, app

Support URL

<http://airbnb.com/help>

Marketing URL

<http://airbnb.com/mobile>

1717

Preparing Your Website

Smart App Banners

Smart App Banner provides a clear link into your app

If app is not installed, Safari prompts the user

```
<meta name="myApp" content="app-id=123,  
app-argument=http://example.com/about">
```

See Promoting Apps with Smart App Banners on the Safari Web Content Guide

Preparing Your Website

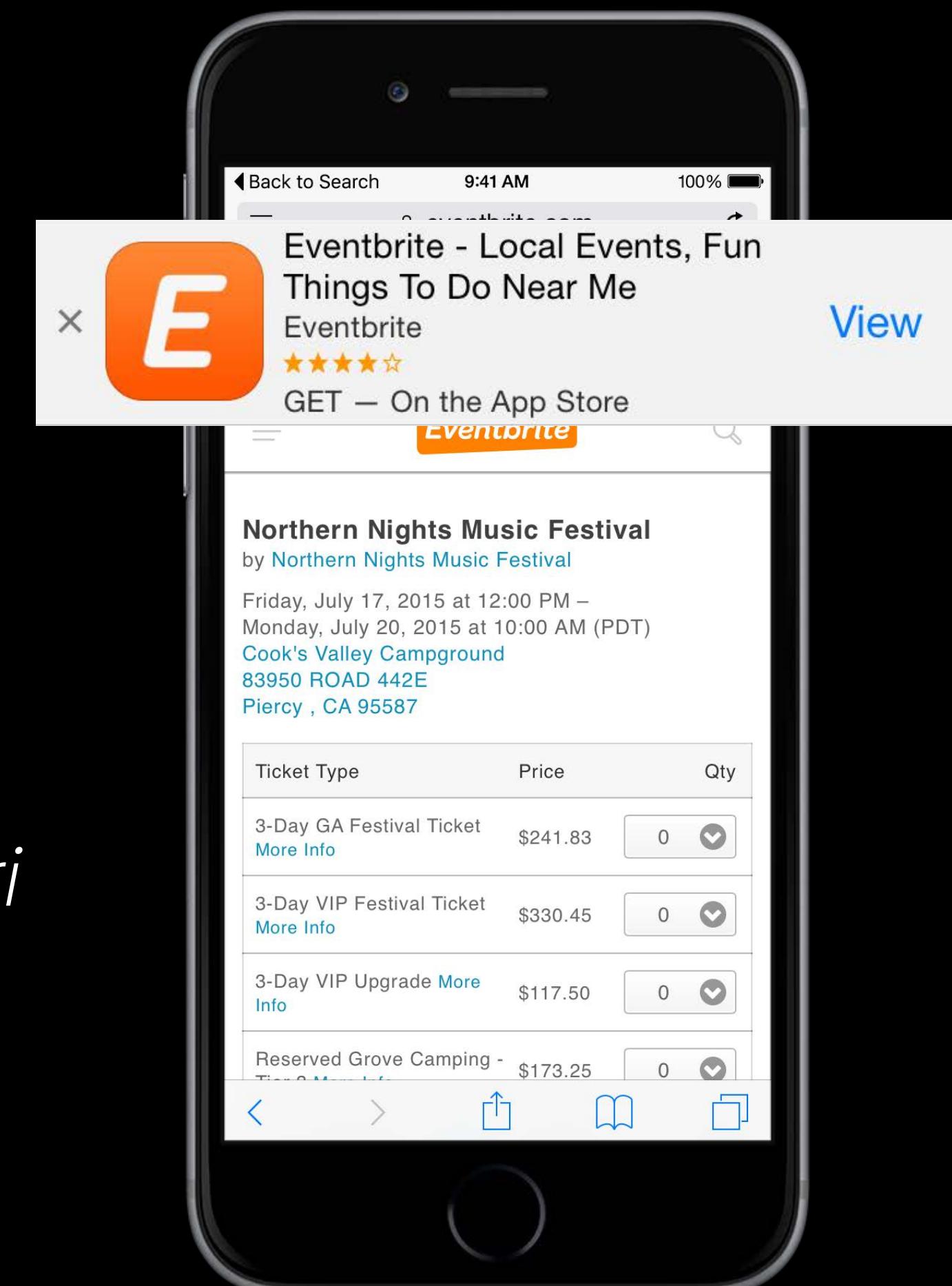
Smart App Banners

Smart App Banner provides a clear link into your app

If app is not installed, Safari prompts the user

```
<meta name="myApp" content="app-id=123,  
app-argument=http://example.com/about">
```

See Promoting Apps with Smart App Banners on the Safari Web Content Guide



Preparing Your Website

Universal links



Universal links have several advantages over custom URL schemes

Seamless Linking to Your App

Nob Hill

Thursday 3:30PM

Preparing Your Website

Universal links



Universal links have several advantages over custom URL schemes

- Unique

Preparing Your Website

Universal links



Universal links have several advantages over custom URL schemes

- Unique
- Secure

Preparing Your Website

Universal links



Universal links have several advantages over custom URL schemes

- Unique
- Secure
- Flexible

Preparing Your Website

Universal links



Universal links have several advantages over custom URL schemes

- Unique
- Secure
- Flexible
- Work seamlessly across app and website

Preparing Your Website

Universal links



Deep links still need to be exposed via website's markup

Use either Smart App Banners or an alternative supported standard

Seamless Linking to Your App

Nob Hill

Thursday 3:30PM

Preparing Your Website

Other deep link schemes

Preparing Your Website

Other deep link schemes

Other standards are supported as well, such as Twitter Cards:

```
<meta name="twitter:app:name:iphone" content="myAppName">
<meta name="twitter:app:id:iphone" content="myAppID">
<meta name="twitter:app:url:iphone" content="myURL">
```

Preparing Your Website

Other deep link schemes

Other standards are supported as well, such as Twitter Cards:

```
<meta name="twitter:app:name:iphone" content="myAppName">
<meta name="twitter:app:id:iphone" content="myAppID">
<meta name="twitter:app:url:iphone" content="myURL">
```

And Facebook's App Links:

```
<meta property="al:ios:app_name" content="myAppName">
<meta property="al:ios:app_store_id" content="myAppID">
<meta property="al:ios:url" content="myURL">
```

Preparing Your App

Support deep linking

```
func application(application: UIApplication, openURL url: NSURL,  
sourceApplication: String?, annotation: AnyObject) -> Bool {  
  
    return false  
}
```

Preparing Your App

Support deep linking

```
func application(application: UIApplication, openURL url: NSURL,  
sourceApplication: String?, annotation: AnyObject) -> Bool {  
  
    return false  
}
```

Preparing Your App

Support deep linking

```
func application(application: UIApplication, openURL url: NSURL,  
sourceApplication: String?, annotation: AnyObject) -> Bool {  
  
    // In this example, the URL is http://example.com/profile/?123  
    if let components = NSURLComponents(URL: url,  
                                         resolvingAgainstBaseURL: true),  
        let path = components.path, let query = components.query {  
  
    }  
    return false  
}
```

Preparing Your App

Support deep linking

```
func application(application: UIApplication, openURL url: NSURL,  
sourceApplication: String?, annotation: AnyObject) -> Bool {  
  
    // In this example, the URL is http://example.com/profile/?123  
    if let components = NSURLComponents(URL: url,  
                                         resolvingAgainstBaseURL: true),  
        let path = components.path, let query = components.query {  
        if path == "/profile" {  
            // Pass the profile ID from the URL, to the view controller  
            return profileViewController.loadProfile(query)  
        }  
    }  
    return false  
}
```

Rich Results

Semantic markup calls out key information

Go beyond just a title and description

Results can contain images, structured data, and even actions

Rich results are more engaging to users and can improve your ranking

Rich Results

Semantic markup calls out key information

Open Graph:

```
<meta property="og:image" content="http://example.com/hello.jpg">
<meta property="og:audio" content="http://example.com/music.m4a">
<meta property="og:video" content="http://example.com/cats.mp4">
```

Rich Results

Semantic markup calls out key information

schema.org Microdata:

```
<div itemprop="aggregateRating" itemscope itemtype="http://schema.org/  
AggregateRating">  
  <span itemprop="ratingValue">4</span> stars -  
  <span itemprop="reviewCount">250</span> reviews  
</div>
```

Rich Results

Semantic markup calls out key information

schema.org JSON-LD:

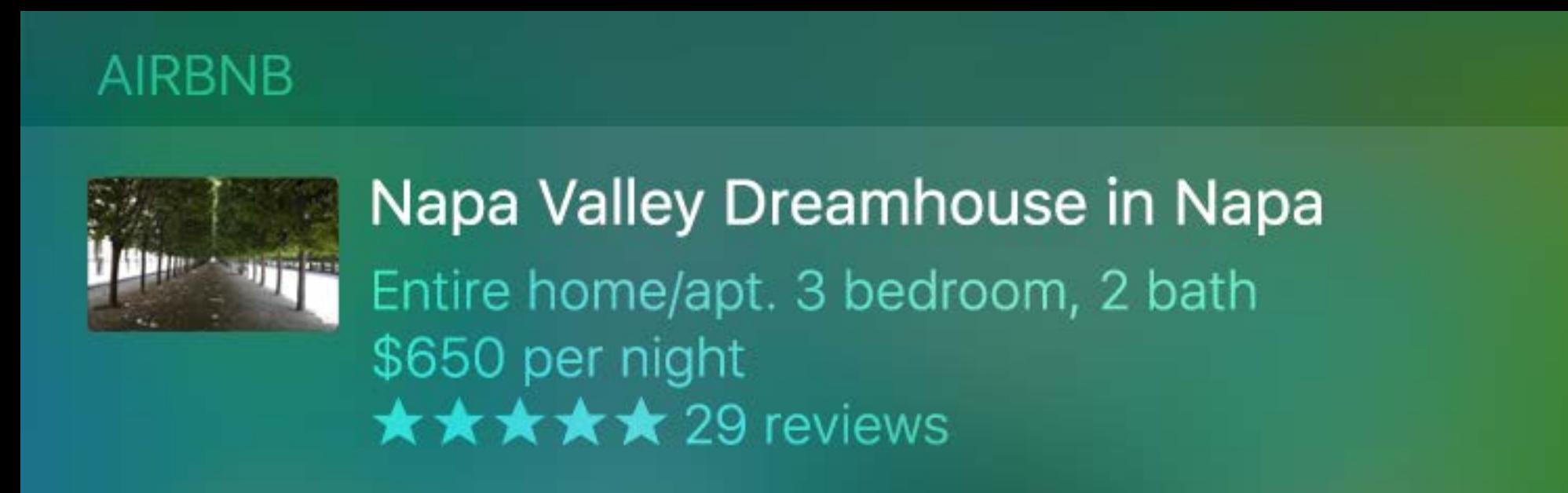
```
<script type="application/ld+json">
{
  "@context": "http://schema.org",
  "@type": "AggregateRating",
  "ratingValue": "4",
  "reviewCount": "250"
}
</script>
```

Rich Results

Semantic markup calls out key information

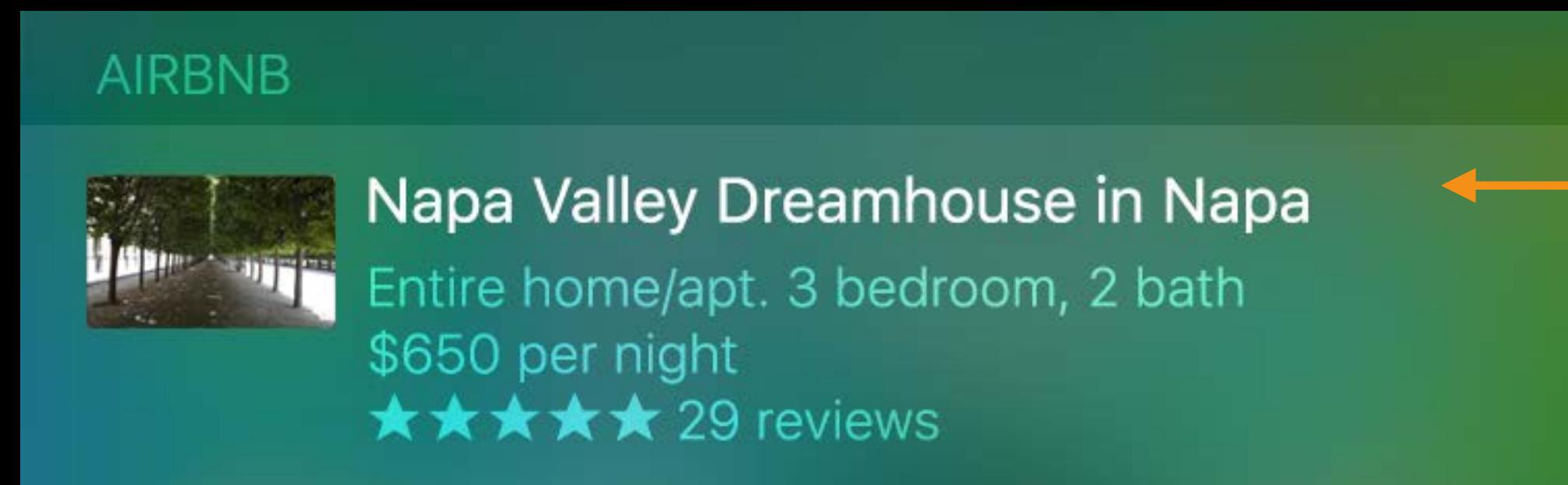
Rich Results

Semantic markup calls out key information



Rich Results

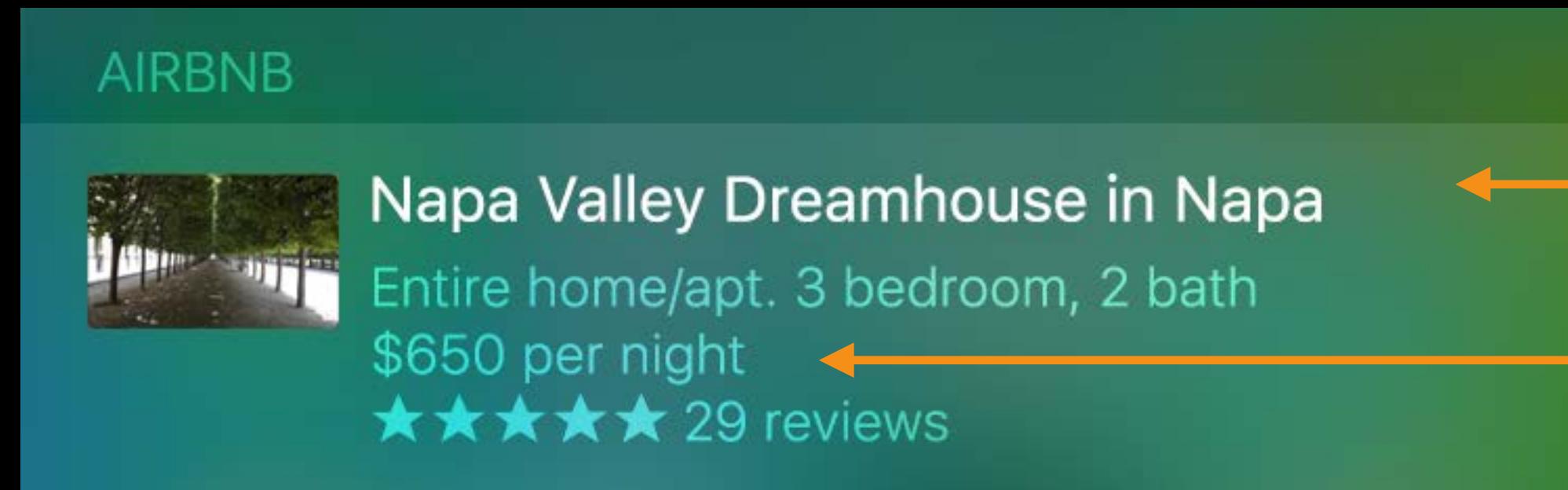
Semantic markup calls out key information



<title>Napa Valley Dream House
in Napa</title>

Rich Results

Semantic markup calls out key information

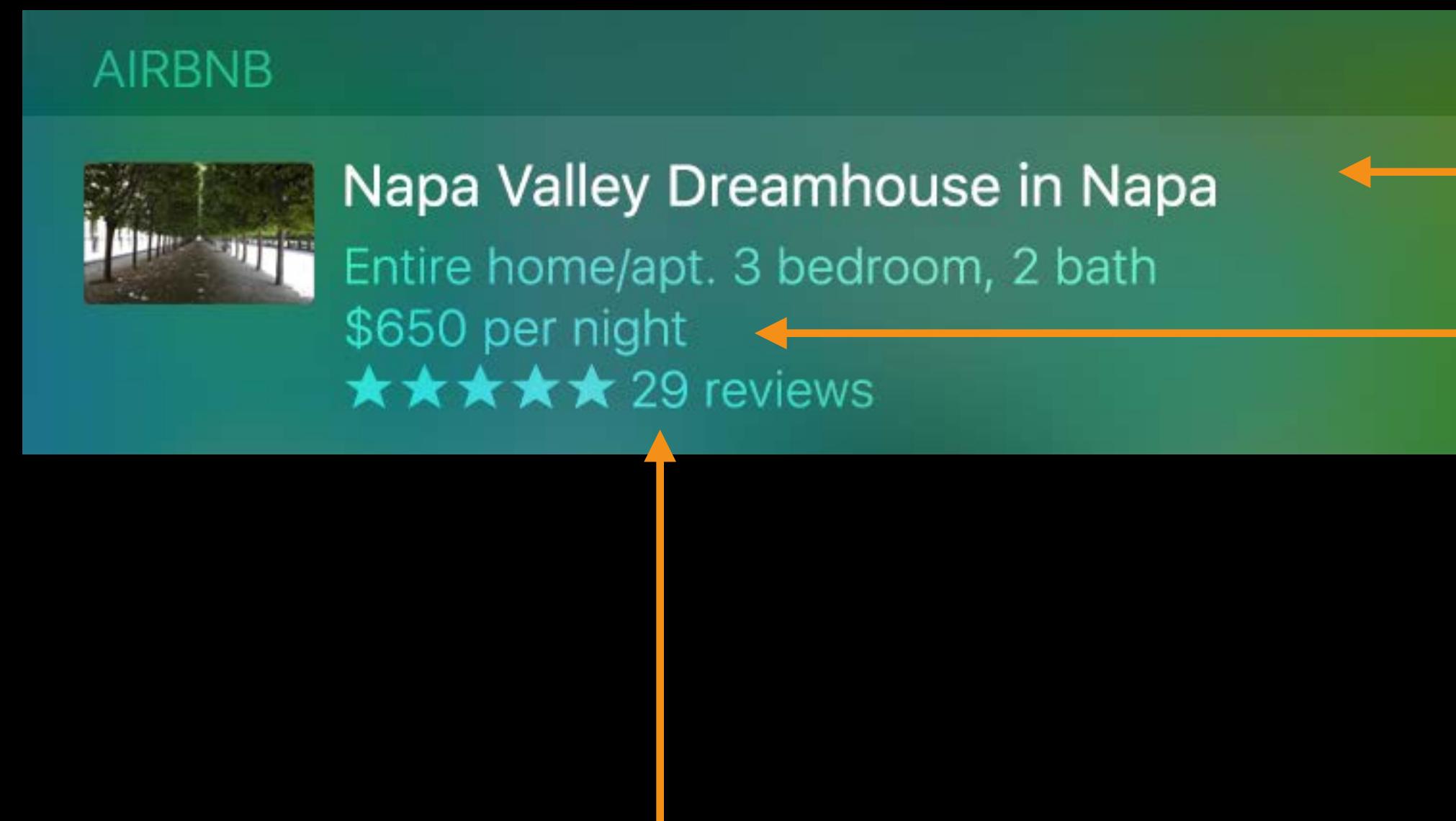


<title>Napa Valley Dream House
in Napa</title>

<meta itemprop="priceCurrency" content="USD">
<meta itemprop="price" content="650">

Rich Results

Semantic markup calls out key information



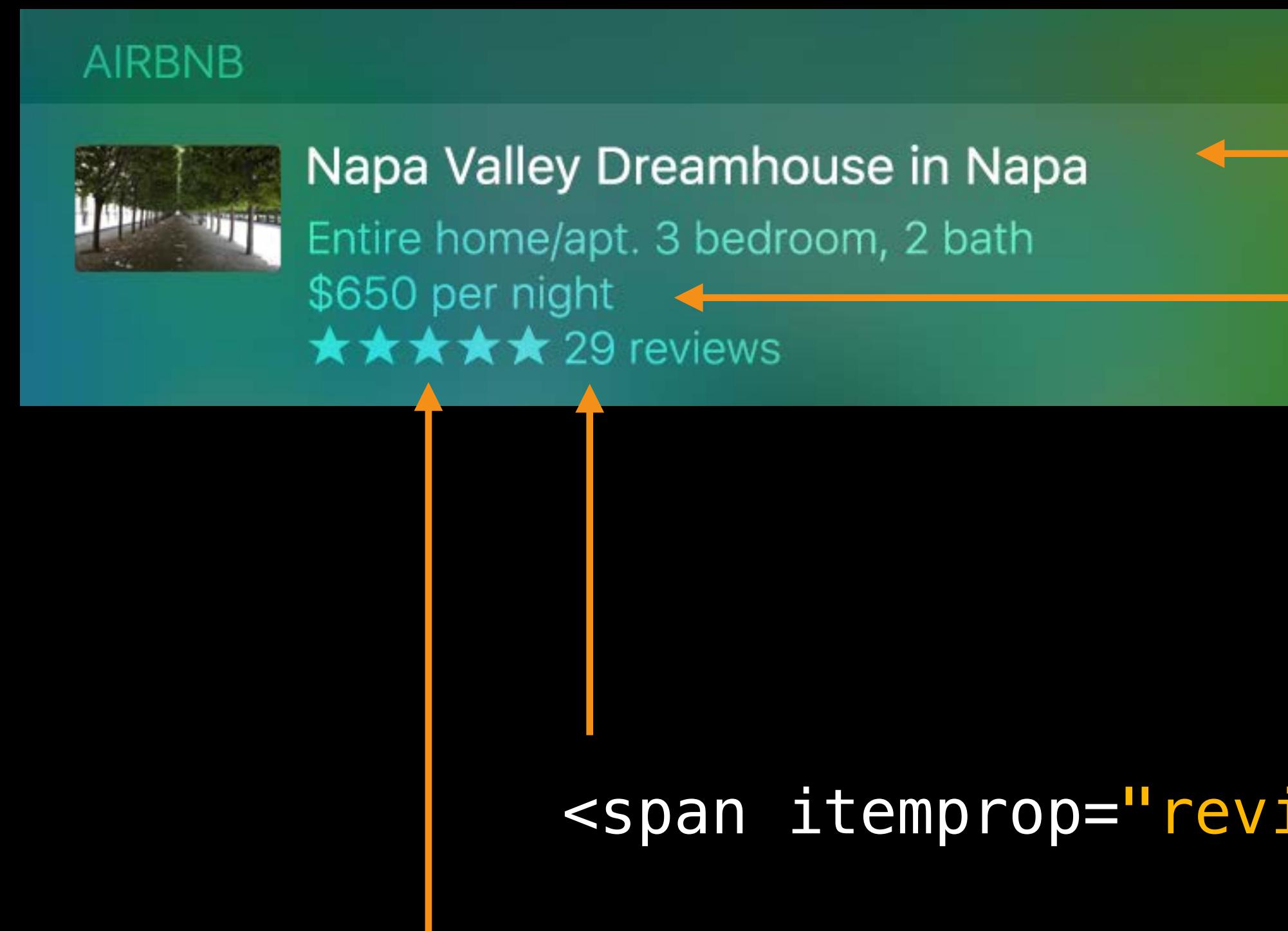
<title>Napa Valley Dream House
in Napa</title>

<meta itemprop="priceCurrency" content="USD">
<meta itemprop="price" content="650">

29

Rich Results

Semantic markup calls out key information



<title>Napa Valley Dream House
in Napa</title>

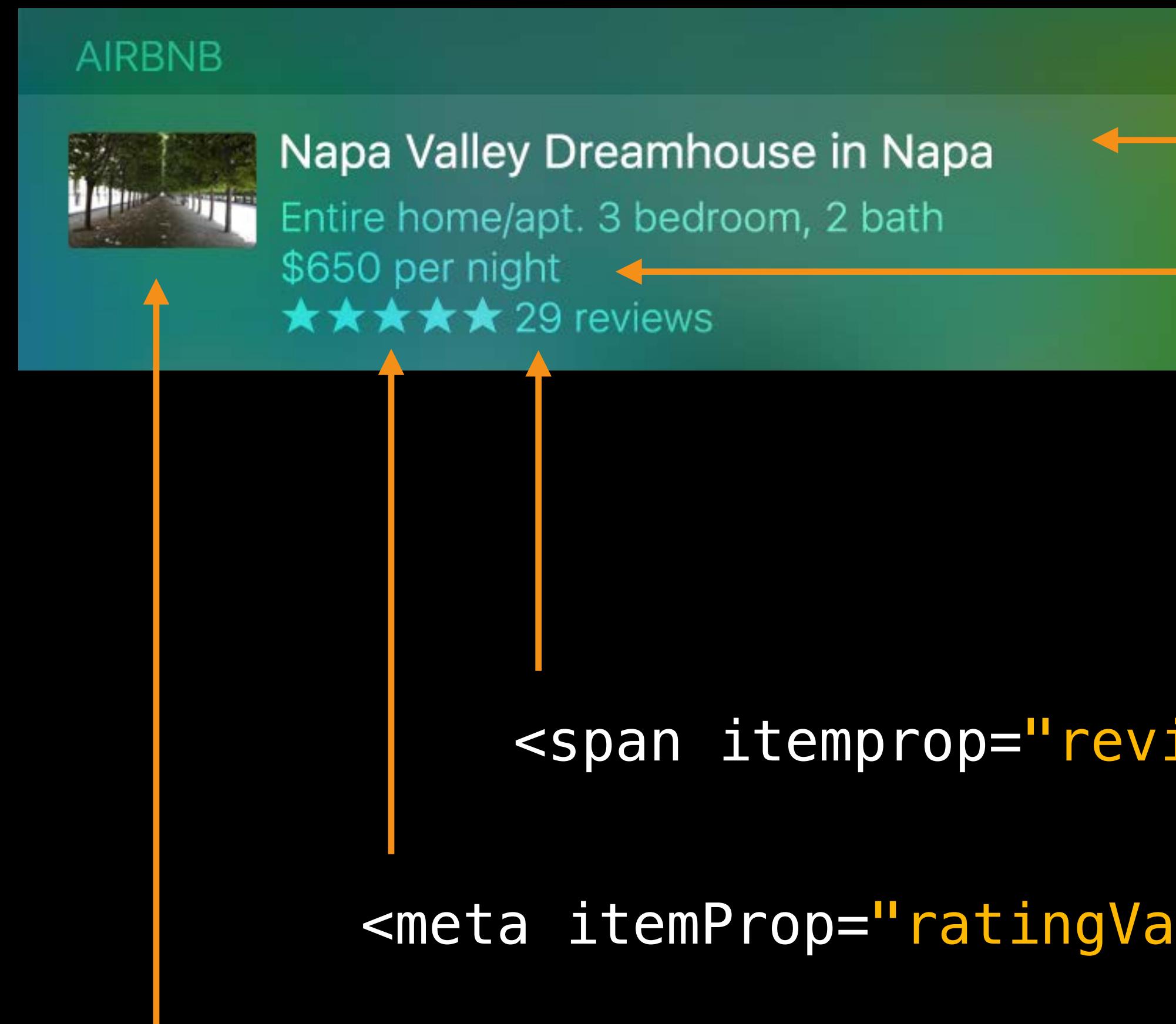
<meta itemprop="priceCurrency" content="USD">
<meta itemprop="price" content="650">

29

<meta itemProp="ratingValue" content="5.0">

Rich Results

Semantic markup calls out key information



<title>Napa Valley Dream House
in Napa</title>

<meta itemprop="priceCurrency" content="USD">
<meta itemprop="price" content="650">

29

<meta itemProp="ratingValue" content="5.0">

<meta property="og:image" content="http://..."/>

Rich Results

Supported schemas

Rich Results

Supported schemas

AggregateRating

Rich Results

Supported schemas

AggregateRating

Offers

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

InteractionCount

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

InteractionCount

Organization

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

InteractionCount

Organization

Recipe

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

InteractionCount

Organization

Recipe

SearchAction

Rich Results

Supported schemas

AggregateRating

Offers

PriceRange

InteractionCount

Organization

Recipe

SearchAction

ImageObject

Rich Results

Actions

Certain structured data allows your results to be actionable

Rich Results

Actions

Certain structured data allows your results to be actionable

Current supported actions are:

- Dialing a phone number

Rich Results

Actions

Certain structured data allows your results to be actionable

Current supported actions are:

- Dialing a phone number
- Getting directions to an address

Rich Results

Actions

Certain structured data allows your results to be actionable

Current supported actions are:

- Dialing a phone number
- Getting directions to an address
- Playing audio or video

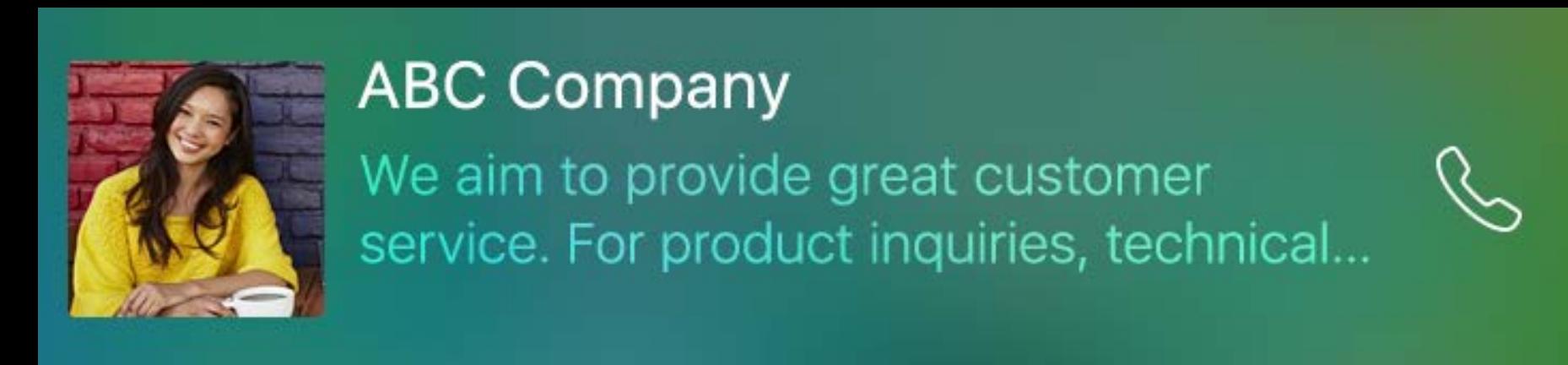
Rich Results

Actions

Rich Results

Actions

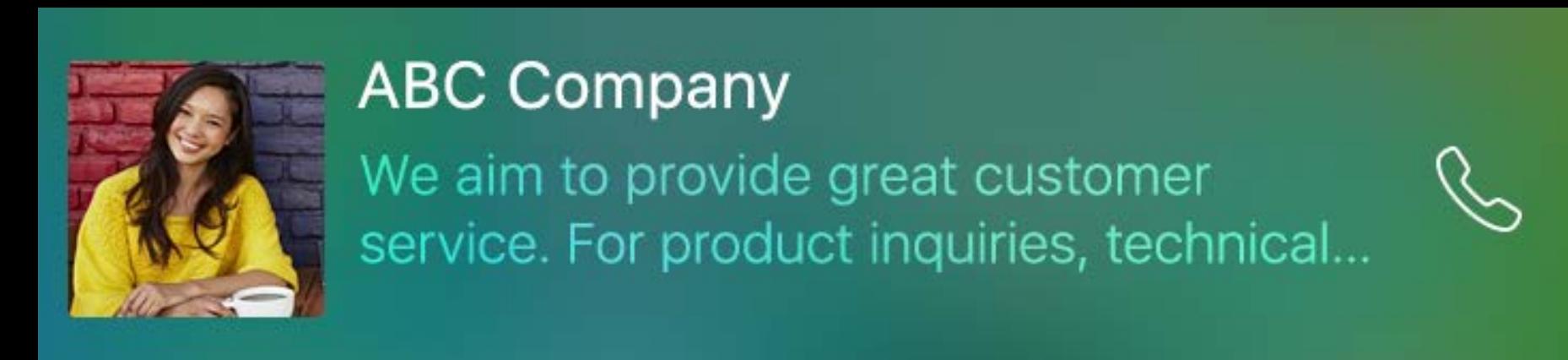
```
<div itemscope itemtype="http://schema.org/Organization">
  <span itemprop="telephone">
    (408) 123-4567</span>
</div>
```



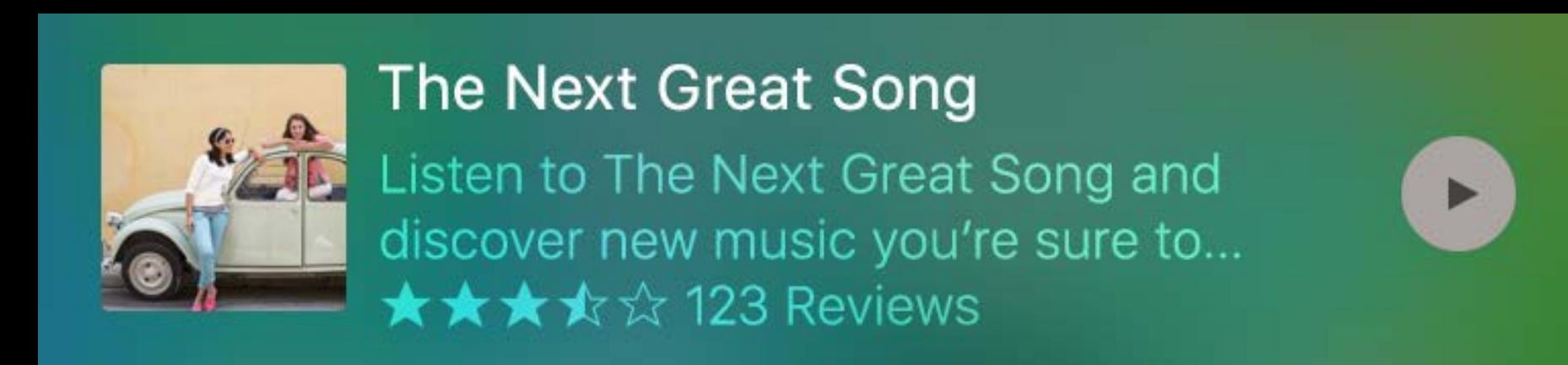
Rich Results

Actions

```
<div itemscope itemtype="http://schema.org/Organization">  
  <span itemprop="telephone">  
    (408) 123-4567</span>  
</div>
```



```
<div itemscope itemtype="http://schema.org/AudioObject">  
  <meta itemprop="contentUrl" content="http://abc.com/x.m4a" />  
</div>
```



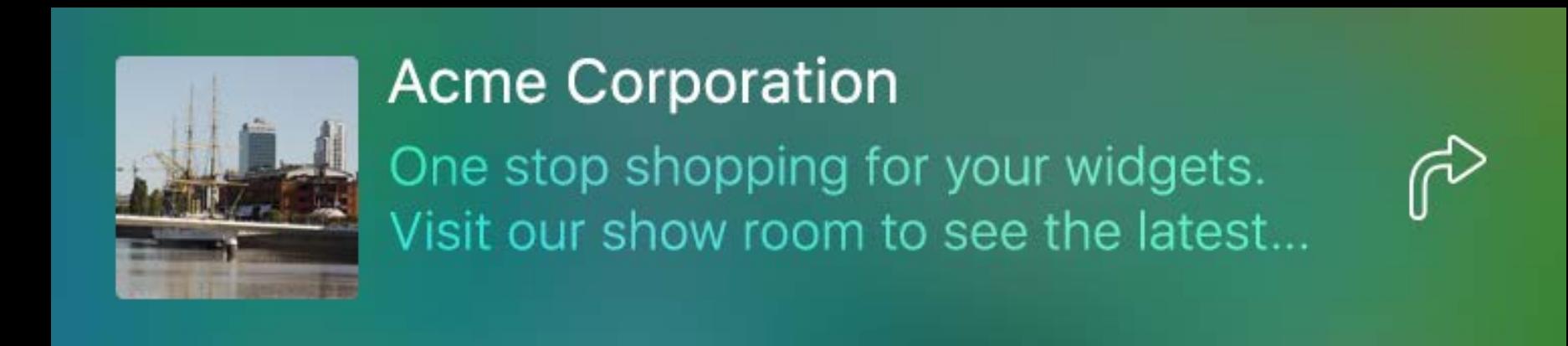
Rich Results

Actions

Rich Results

Actions

```
<div itemprop="address" itemscope  
itemtype="http://schema.org/  
PostalAddress">  
  <span itemprop="streetAddress">  
    200 Innovation Way  
  </span>  
  <span itemprop="addressLocality">  
    San Francisco</span>  
  <span itemprop="addressRegion">  
    CA</span>  
  <span itemprop="postalCode">  
    94108</span>  
</div>
```



Rich Results

Testing tools

App search markup validator for deep link and structured data testing

Check our developer site for more information later this year:

<http://developer.apple.com/ios/search/>

Rich Results

Resources

App Search Developer Site

<http://developer.apple.com/ios/search/>

Twitter's Cards Protocol

<http://dev.twitter.com/cards/mobile>

Facebook's App Links

<http://applinks.org>

schema.org

<http://schema.org>

Open Graph

<http://ogp.me>

Achieving Best Results

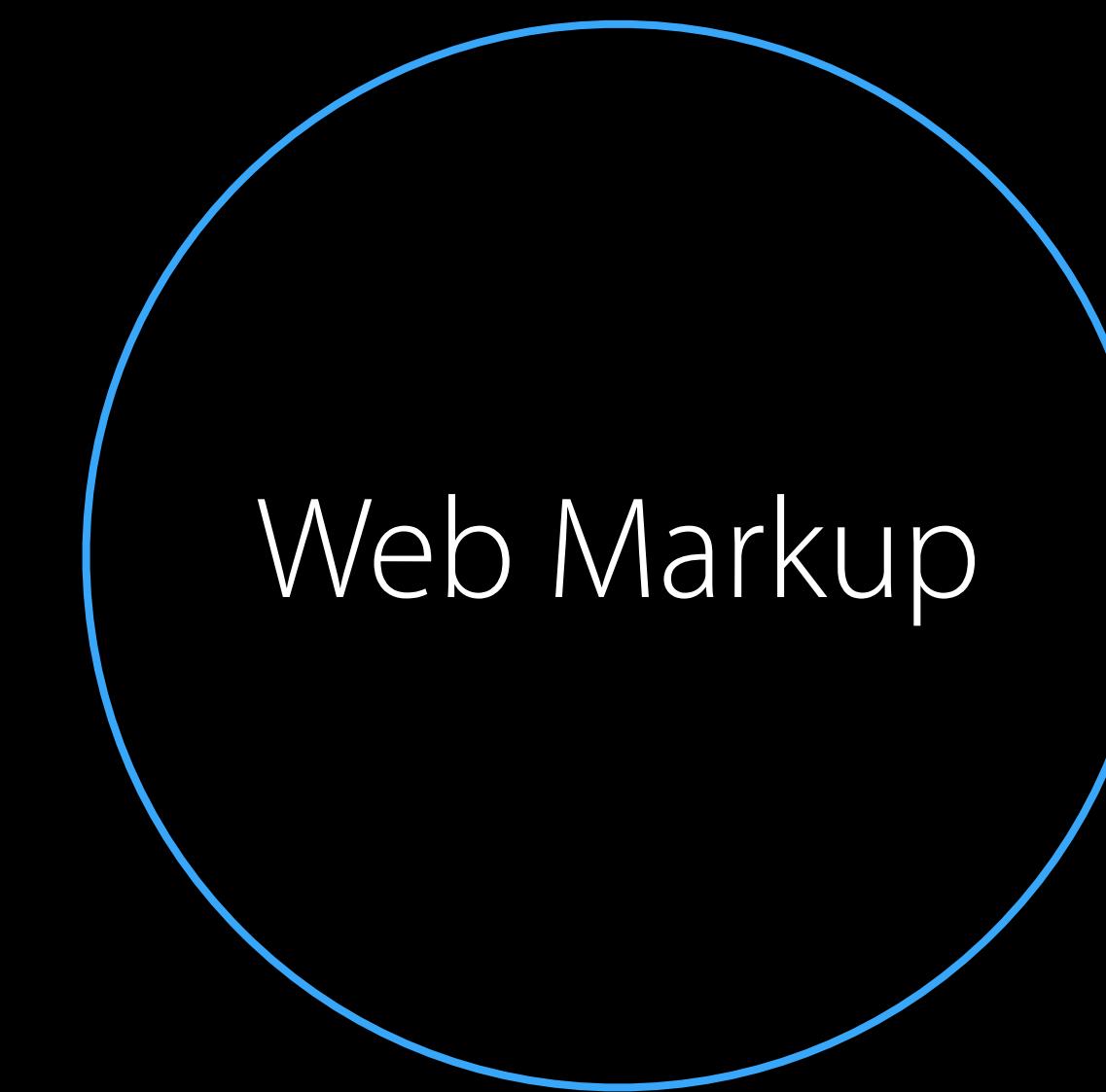
Adopting Multiple APIs



Viewed App Content



Any App Content

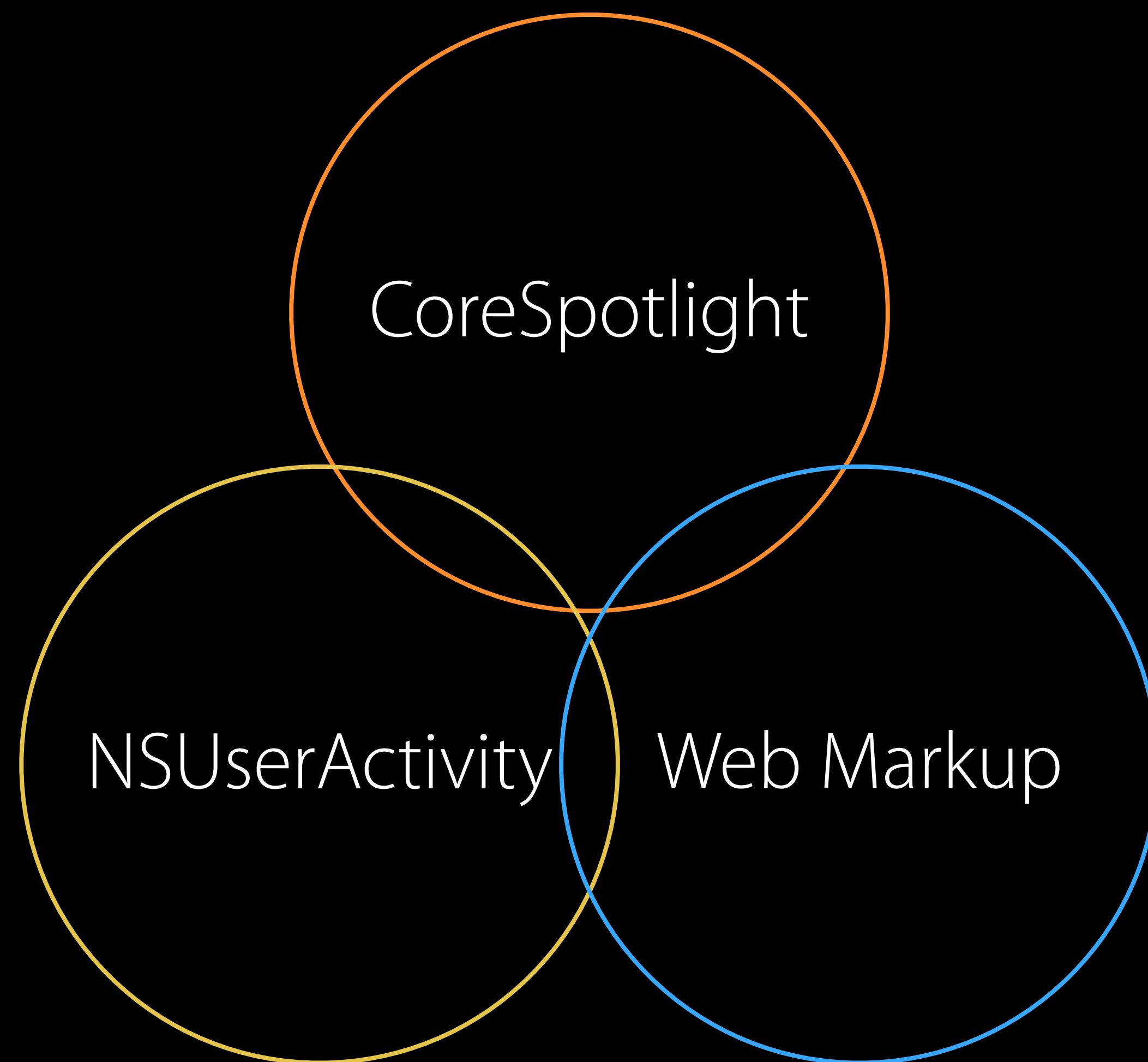


App Content on Web

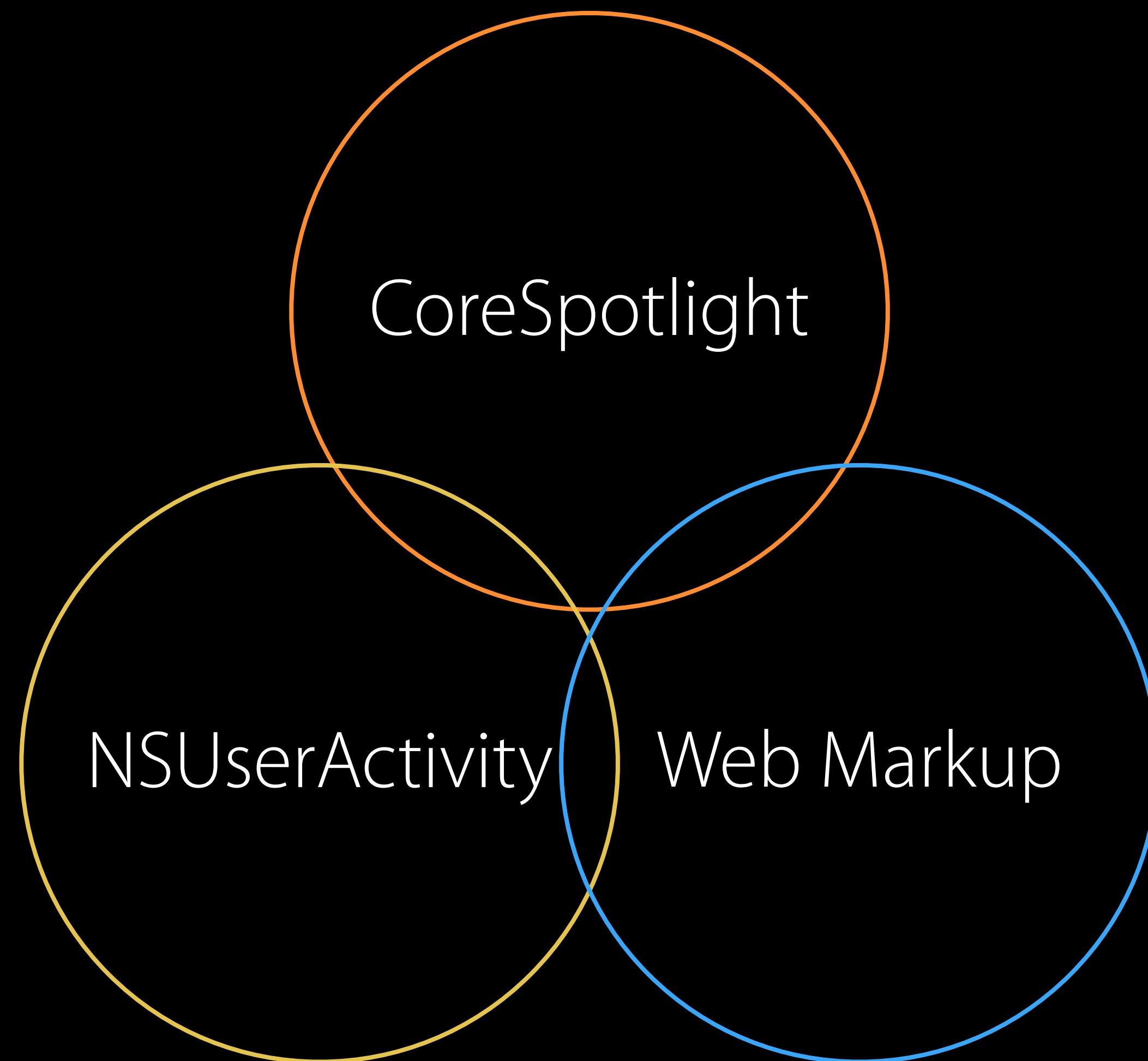
Relevance: Linking APIs



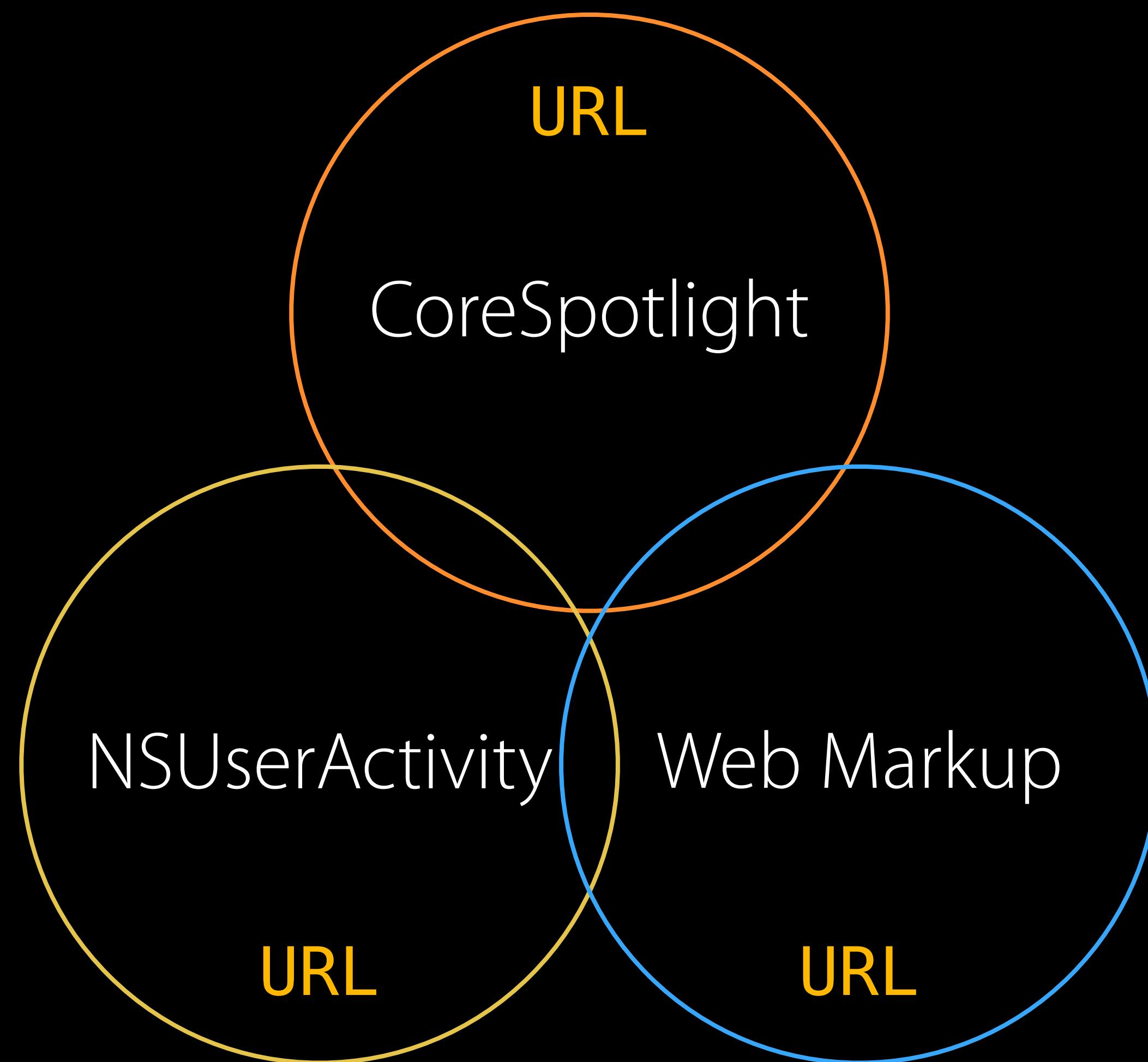
Relevance: Linking APIs



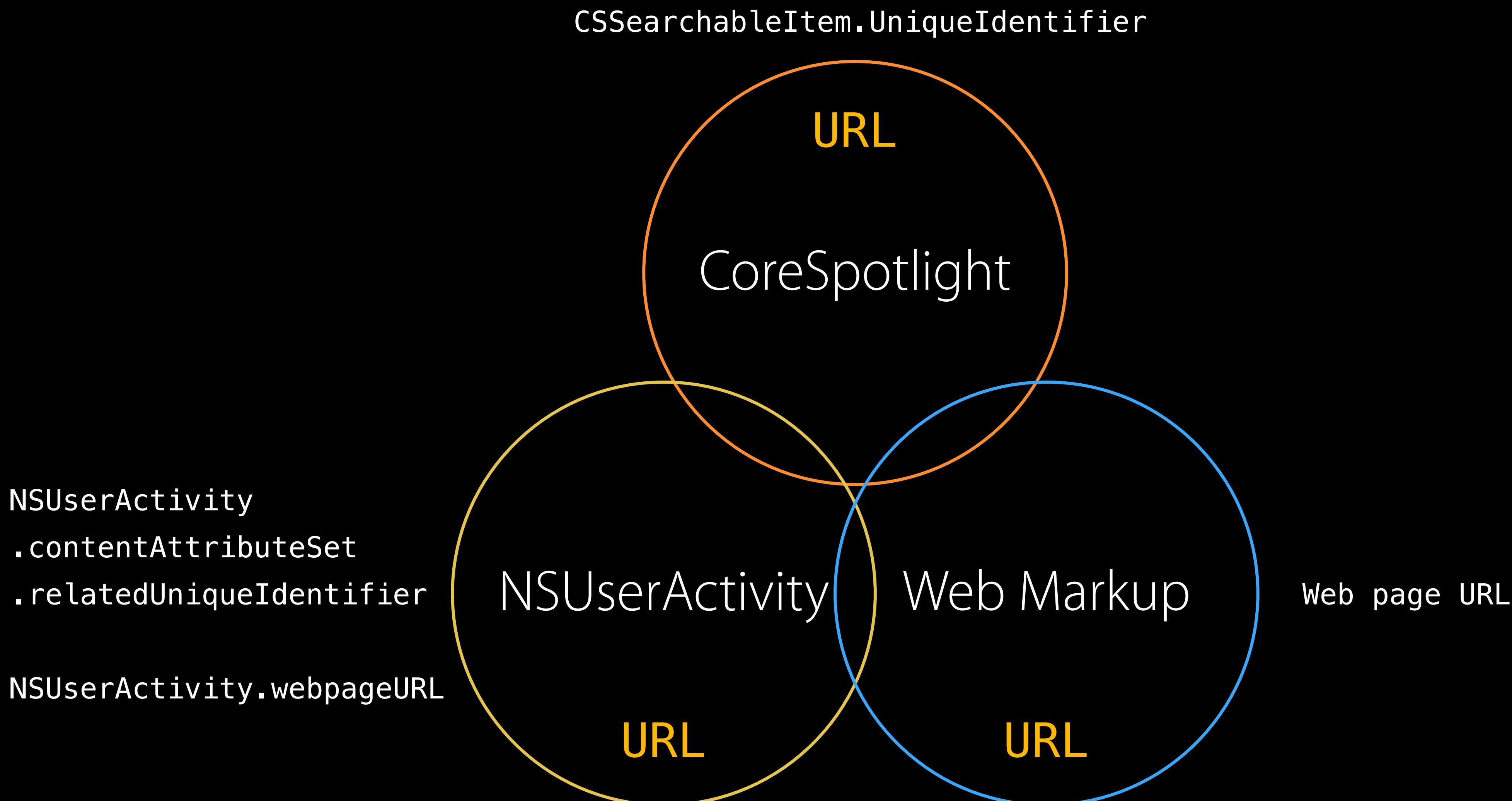
Relevance: Linking APIs



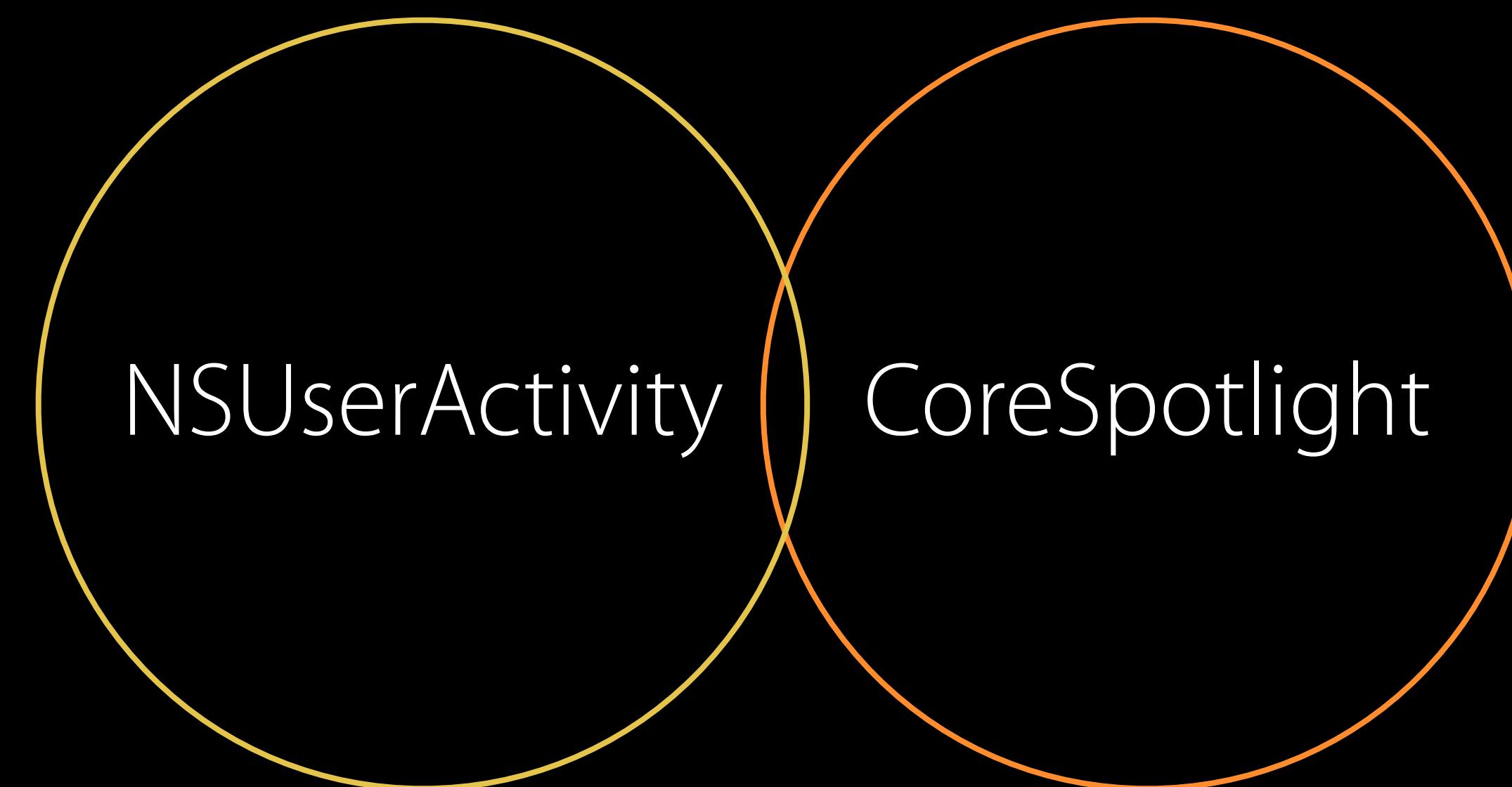
Relevance: Linking APIs



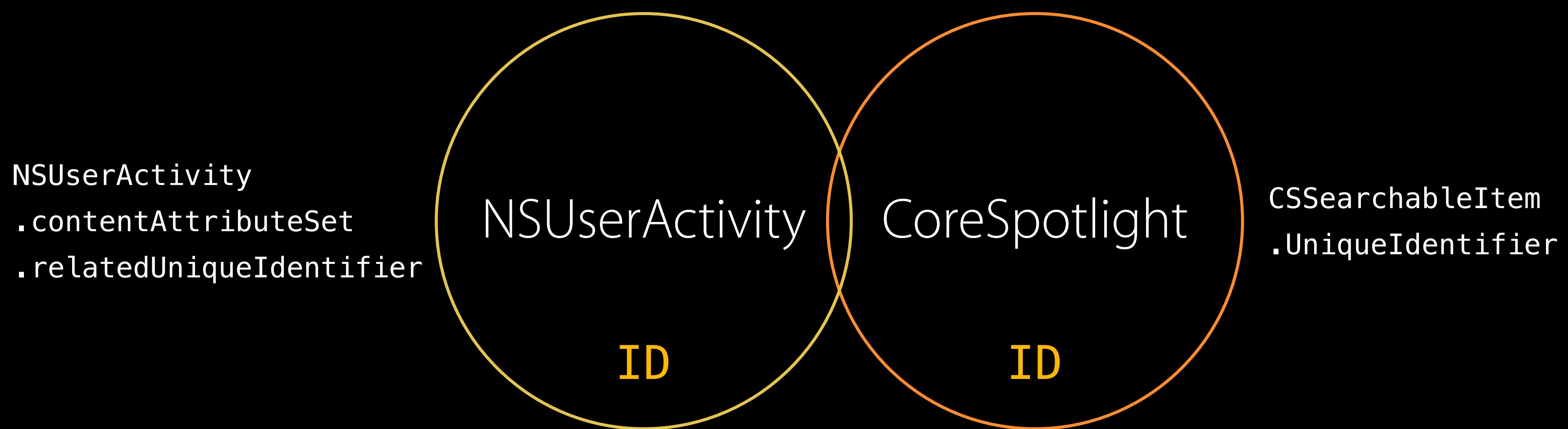
Relevance: Linking APIs



Relevance: Linking APIs



Relevance: Linking APIs



Relevance

Understanding the basis of relevance

Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Result quality a function of user interaction

Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Result quality a function of user interaction

URL Popularity

Activities (NSUserActivity)

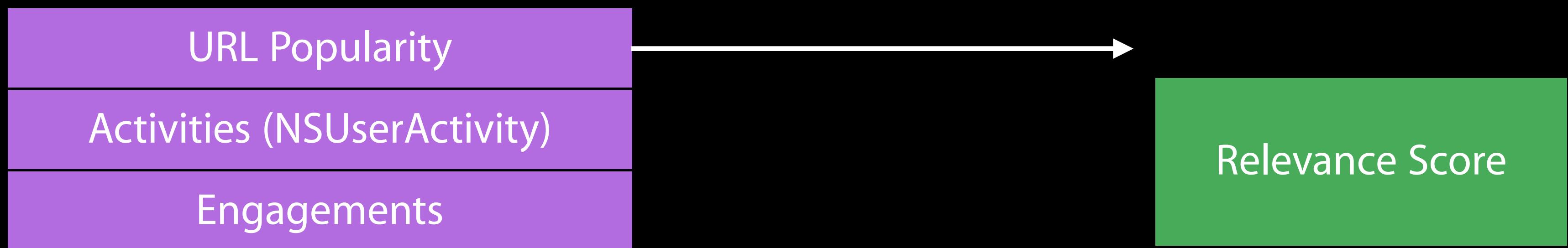
Engagements

Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Result quality a function of user interaction

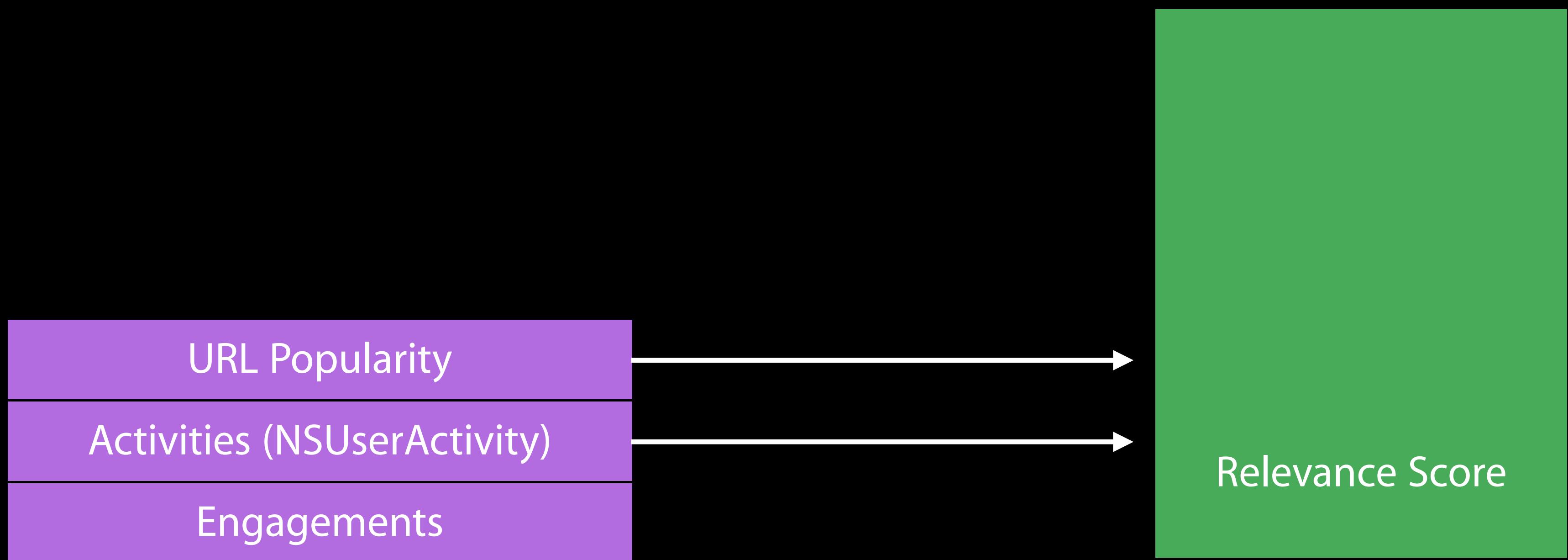


Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Result quality a function of user interaction

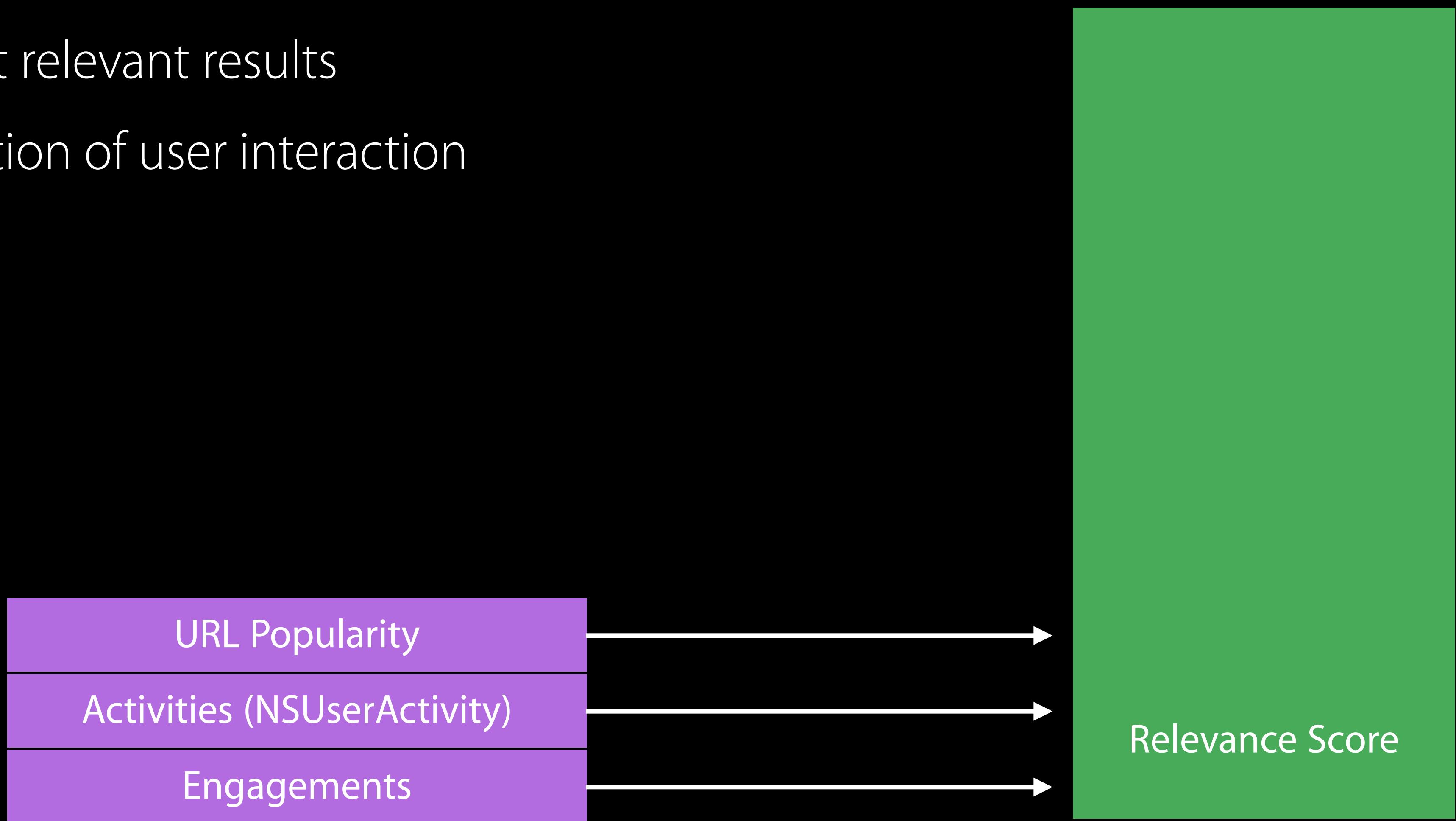


Relevance

Understanding the basis of relevance

Goal to provide most relevant results

Result quality a function of user interaction



Optimizing Relevance

Best practices

Optimizing Relevance

Best practices

Create great apps and content

Adopt API provisions that contribute to relevance

- NSUserActivity
- NSUserActivity public indexing where appropriate
- Schema markup for ratings and reviews

Follow User Interface Guidelines

Protecting Relevance

Ranking works in both directions

Protecting Relevance

Ranking works in both directions

Search will down-rank or suppress poor results

Malicious or poorly considered implementations penalized

Ratio of engagement-to-shown a key quality metric

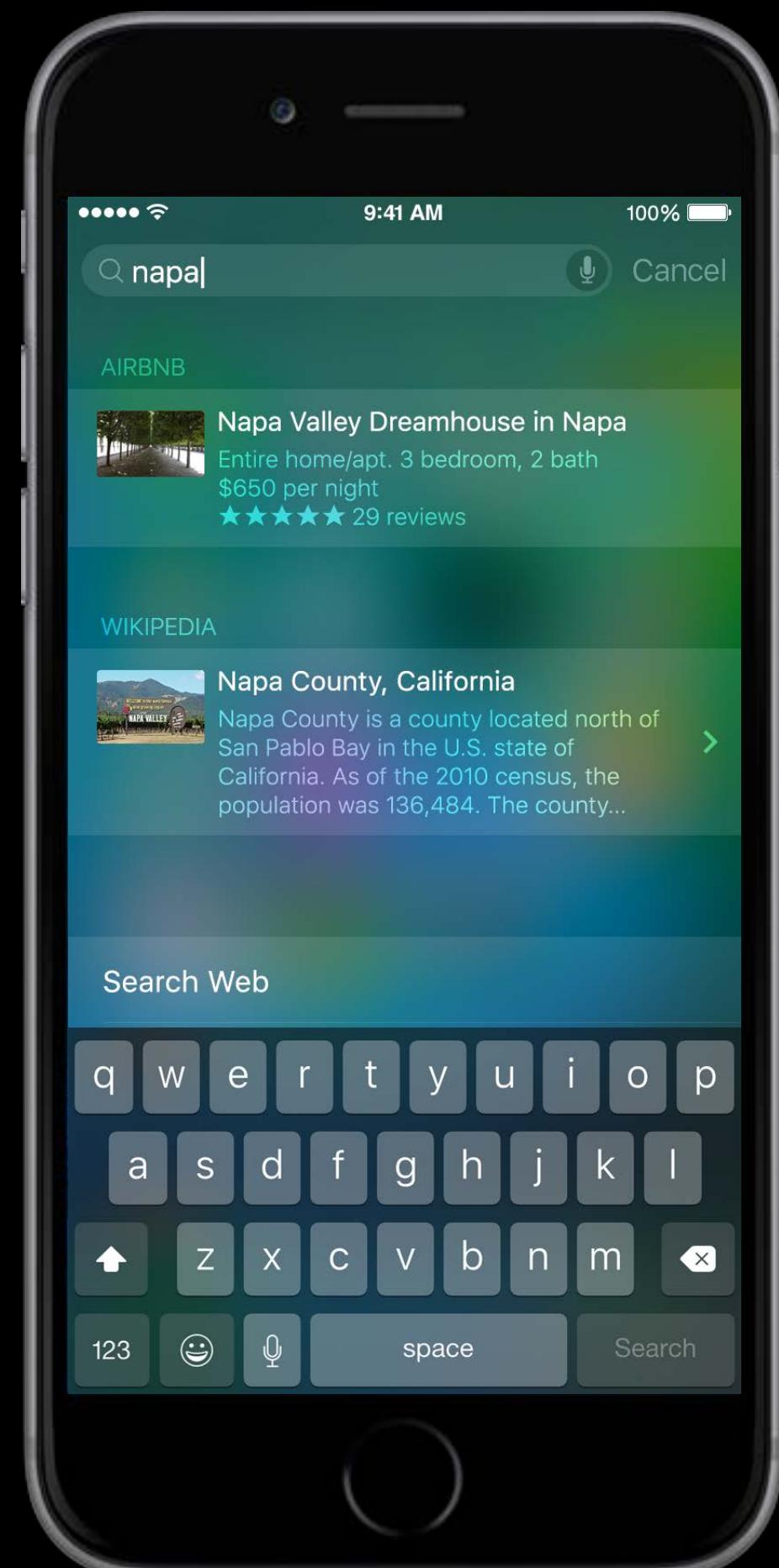
User Experience Guidelines

Descriptive Results

Descriptive Results

Richer results have better satisfaction and engagement

- Thumbnail, well-structured description, ratings, and actions
- Relevant and appealing image
- Key information user is looking for



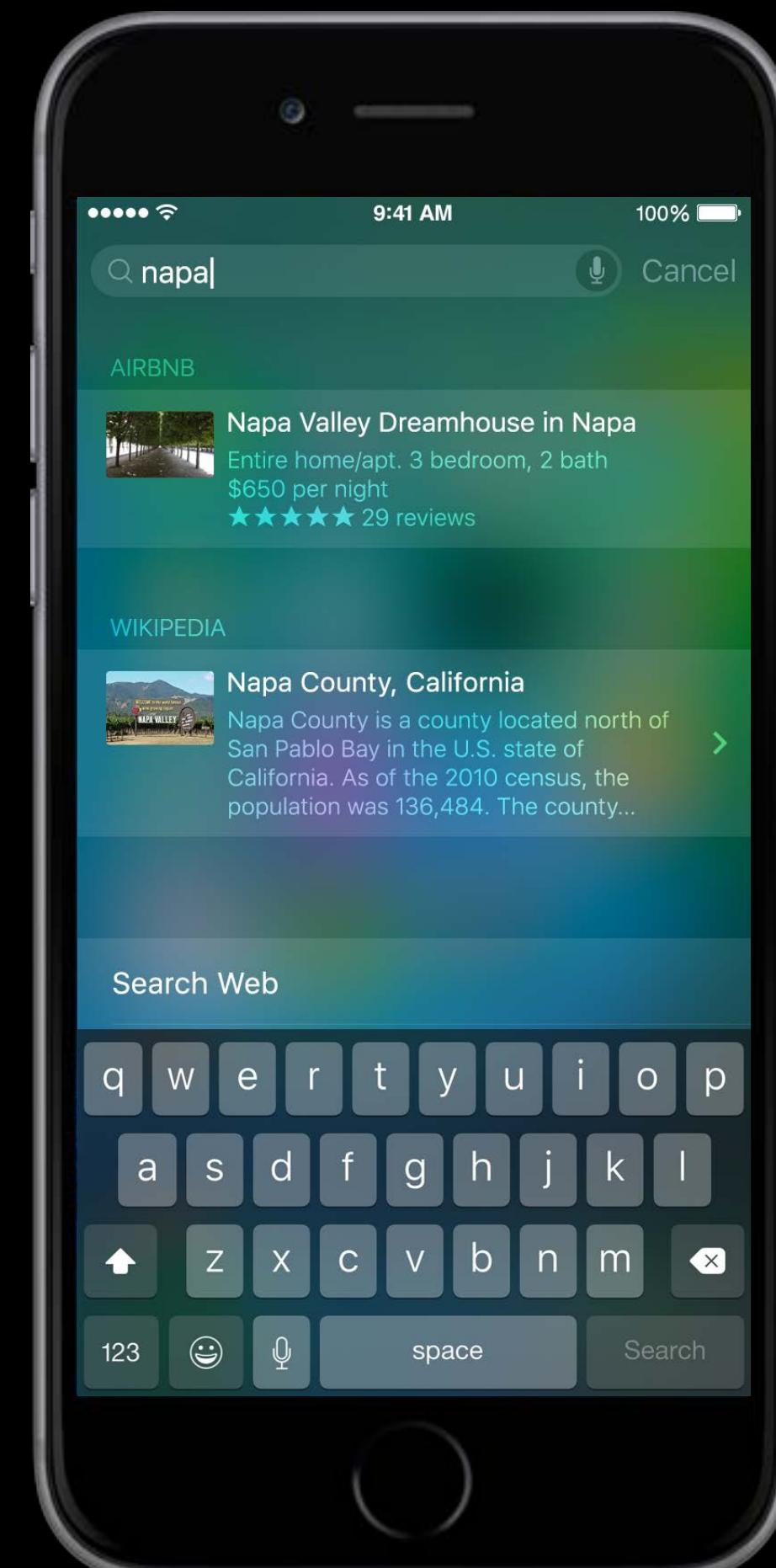
Descriptive Results

Richer results have better satisfaction and engagement

- Thumbnail, well-structured description, ratings, and actions
- Relevant and appealing image
- Key information user is looking for

Keywords associate your result with queries

- Typical items should have 3 to 5 keywords
- Category keywords, e.g., “ticket” or “recipe”
- Synonyms or abbreviations for item subject



UI Behavior on App Launch

Get users to content with minimal distraction

UI Behavior on App Launch

Get users to content with minimal distraction

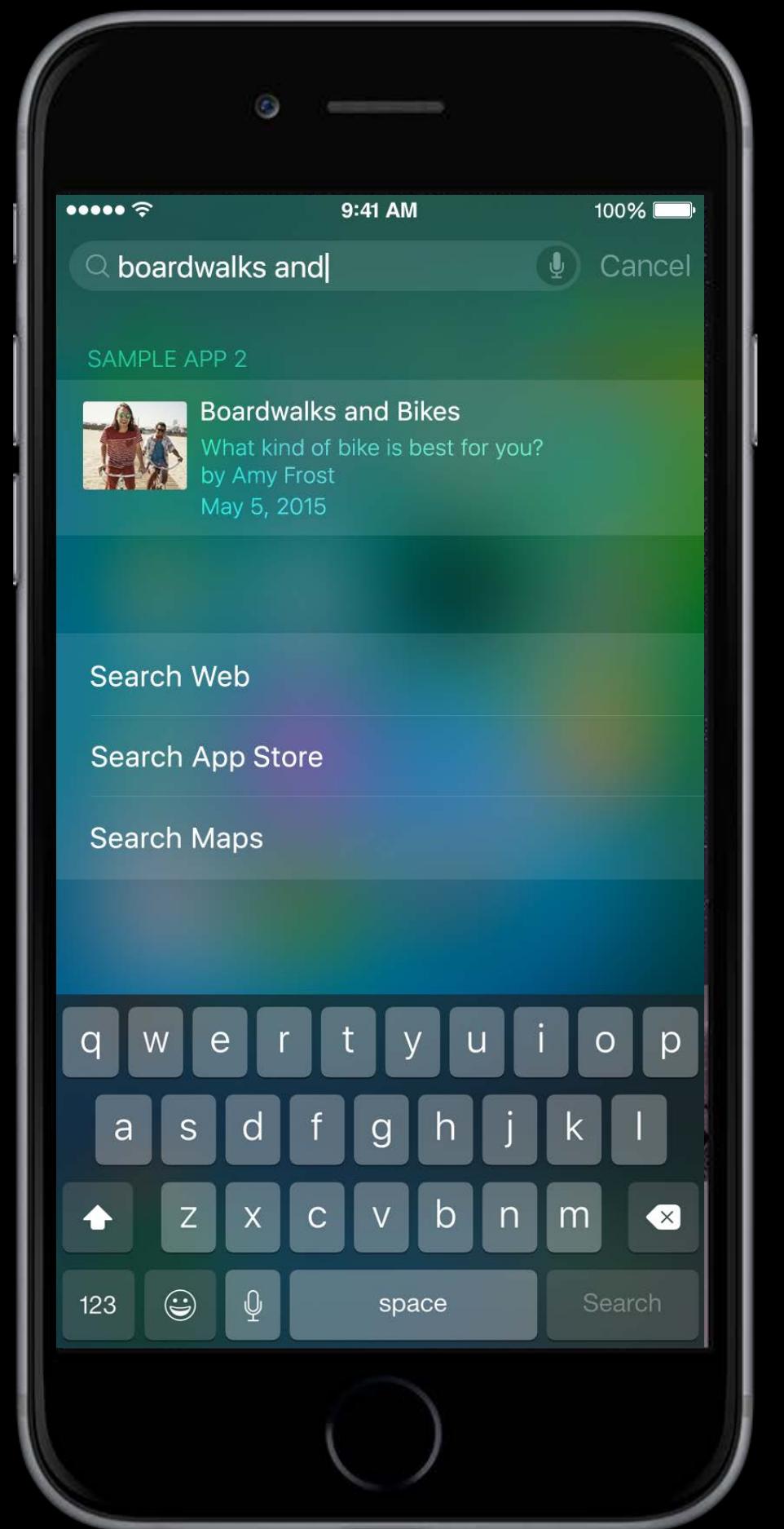
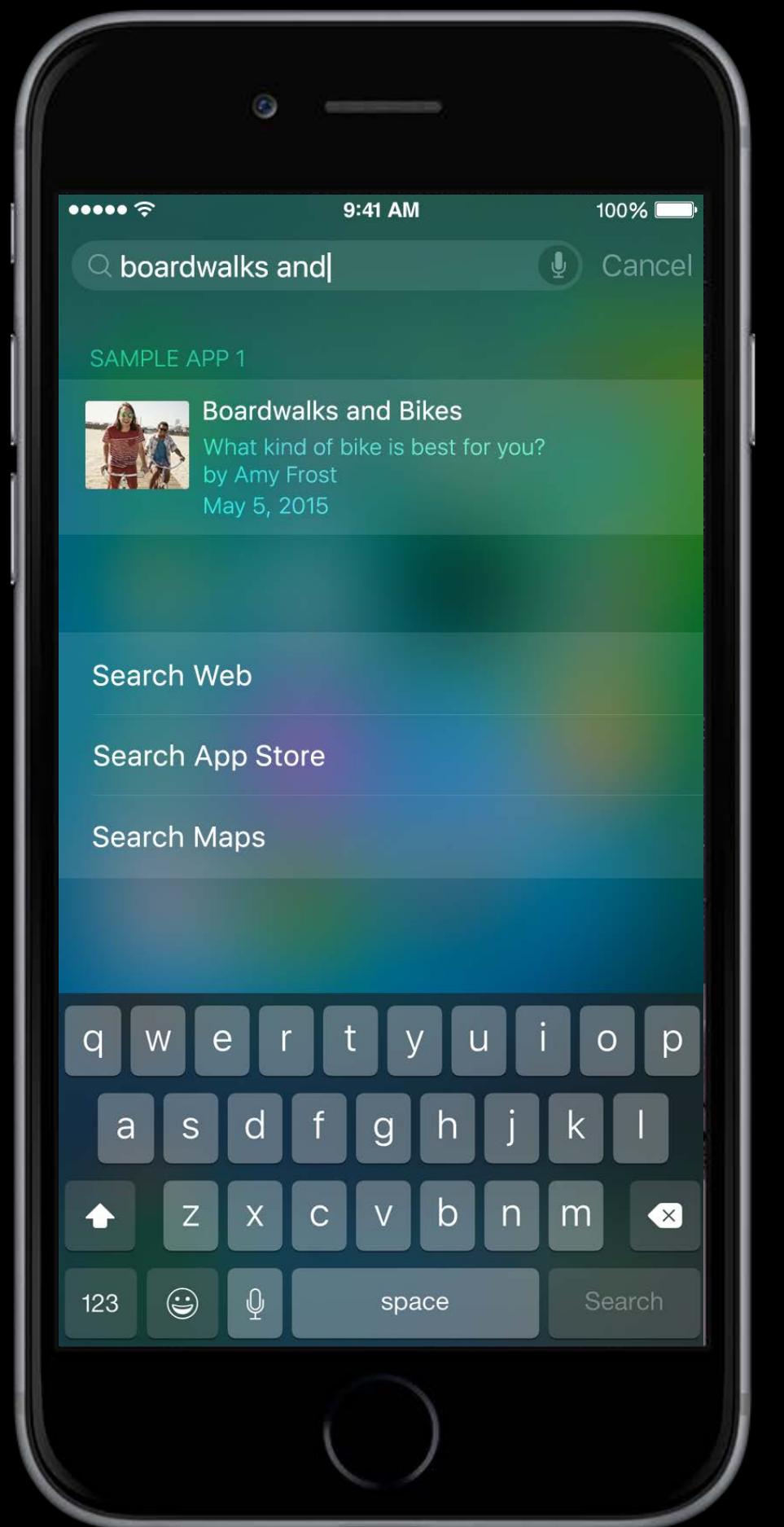
Go straight to content, no interstitials or multi-step builds

Guidelines apply to both app and web links

Time from result to content is measured and used in ranking

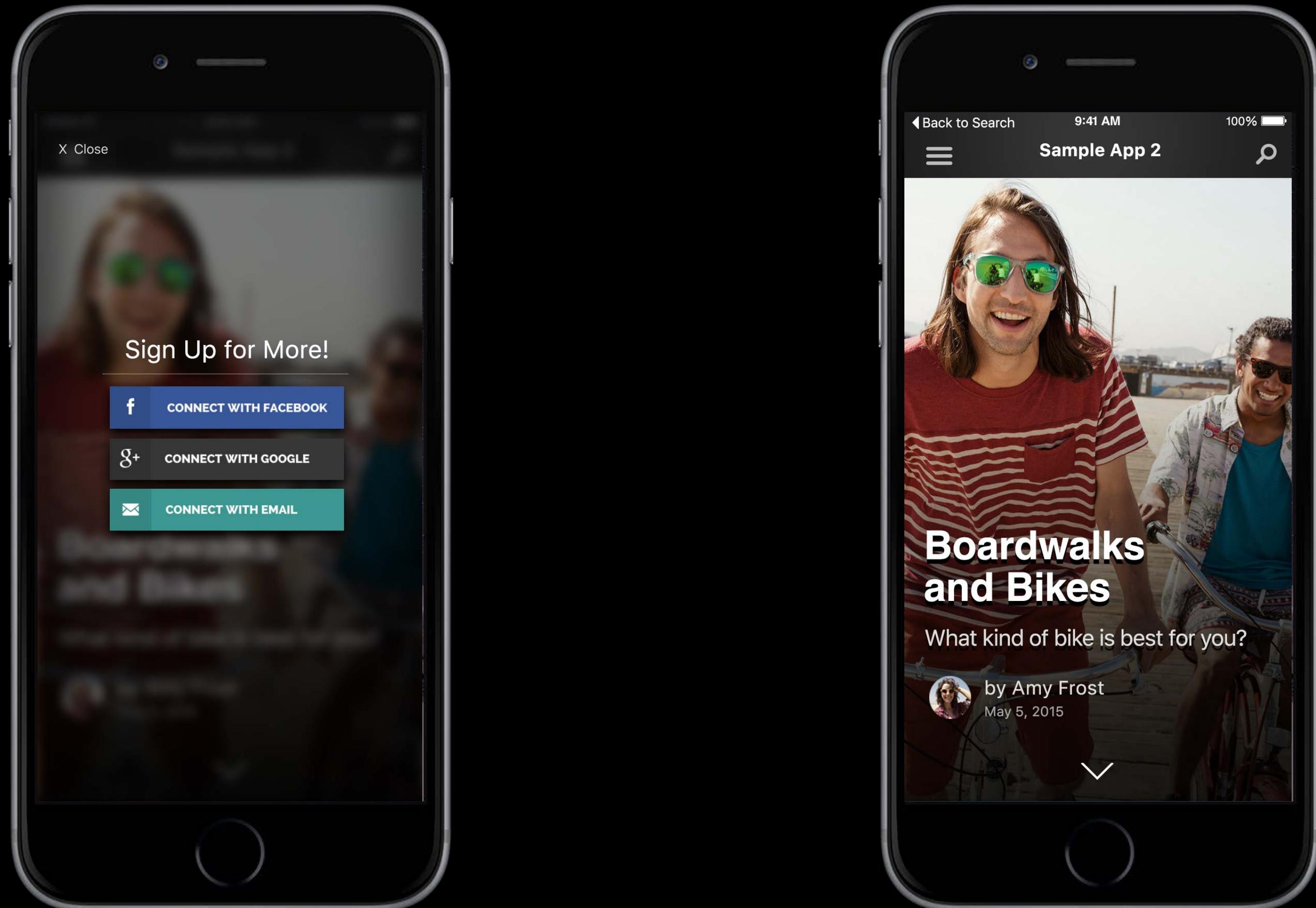
UI Behavior on App Launch

Examples



UI Behavior on App Launch

Examples



What to Index

What to Index

Any content viewed, created, or curated by user

What to Index

Any content viewed, created, or curated by user

Navigation points and features

What to Index

Any content viewed, created, or curated by user

Navigation points and features

New messages, content, or items arriving on device

What to Index

Any content viewed, created, or curated by user

Navigation points and features

New messages, content, or items arriving on device

Consider proactively indexed items of potential interest

What to Index

Any content viewed, created, or curated by user

Navigation points and features

New messages, content, or items arriving on device

Consider proactively indexed items of potential interest

iOS Search is flexible, extensible, and open to creativity

Summary

Summary

Summary

Fast on-device and cloud search

Summary

Fast on-device and cloud search

Three easy-to-adopt APIs

Summary

Fast on-device and cloud search

Three easy-to-adopt APIs

Increase engagement

Summary

Fast on-device and cloud search

Three easy-to-adopt APIs

Increase engagement

Free organic marketing

More Information

Technical Support

Apple Developer Forums

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

Documentation

Search APIs Documentation

<http://developer.apple.com/ios/search>

General Inquiries

Paul Marcos, Software Evangelist

pmarcos@apple.com

Related Sessions

Seamless Linking to Your App

Nob Hill

Thursday 3:30PM

Labs

App Search and Spotlight Lab

Frameworks Lab A Wednesday 12:00PM

App Search and Spotlight Lab

Frameworks Lab E Friday 1:30PM

 **WWDC 15**