App Frameworks

#WWDC16

A Peek at 3D Touch

Enhancing your apps for the next dimension of touch

Session 228

Tyler Fox UIKit Frameworks Engineer
Peter Hajas UIKit Frameworks Engineer

Agenda

Agenda

Overview of 3D Touch

Agenda

Overview of 3D Touch

Home Screen Quick Actions

Agenda

Overview of 3D Touch

Home Screen Quick Actions

Peek and Pop

Agenda

NEW

Overview of 3D Touch

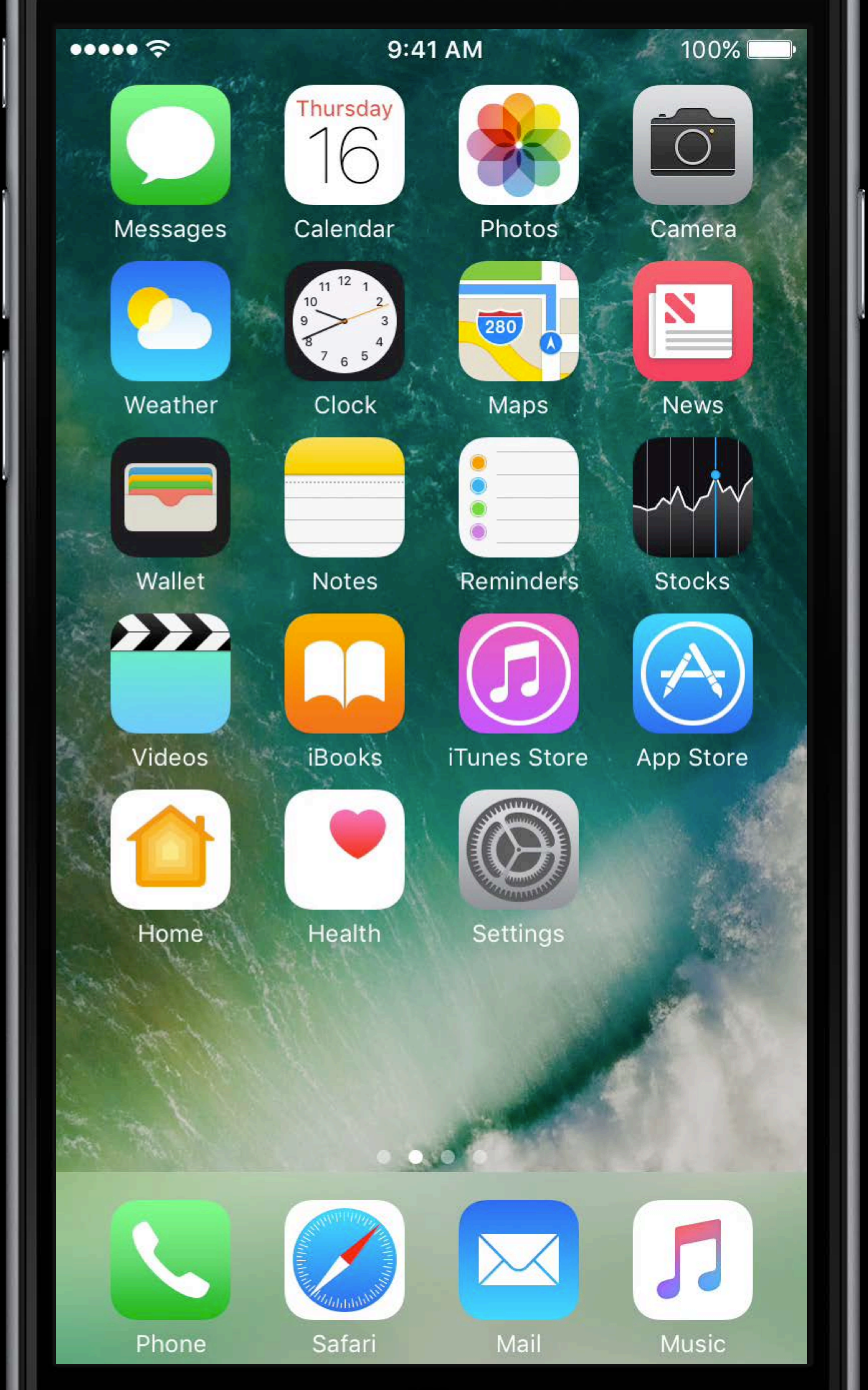
Home Screen Quick Actions

Peek and Pop

UIPreviewInteraction

Overview of 3D Touch

Tour across the system


9:41 AM
100%
Thursday
16
Messages
Calendar
Photos
Camera
Weather
Clock
280
Maps
News
Wallet
Notes
Reminders
Stocks
Videos
iBooks
iTunes Store
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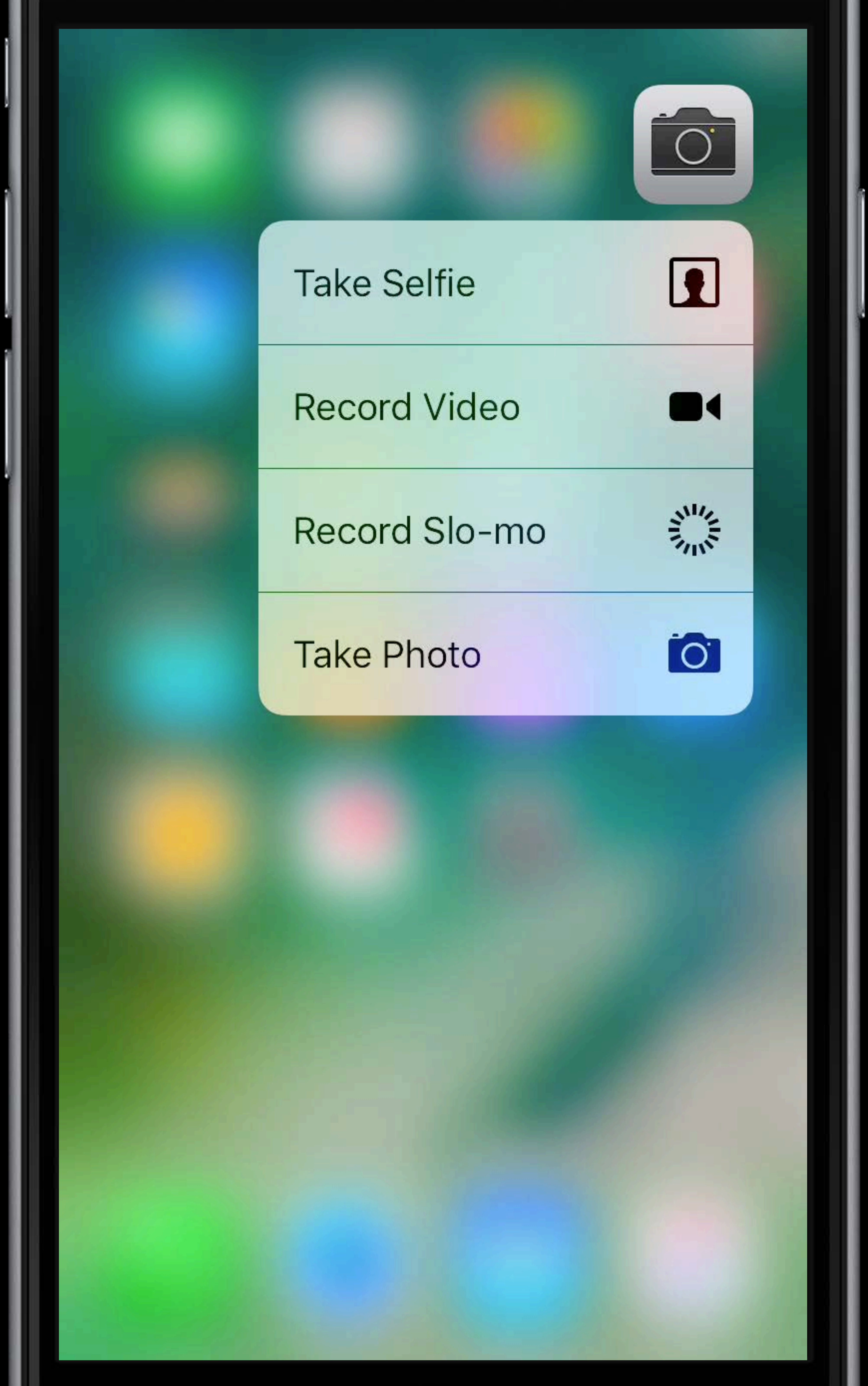
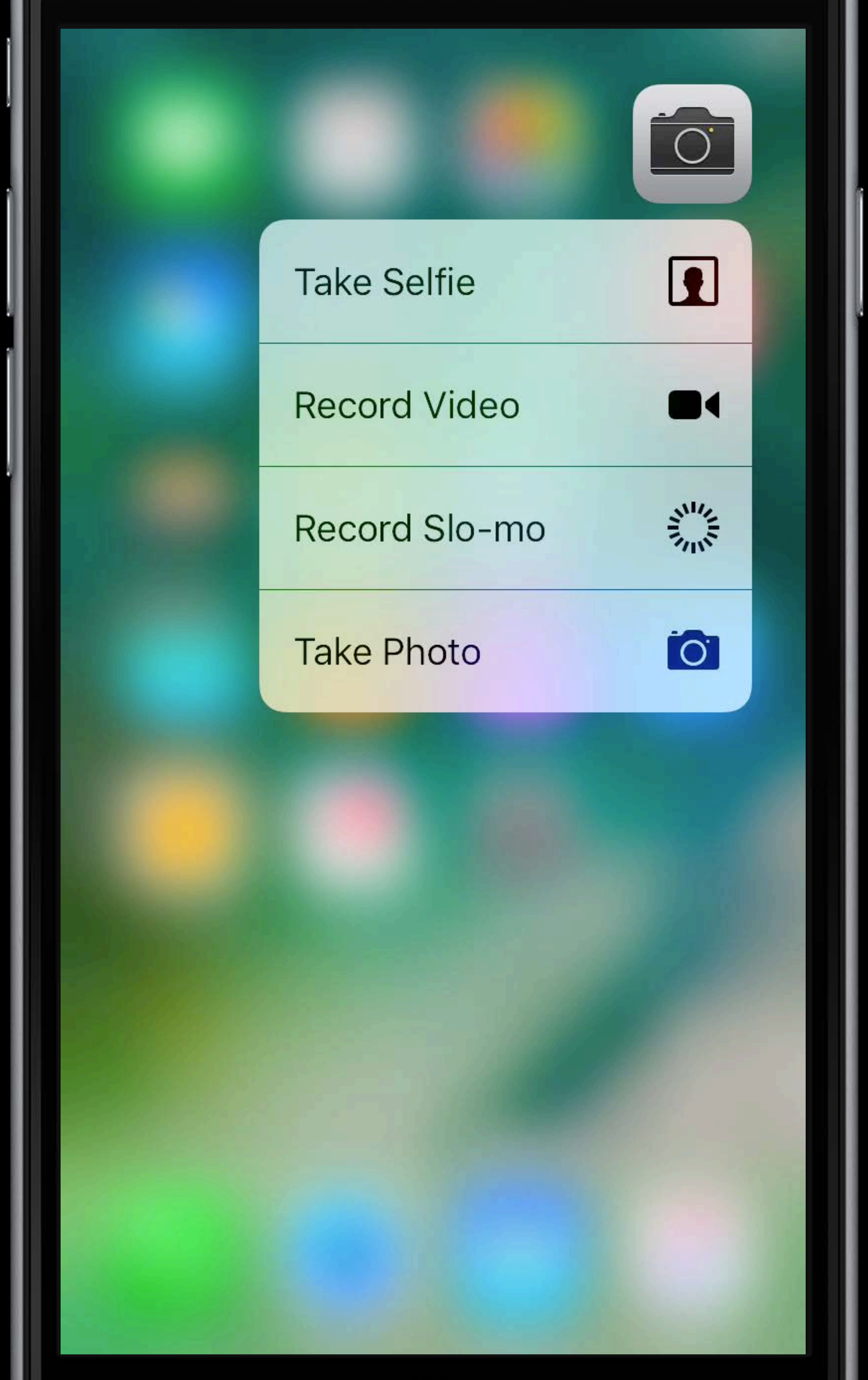

Take Selfie
Record Video
Record Slo-mo
Take Photo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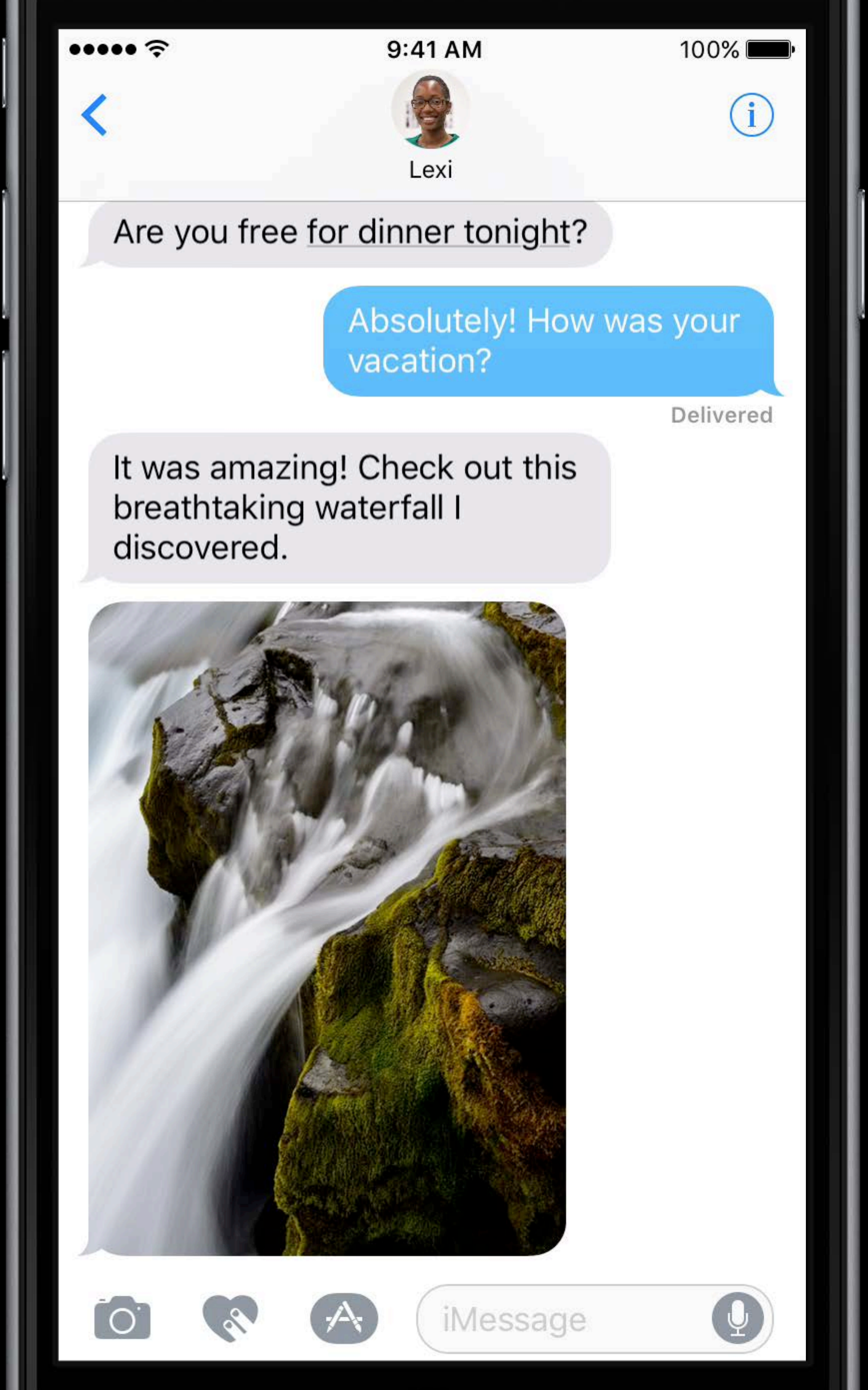
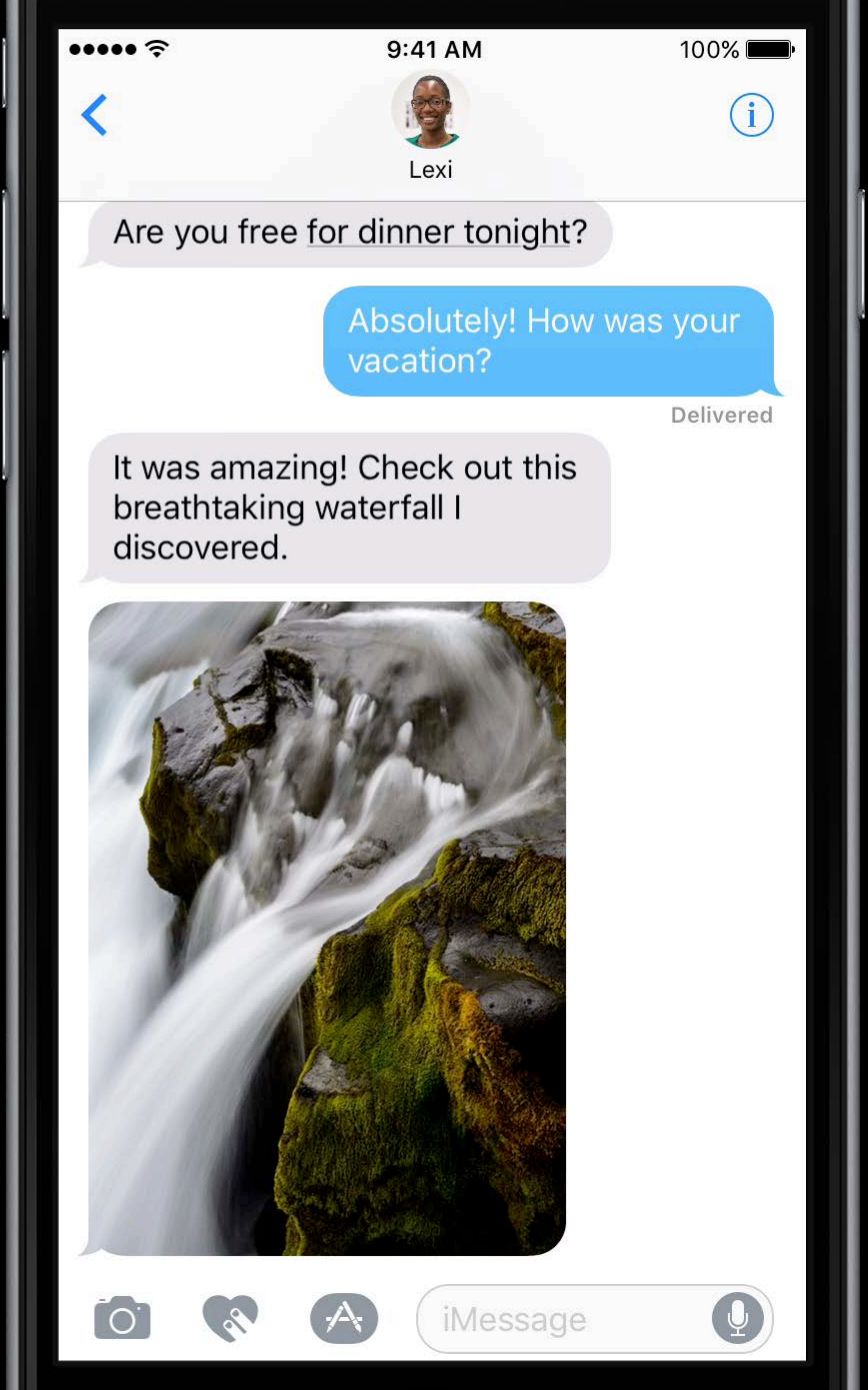


Are you free for dinner tonight?

Absolutely! How was your vacation?

It was amazing! Check out this breathtaking waterfall I discovered.



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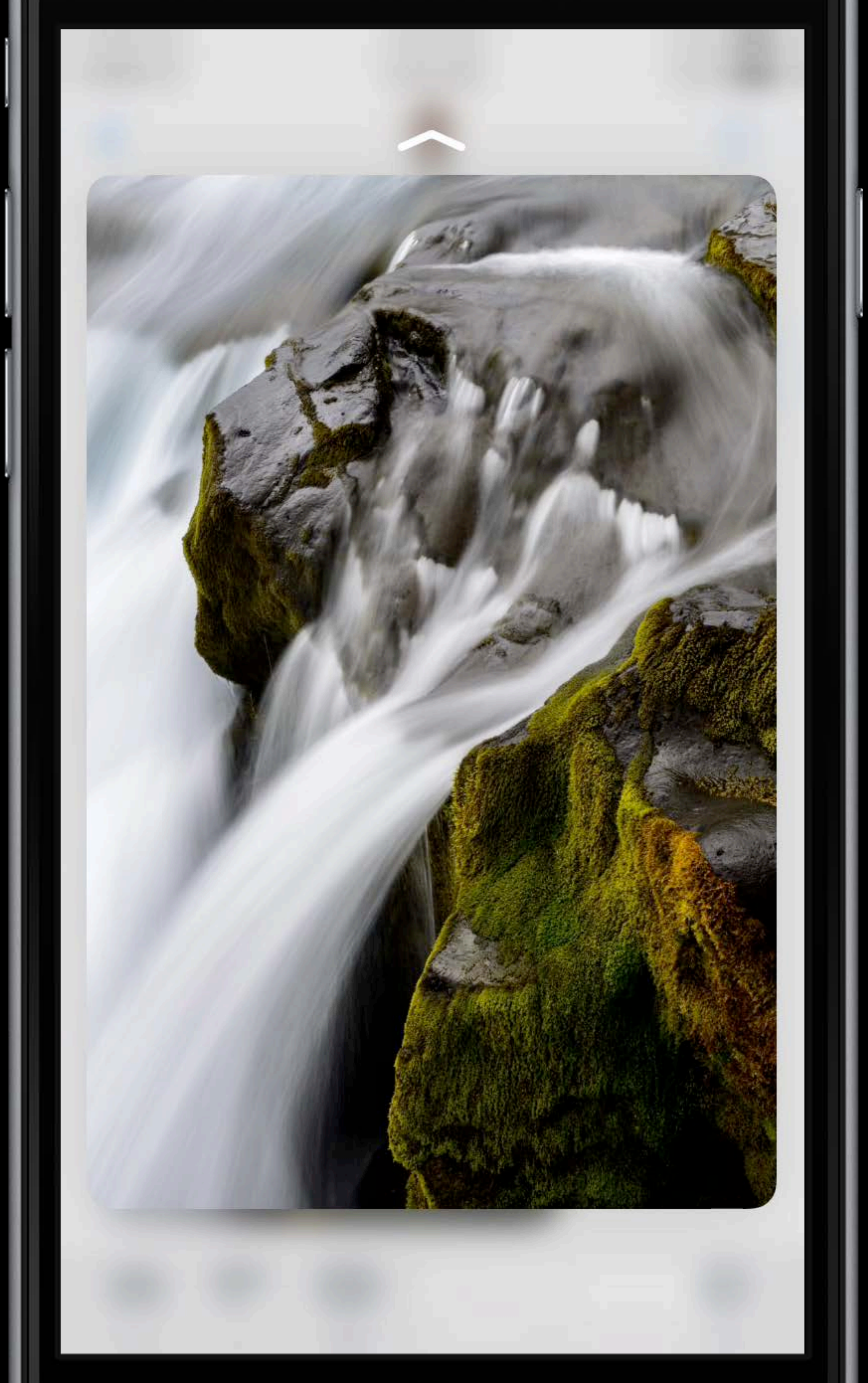

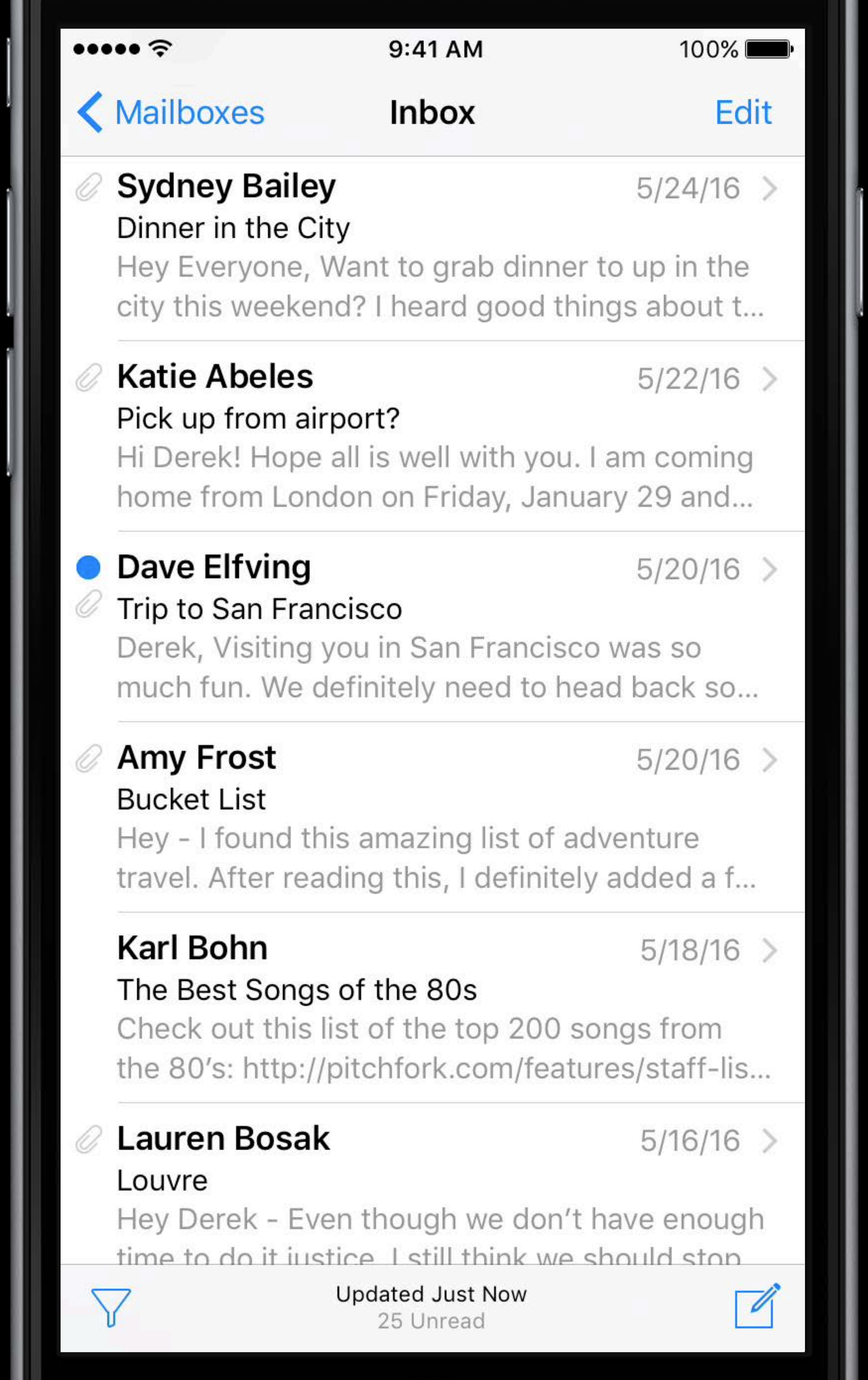

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Mailboxes **Inbox** Edit

Sydney Bailey 5/24/16
Dinner in the City
Hey Everyone, Want to grab dinner to up in the city this weekend? I heard good things about t...

Katie Abeles 5/22/16
Pick up from airport?
Hi Derek! Hope all is well with you. I am coming home from London on Friday, January 29 and...

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Derek, Visiting you in San Francisco was so much fun. We definitely need to head back so...

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Lauren Bosak 5/16/16
Louvre
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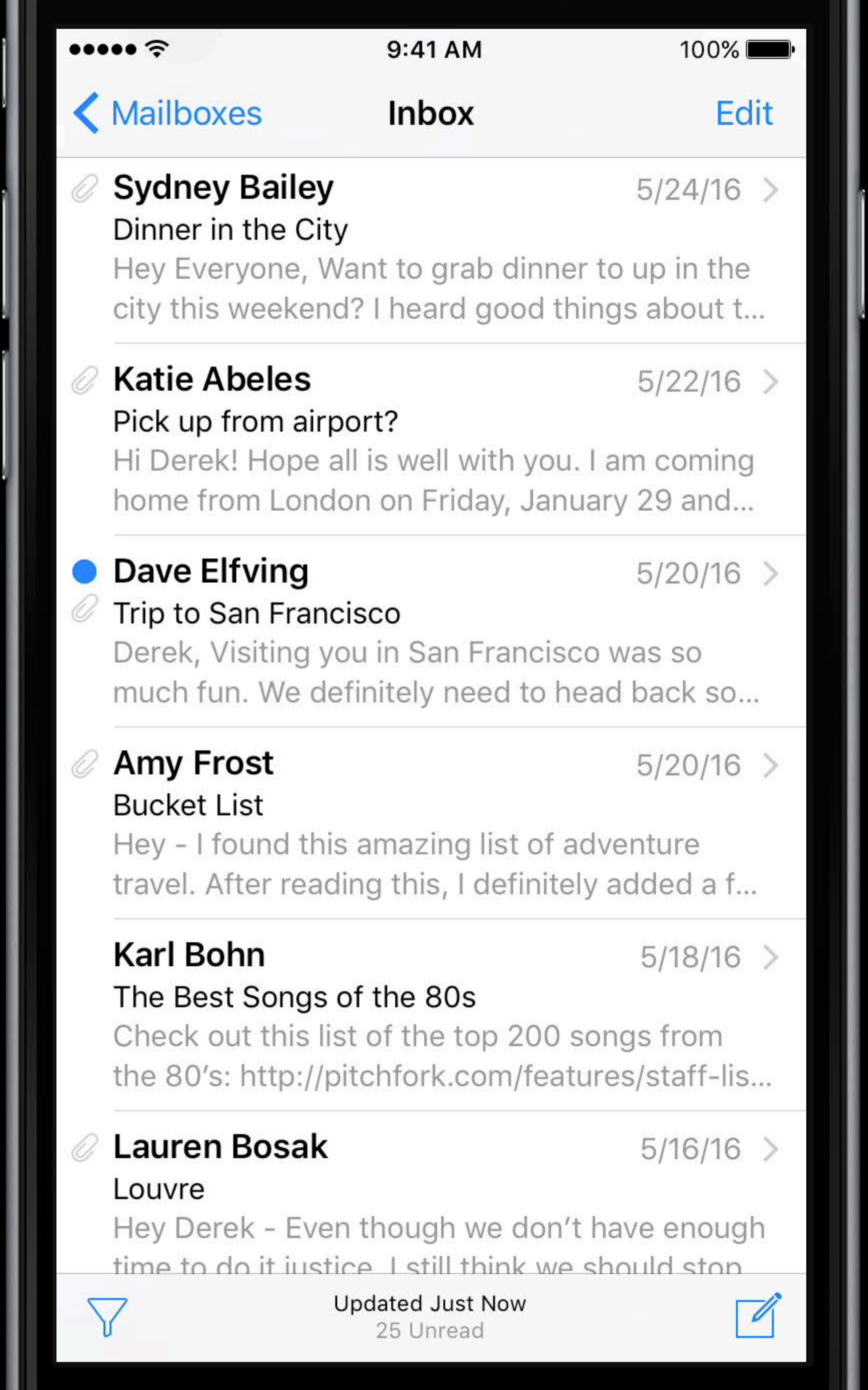
Updated Just Now
25 Unread



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Supporting 3D Touch

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Accelerate access to existing features in your app

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Accelerate access to existing features in your app

Enable new immersive interactions

Supporting 3D Touch

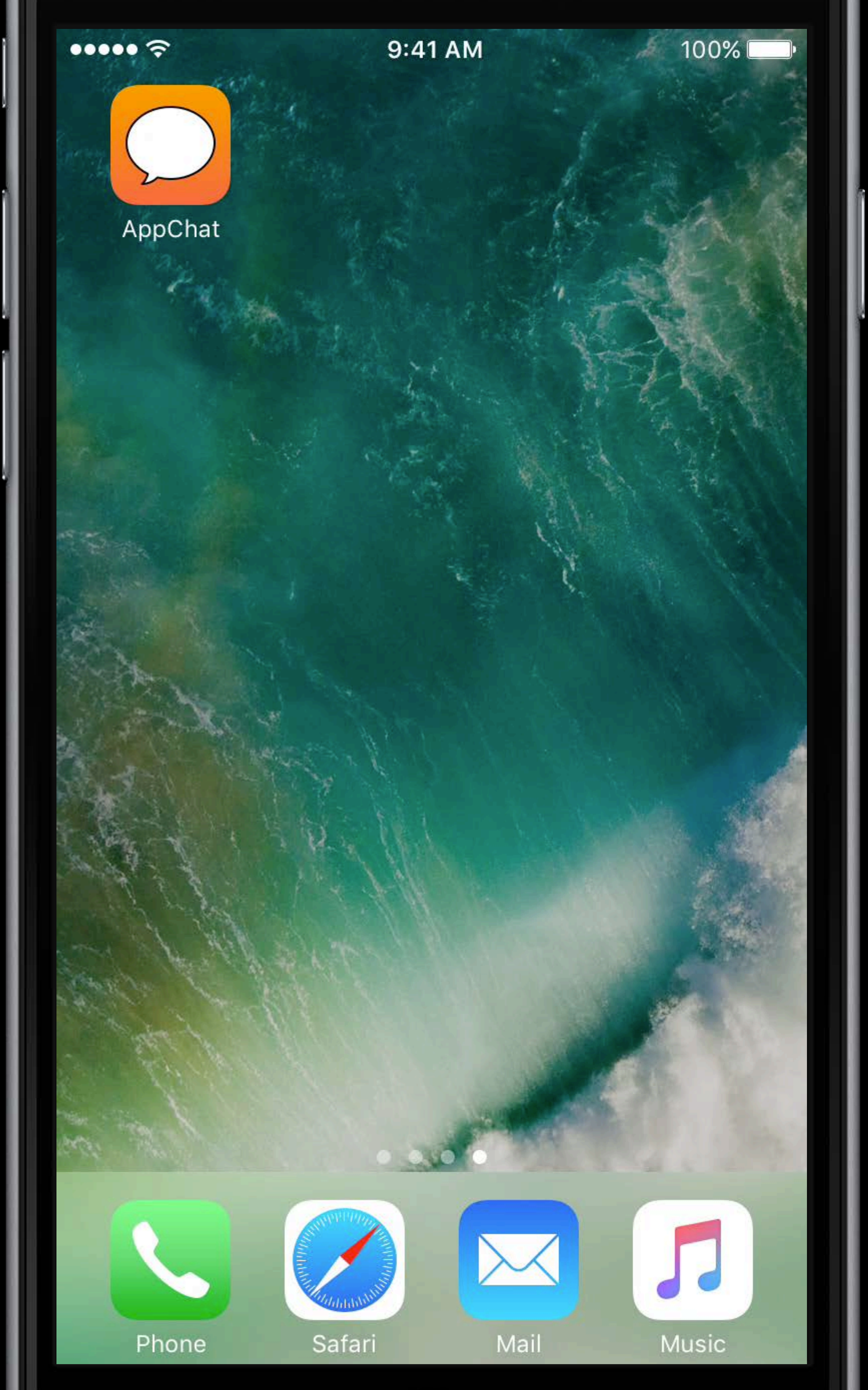
Accelerate access to existing features in your app

Enable new immersive interactions

Provide a consistent experience across iOS

Home Screen Quick Actions

Leap straight into action from the home screen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AppChat
Phone
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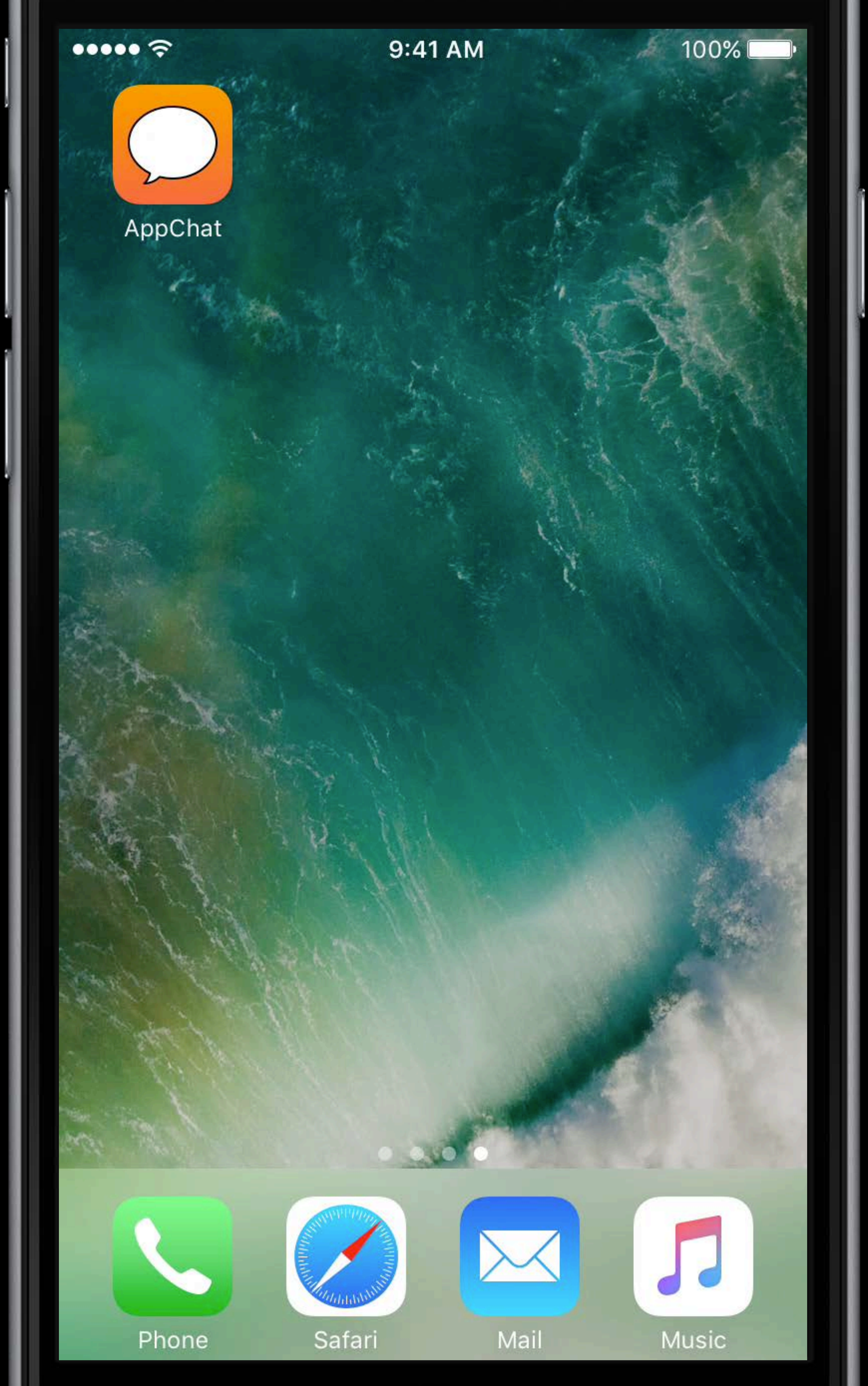
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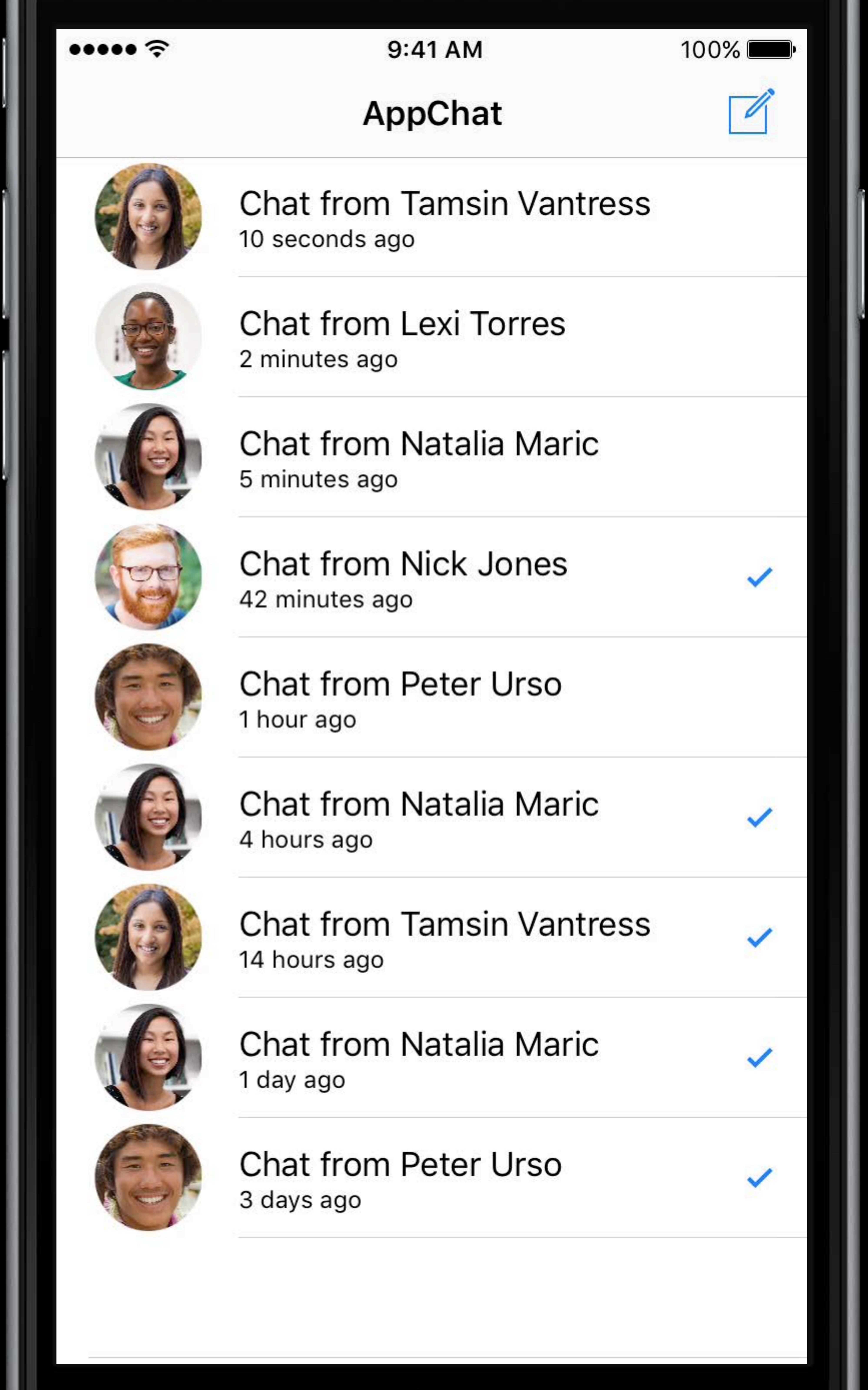

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10 seconds ago

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Chat from Nick Jones ✓
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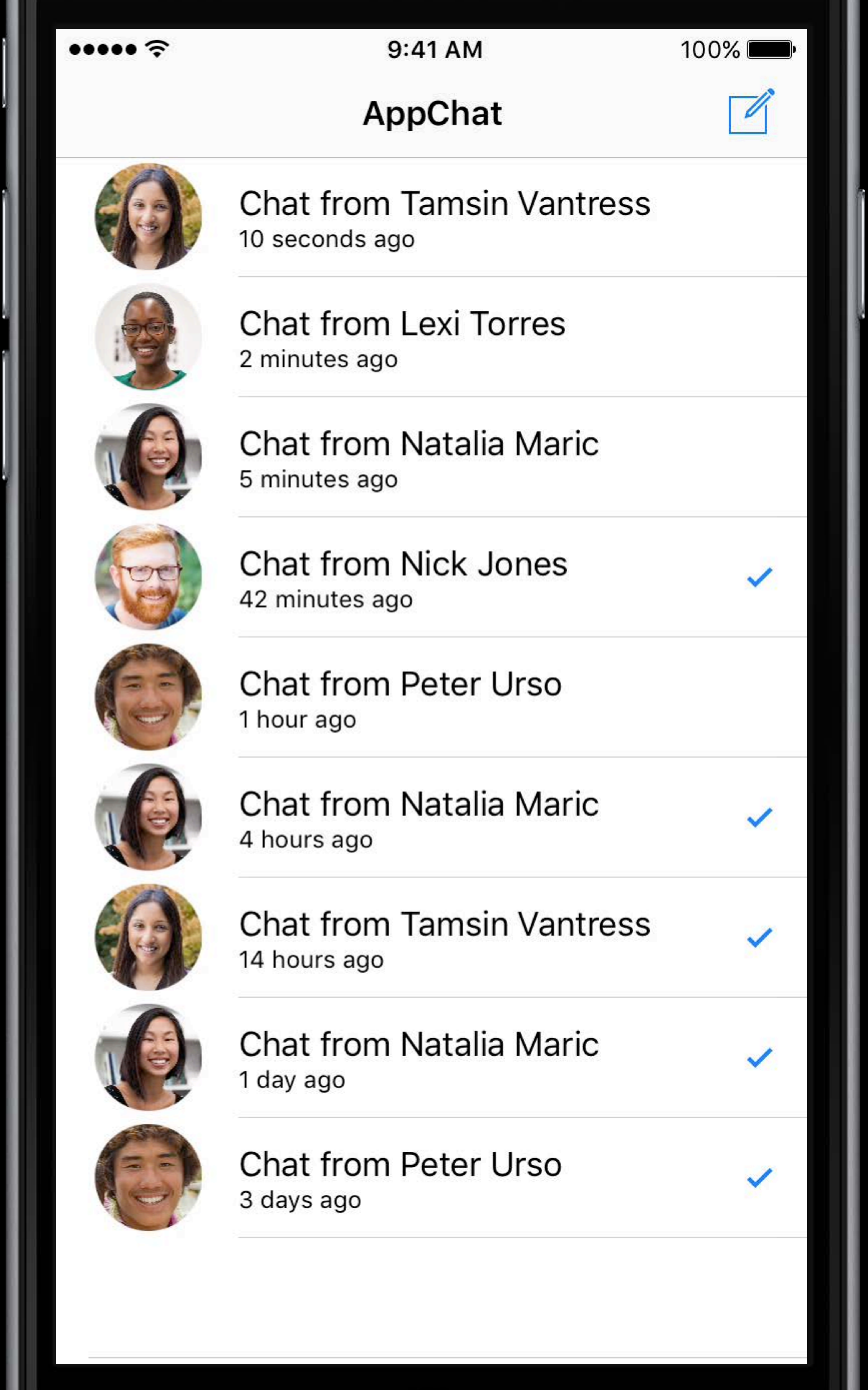

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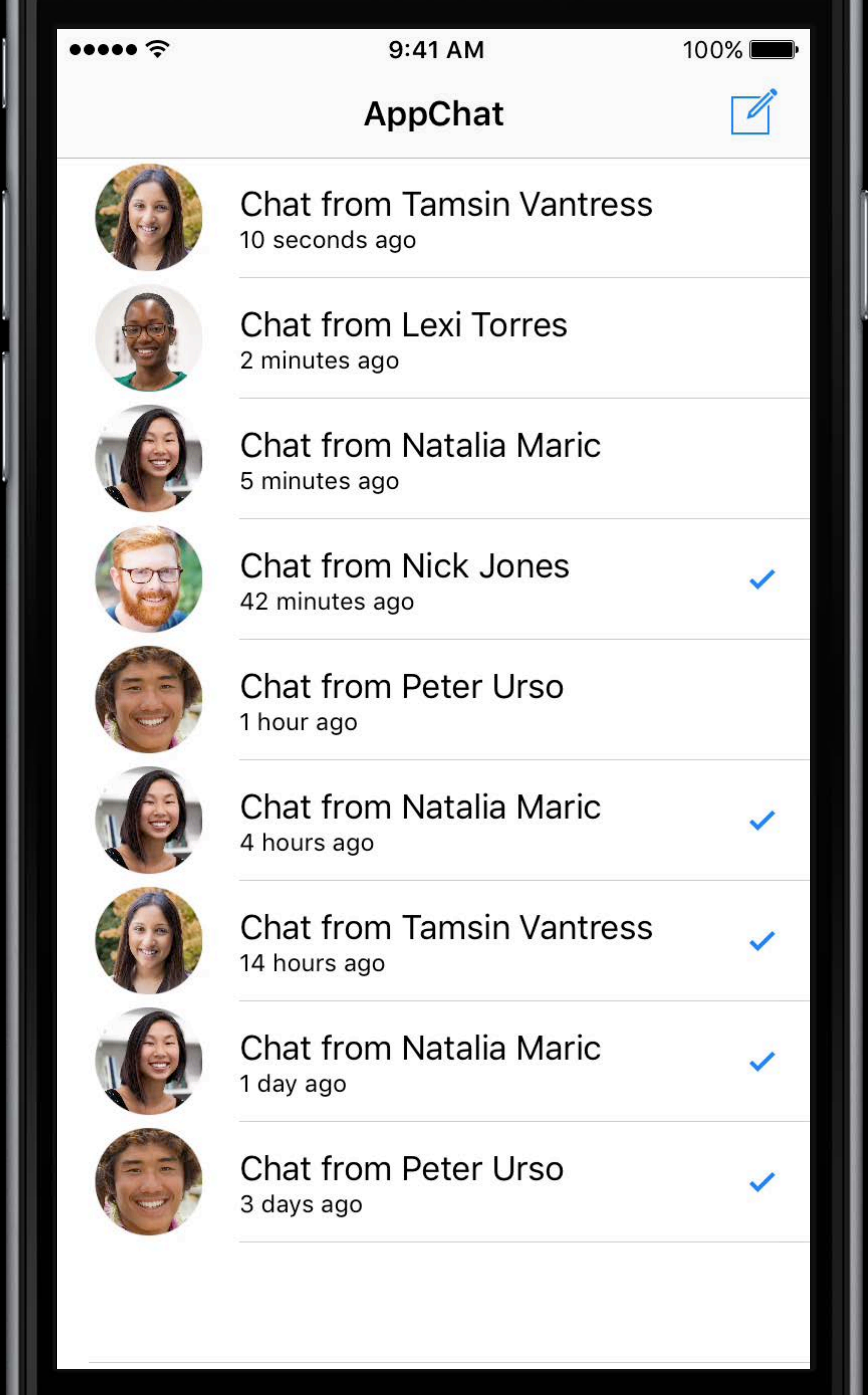

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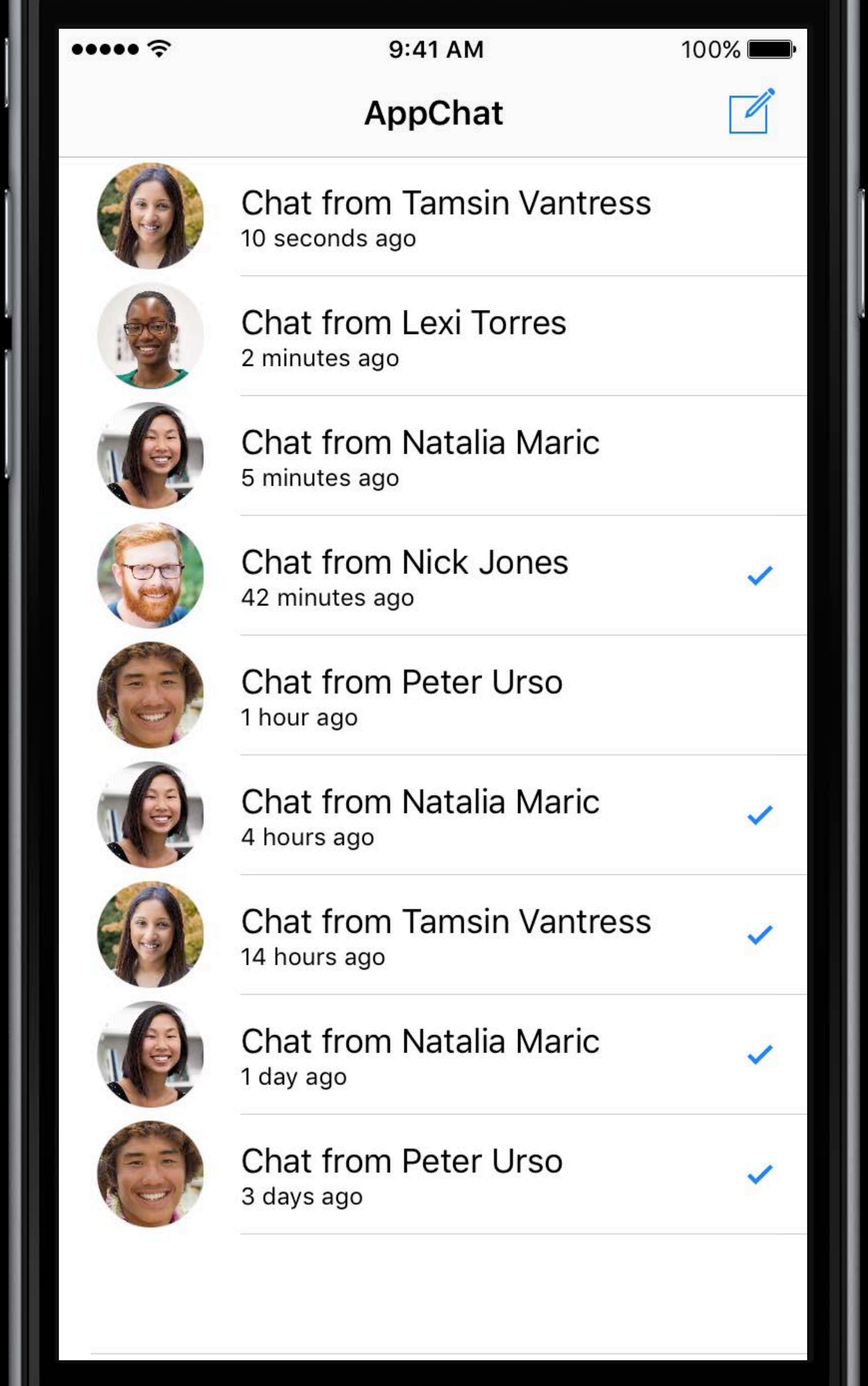

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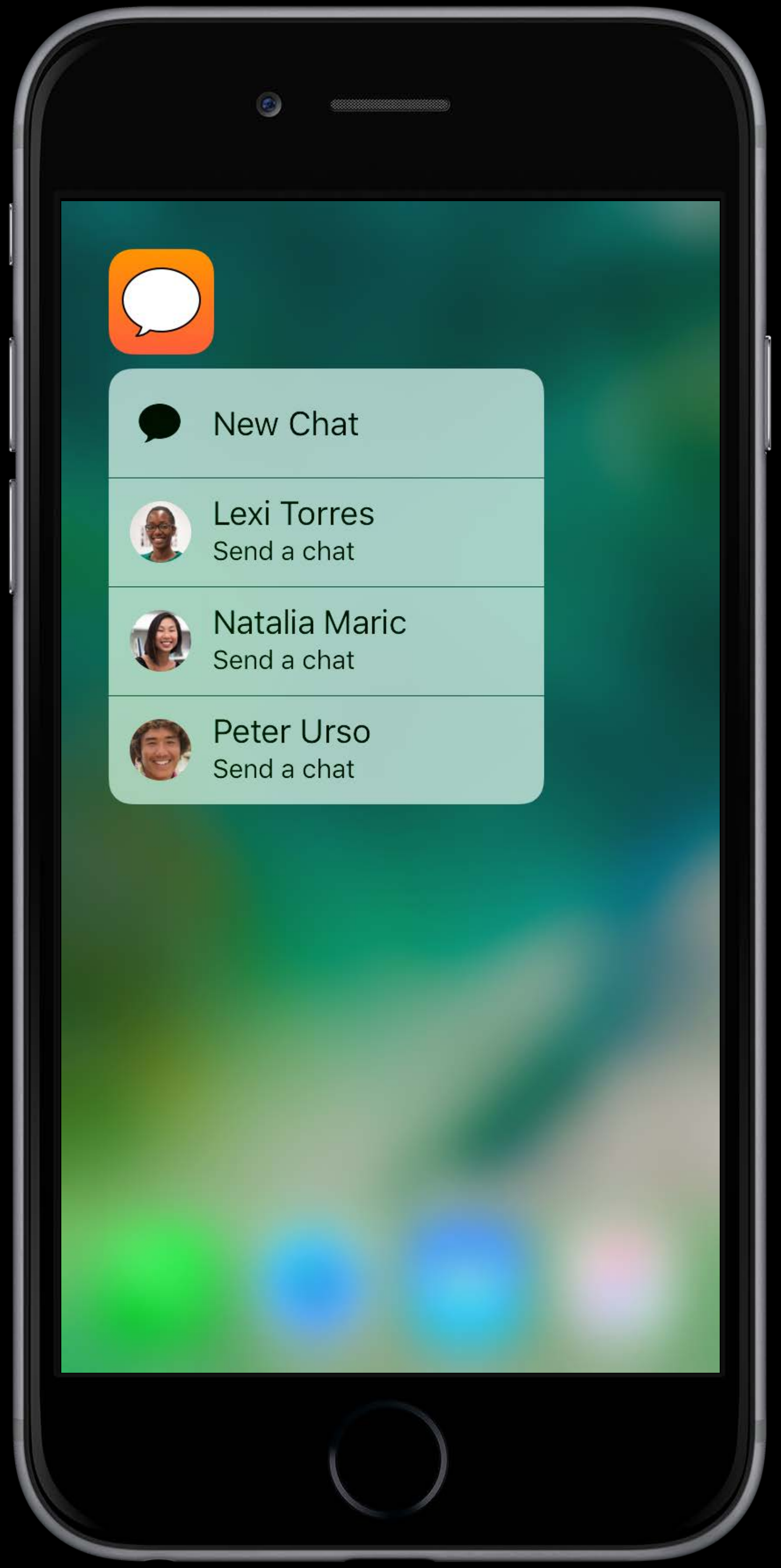
Home Screen Quick Actions

Two types

Static

Dynamic



Home Screen Quick Actions

Static

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Defined in your app’s Info.plist

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Available as soon as your app has been installed

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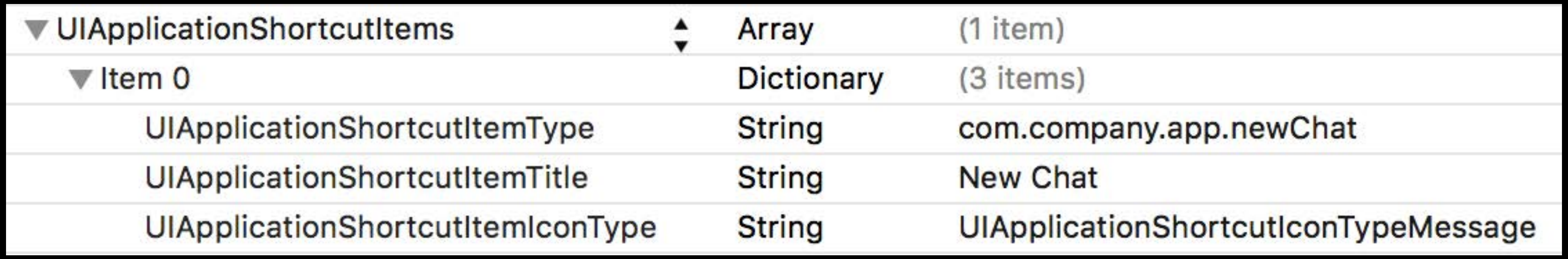
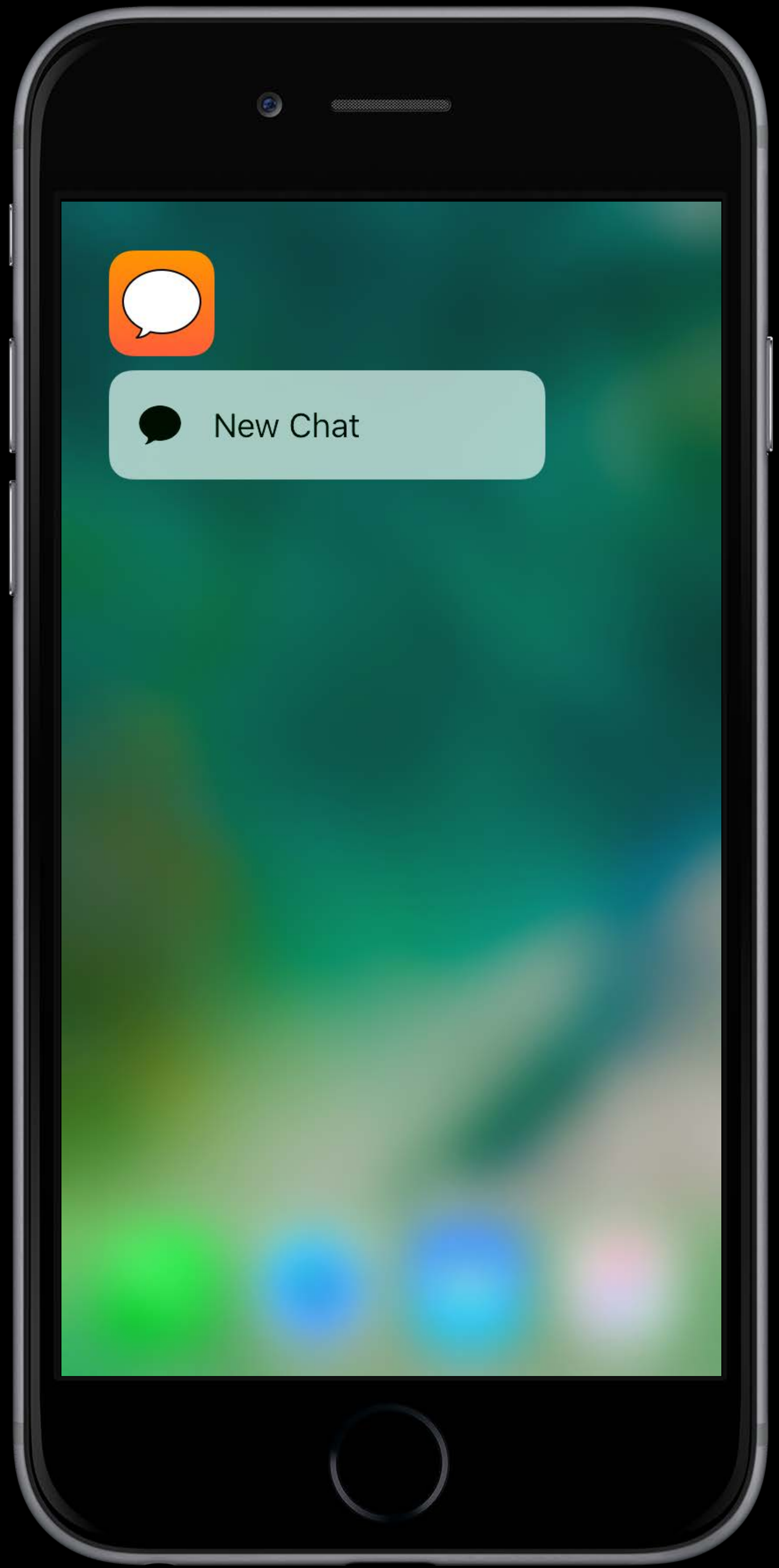


▼ UIApplicationShortcutItems	Array	(1 item)
▼ Item 0	Dictionary	(3 items)
UIApplicationShortcutItemType	String	com.company.app.newChat
UIApplicationShortcutItemTitle	String	New Chat
UIApplicationShortcutItemIconType	String	UIApplicationShortcutIconTypeMessage



Home Screen Quick Actions

Dynamic

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Created by your app at runtime

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Created by your app at runtime

Available after the first launch of your app

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Shown after any static quick actions (space permitting)

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Can include a system icon, custom icon, or Address Book contact

Dynamic Quick Actions

Using a contact for the icon

```
let contactName = "Lexi Torres"
var contactIcon: UIApplicationShortcutIcon? = nil
```

Dynamic Quick Actions

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```
let contactName = "Lexi Torres"
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// Make sure to request access to the user's contacts first
if CNContactStore.authorizationStatus(for: .contacts) == .authorized {






}
```

Dynamic Quick Actions

Using a contact for the icon

```swift
let contactName = "Lexi Torres"
var contactIcon: UIApplicationShortcutIcon? = nil

// Make sure to request access to the user's contacts first
if CNContactStore.authorizationStatus(for: .contacts) == .authorized {
    let predicate = CNContact.predicateForContacts(matchingName: contactName)
    let contacts = try? CNContactStore().unifiedContacts(matching: predicate, keysToFetch: [])




}
```

Dynamic Quick Actions

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let contactName = "Lexi Torres"
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    let predicate = CNContact.predicateForContacts(matchingName: contactName)
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    if let contact = contacts?.first {
        contactIcon = UIApplicationShortcutIcon(contact: contact)
    }
}
```

Dynamic Quick Actions

Using a contact for the icon

```swift
let contactName = "Lexi Torres"
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    if let contact = contacts?.first {
        contactIcon = UIApplicationShortcutIcon(contact: contact)
    }
}
let icon = contactIcon ?? UIApplicationShortcutIcon(type: .message)
```

Dynamic Quick Actions

Creating and registering

```
// Create a dynamic quick action using the icon
let type = "com.company.app.sendChatTo"
let subtitle = "Send a chat"
let shortcutItem1 = UIApplicationShortcutItem(type: type, localizedTitle: contactName,
   localizedSubtitle: subtitle, icon: icon)
```

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// Repeat as needed for any additional dynamic quick actions...
```

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let shortcutItems = [shortcutItem1, shortcutItem2, shortcutItem3]
```

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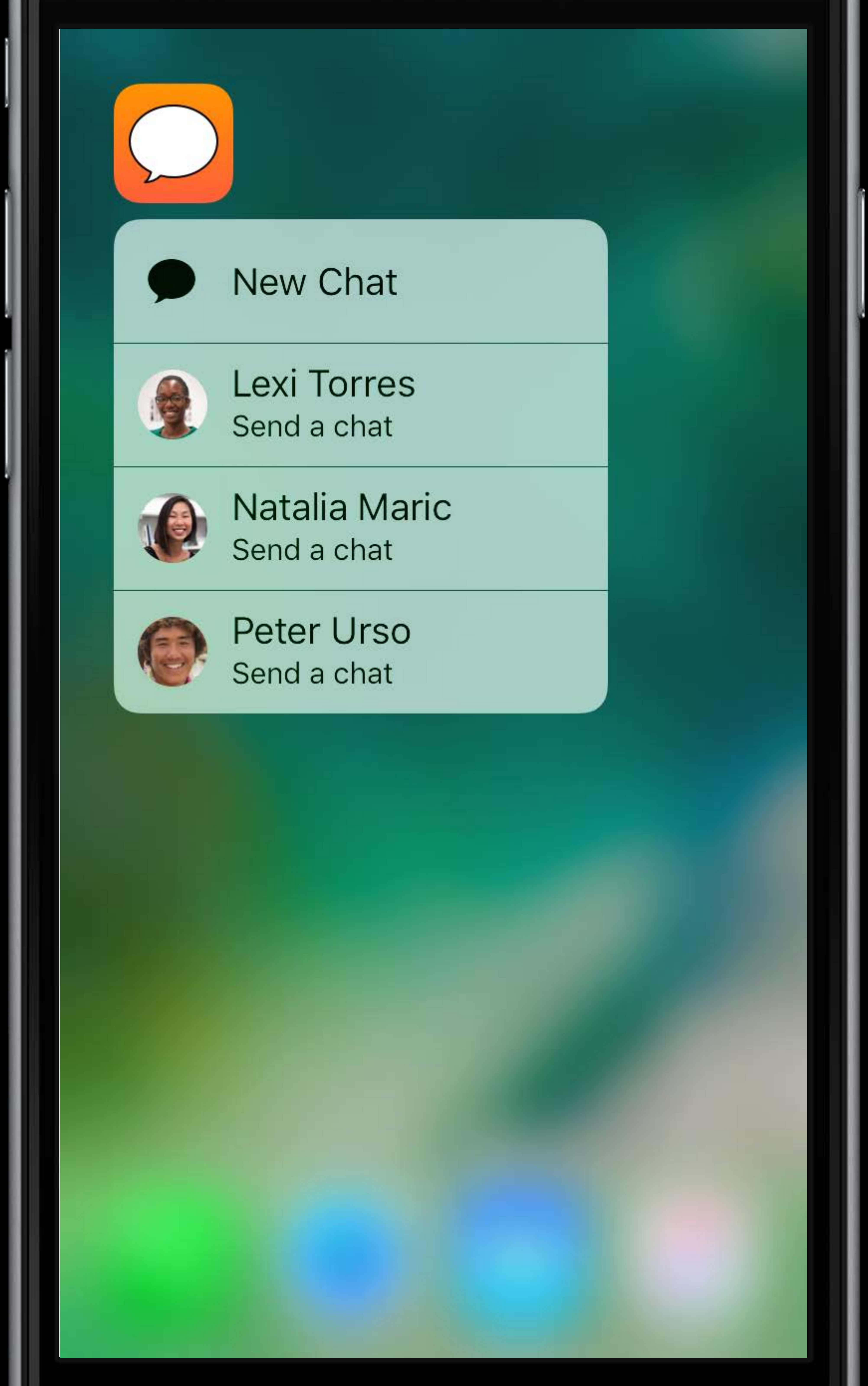
// Repeat as needed for any additional dynamic quick actions...

let shortcutItems = [shortcutItem1, shortcutItem2, shortcutItem3]

// Register the dynamic quick actions to display on the home screen
application.shortcutItems = shortcutItems
```



New Chat

Lexi Torres
Send a chat

Natalia Maric
Send a chat

Peter Urso
Send a chat

Handling Quick Actions

On app activation

```
func application(application: UIApplication,
   performActionForShortcutItem shortcutItem: UIApplicationShortcutItem,
   completionHandler: Bool -> Void) {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Handling Quick Actions

On app activation

```
func application(application: UIApplication,
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Handling Quick Actions

On app launch

```
func application(application: UIApplication,
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Handling Quick Actions

On app launch

```
func application(application: UIApplication,
   didFinishLaunchingWithOptions launchOptions: [NSObject: AnyObject]?) -> Bool {
    var performAdditionalHandling = true
    if let shortcutItem = launchOptions?[UIApplicationLaunchOptionsShortcutItemKey]
       as? UIApplicationShortcutItem {
        /* handle the quick action using shortcutItem */
        performAdditionalHandling = false
    }
    return performAdditionalHandling
}
```

Handling Quick Actions

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Home Screen Quick Actions

Best practices

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Every app should provide quick actions

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Focus on providing quick access to high-value tasks

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Focus on providing quick access to high-value tasks

Make quick actions predictable

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Be prepared to handle dynamic quick actions from a previous version of your app

Home Screen Quick Actions

Best practices

Every app should provide quick actions

Focus on providing quick access to high-value tasks

Make quick actions predictable

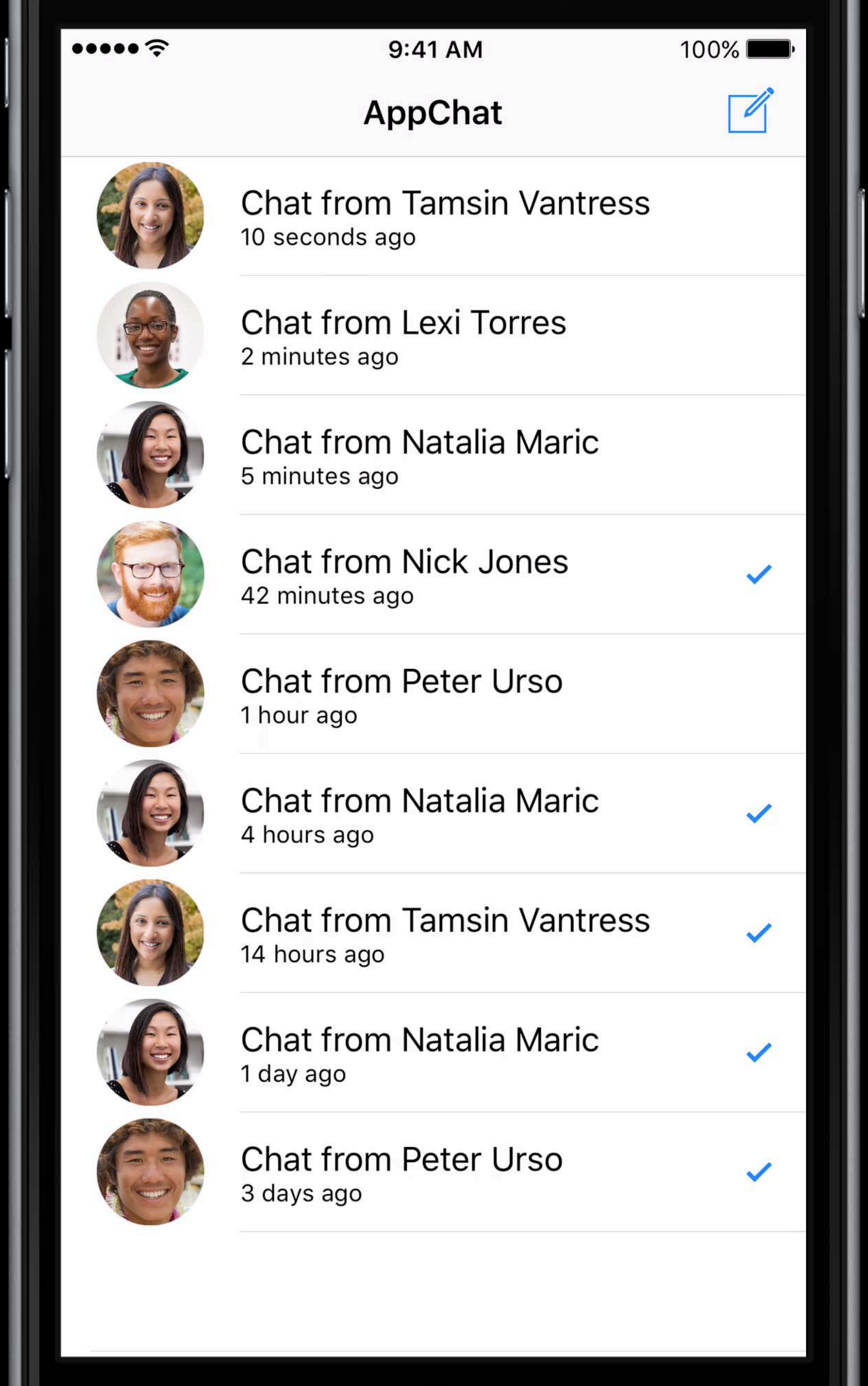
Be prepared to handle dynamic quick actions from a previous version of your app

Don’t add functionality that is only accessible using quick actions

Peek and Pop

Seamlessly preview and navigate to content

Peter Hajas UIKit Frameworks Engineer



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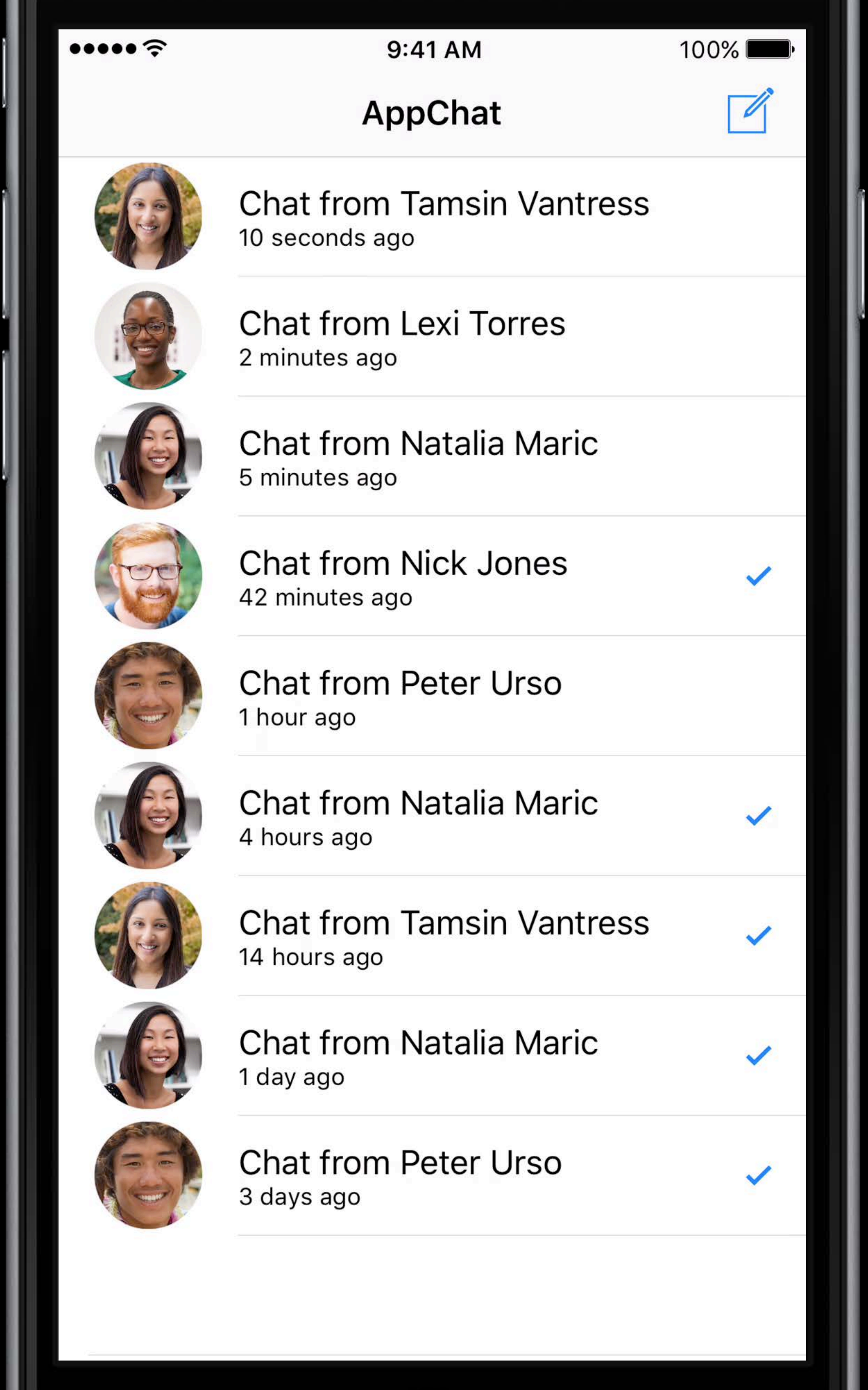

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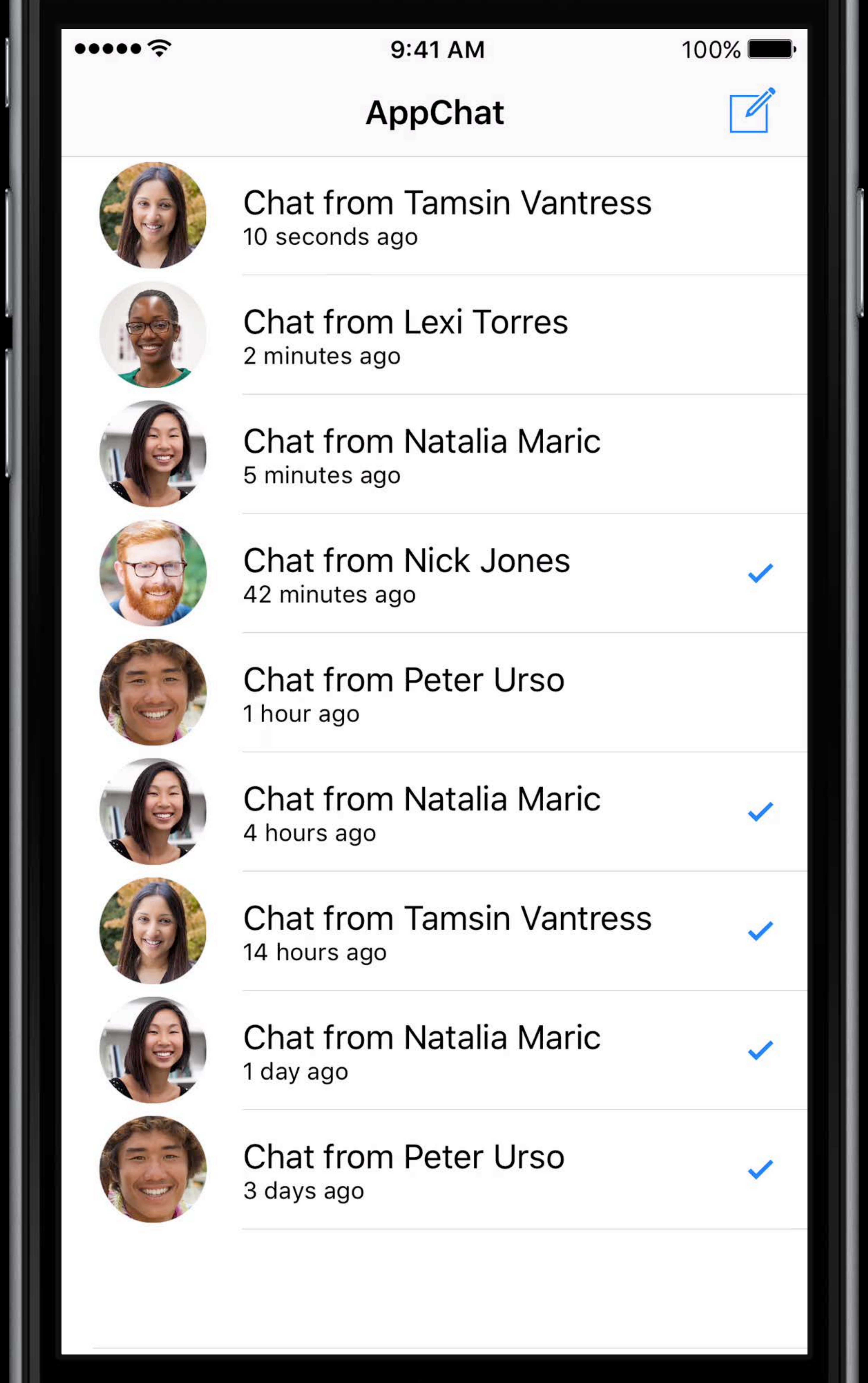

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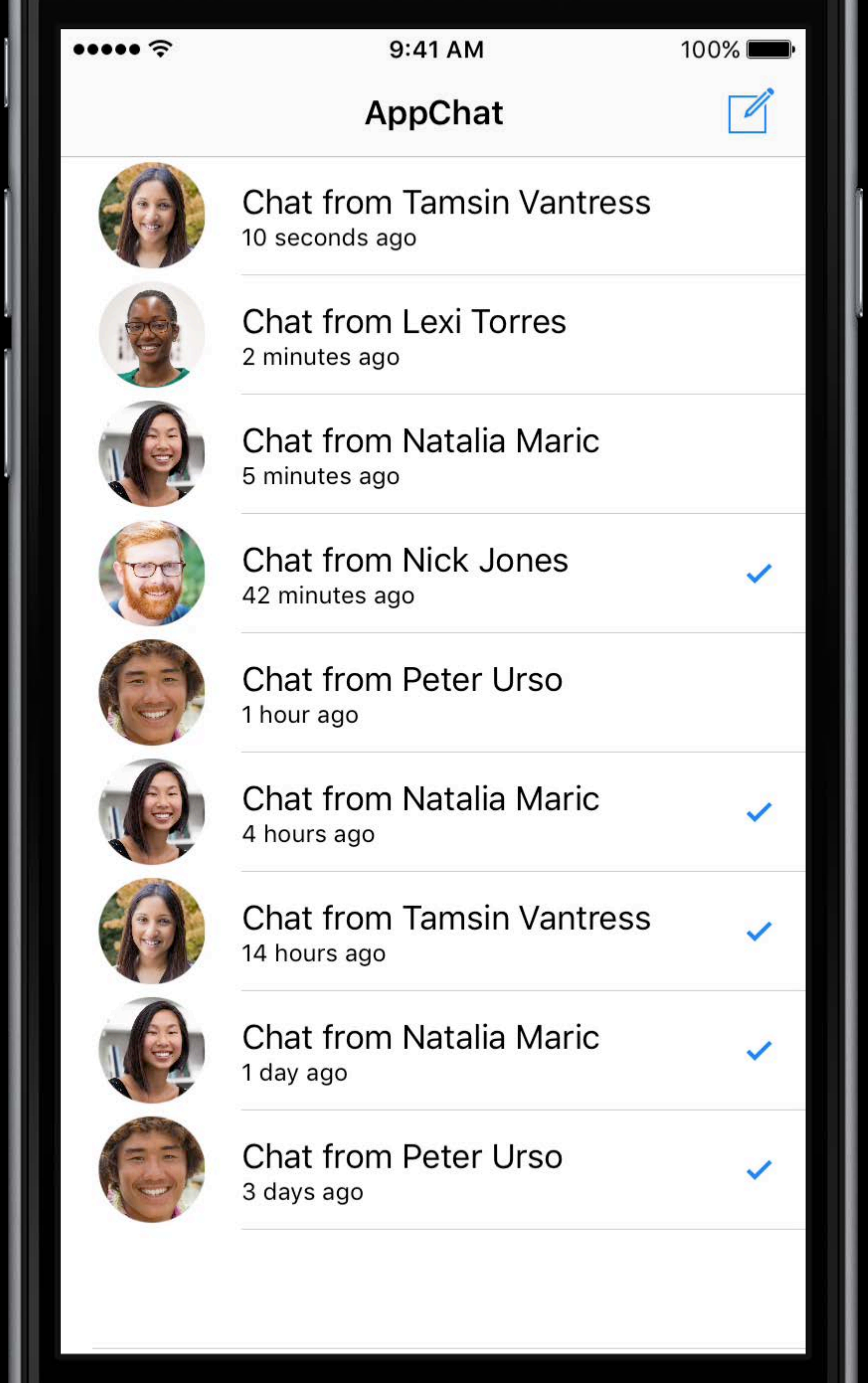

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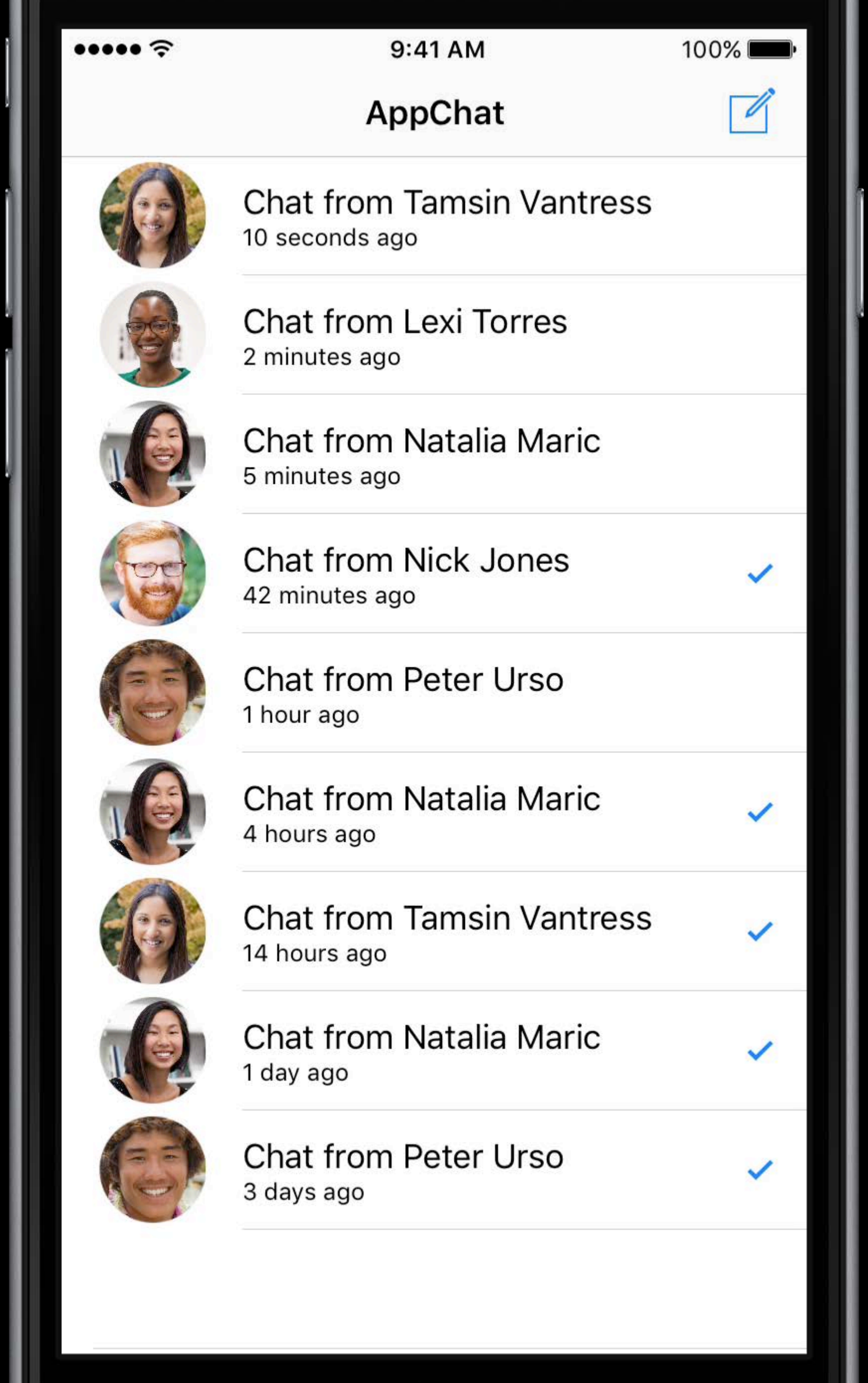

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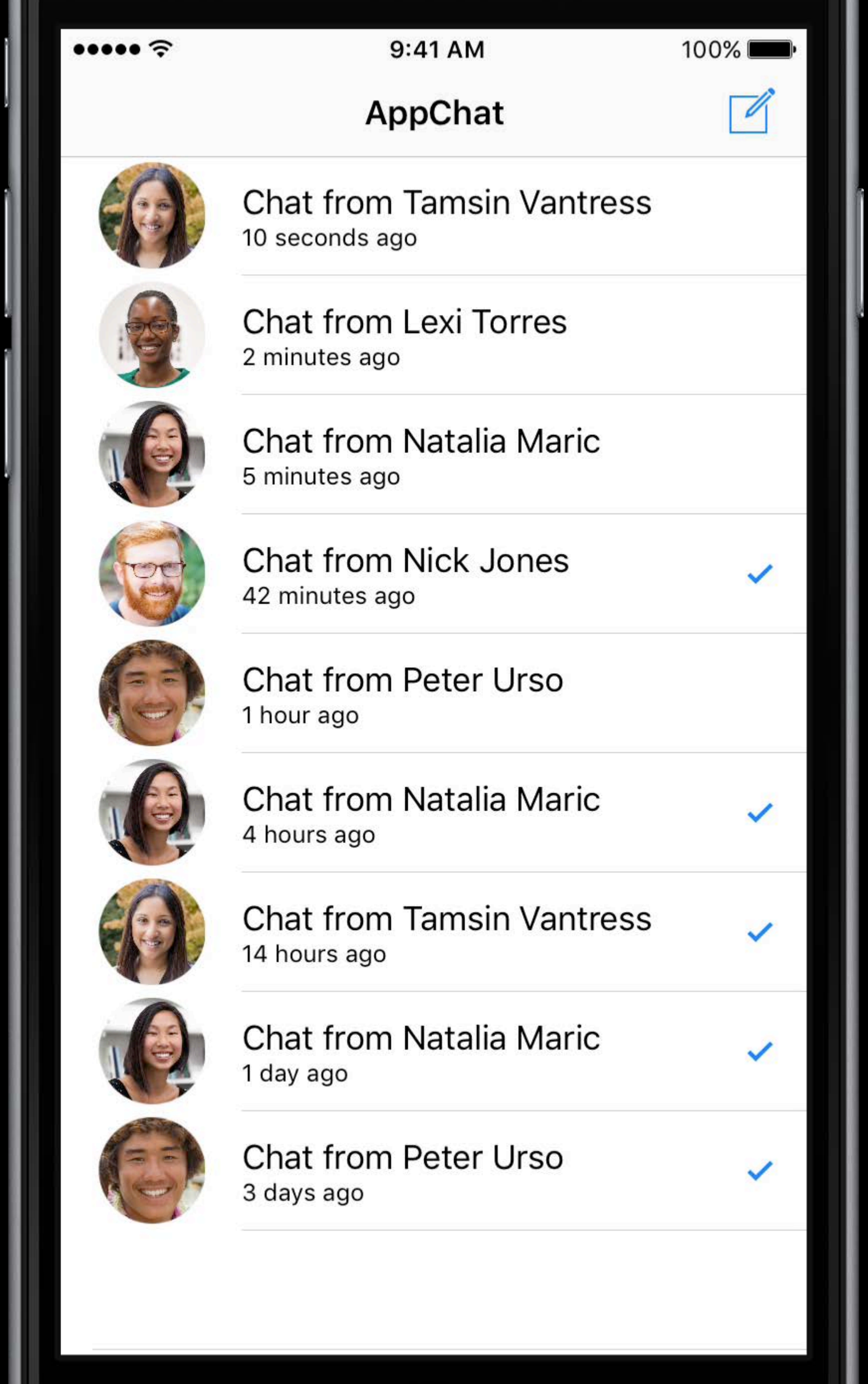
Preview



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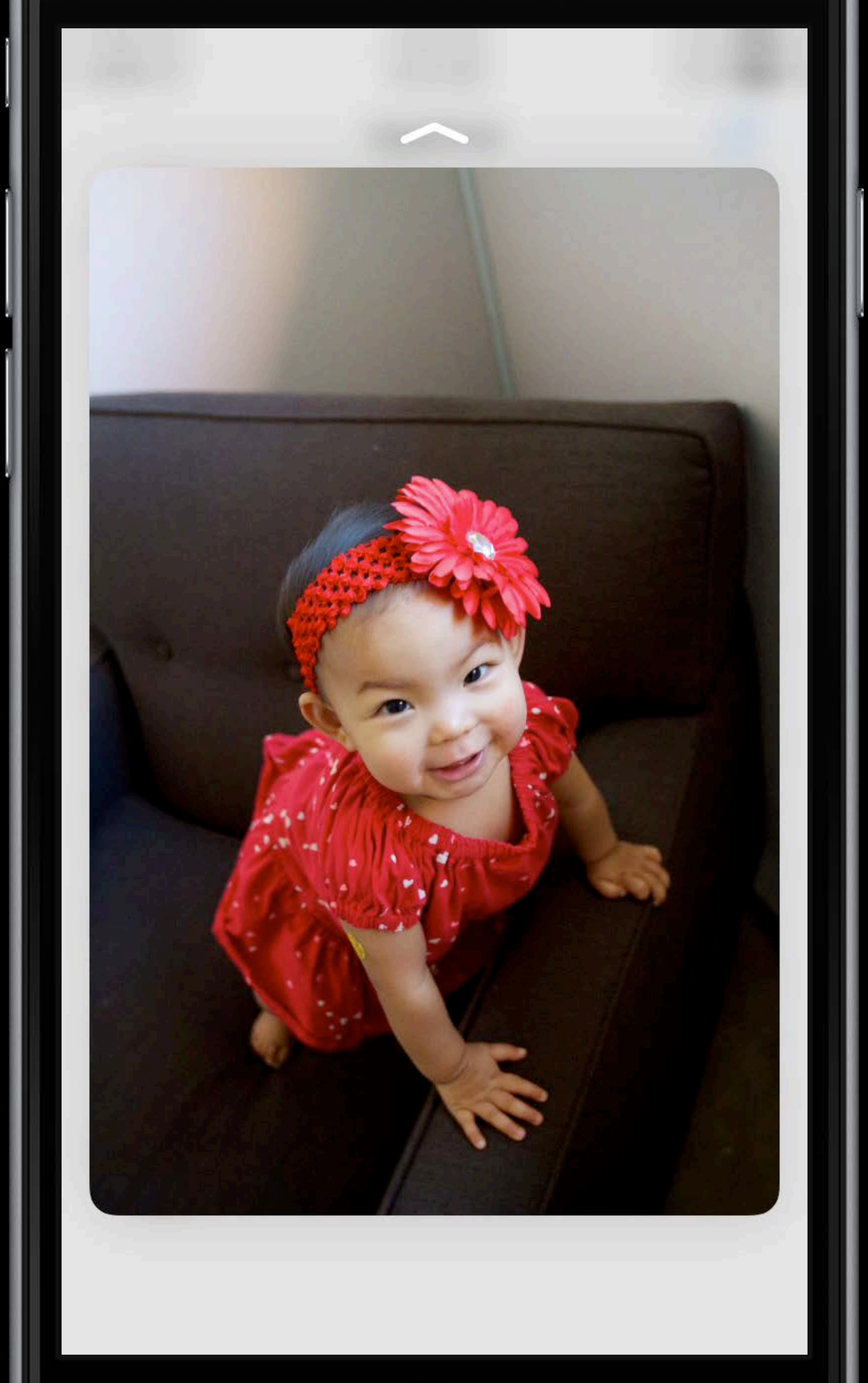
`Commit`



Adding Peek and Pop to Your App

Components of the interaction

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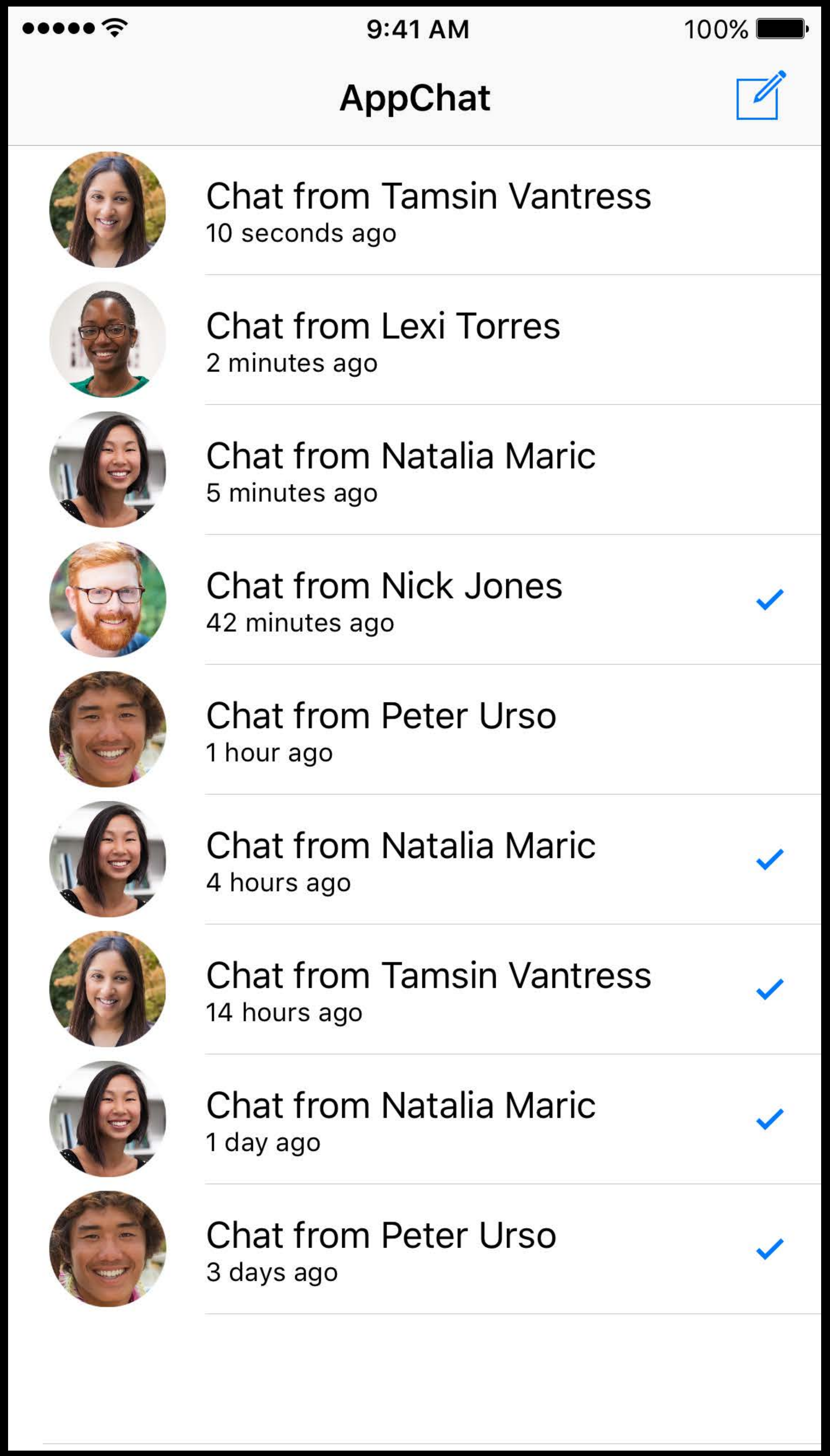
Components of the interaction

Registered View Controller



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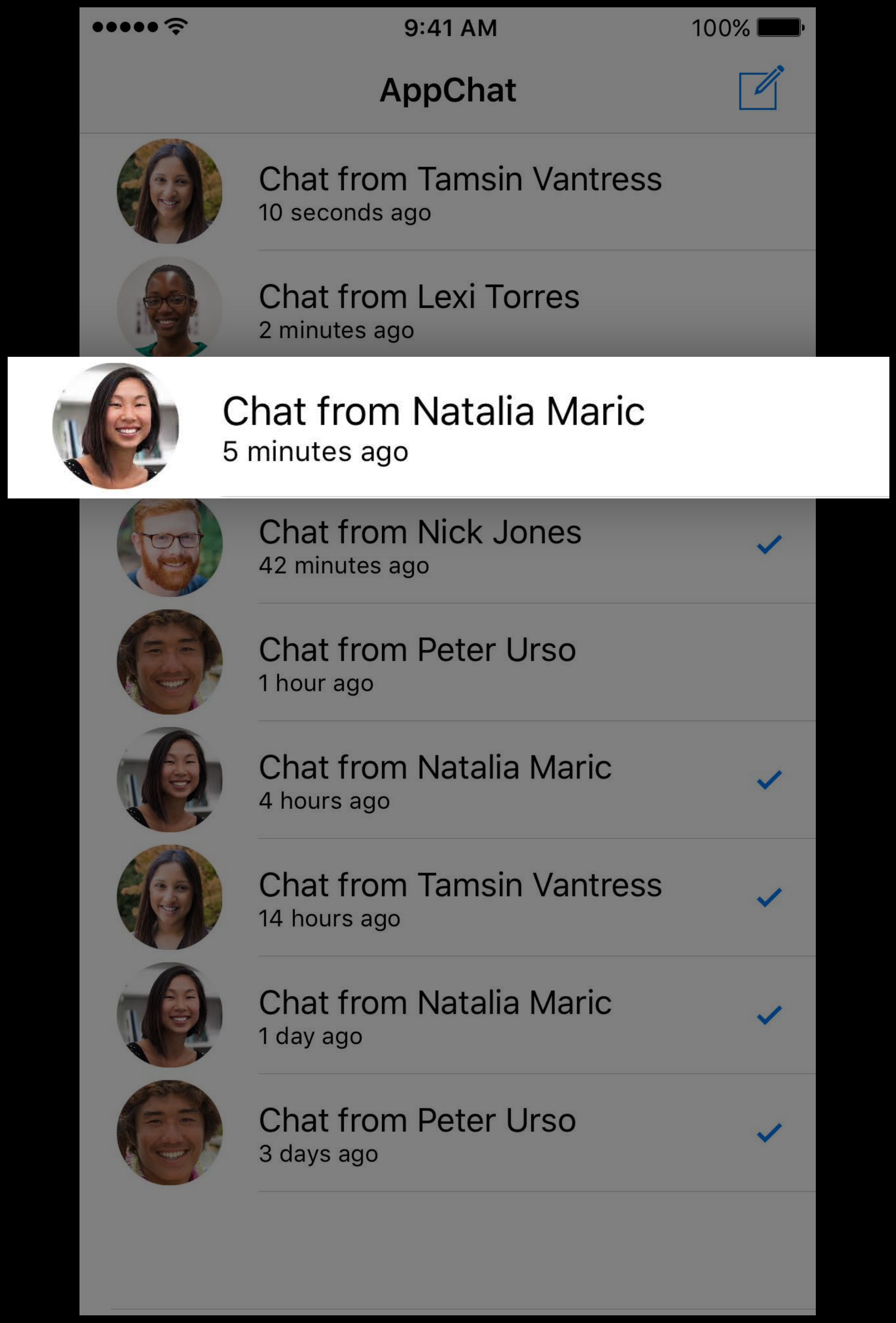

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Source

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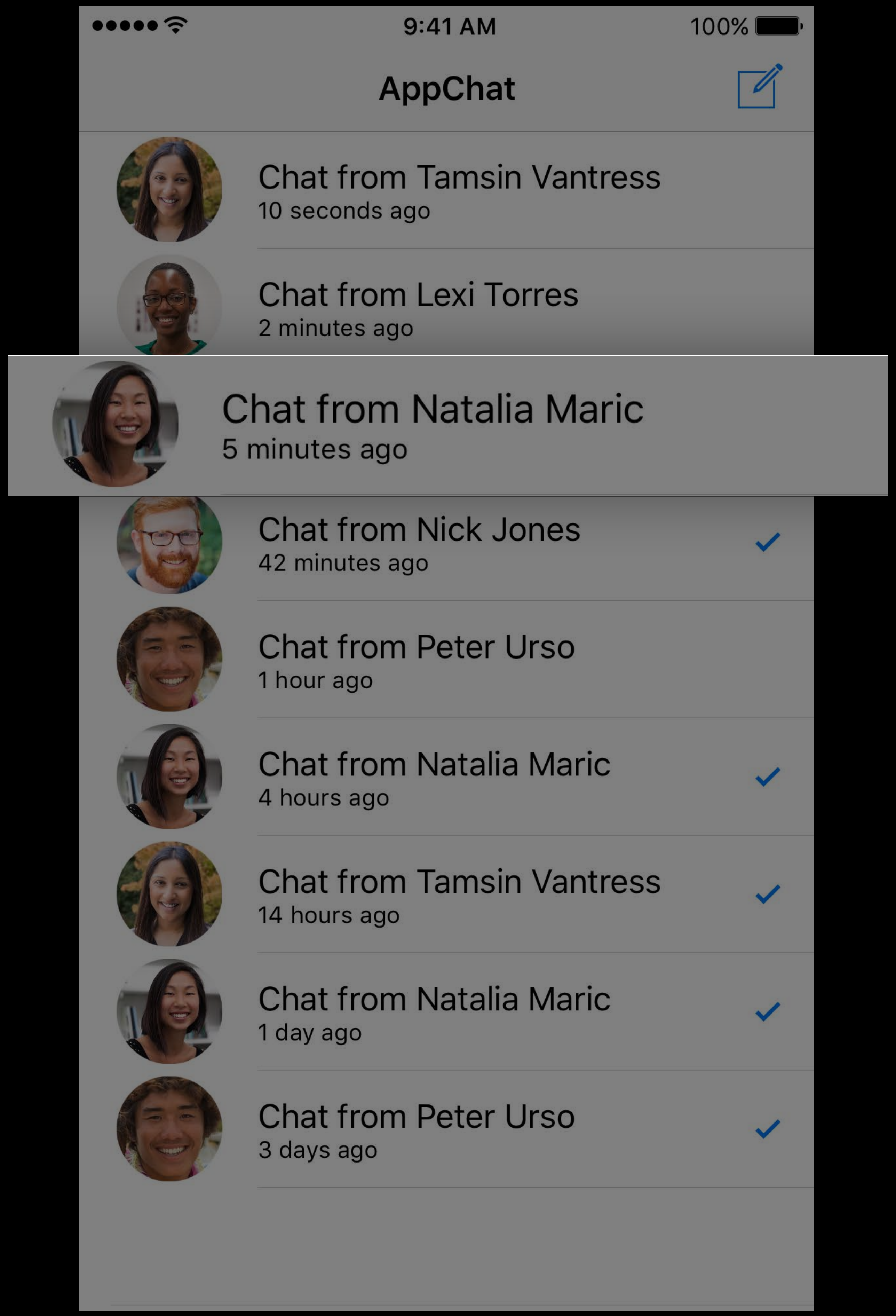

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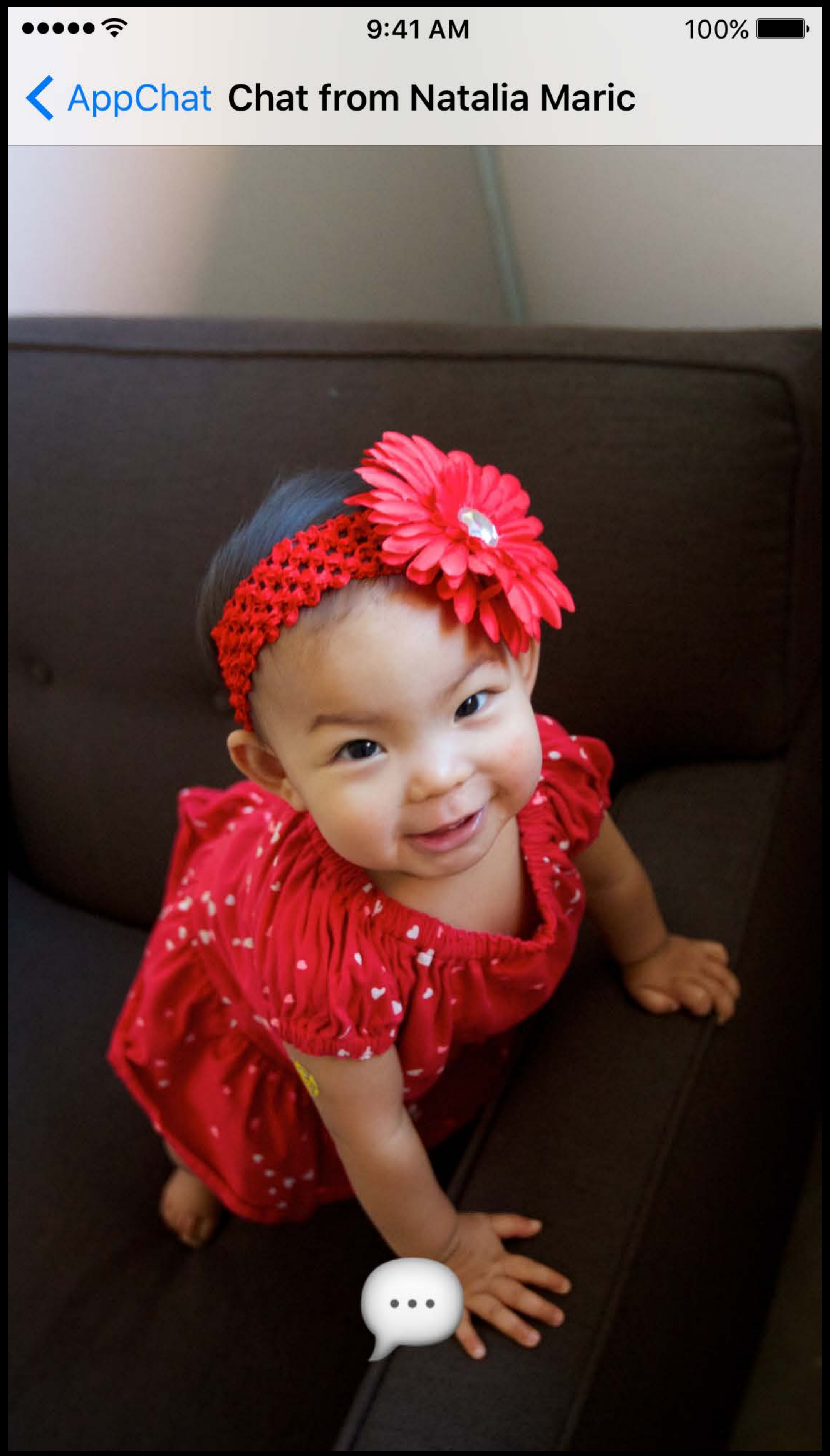
Source

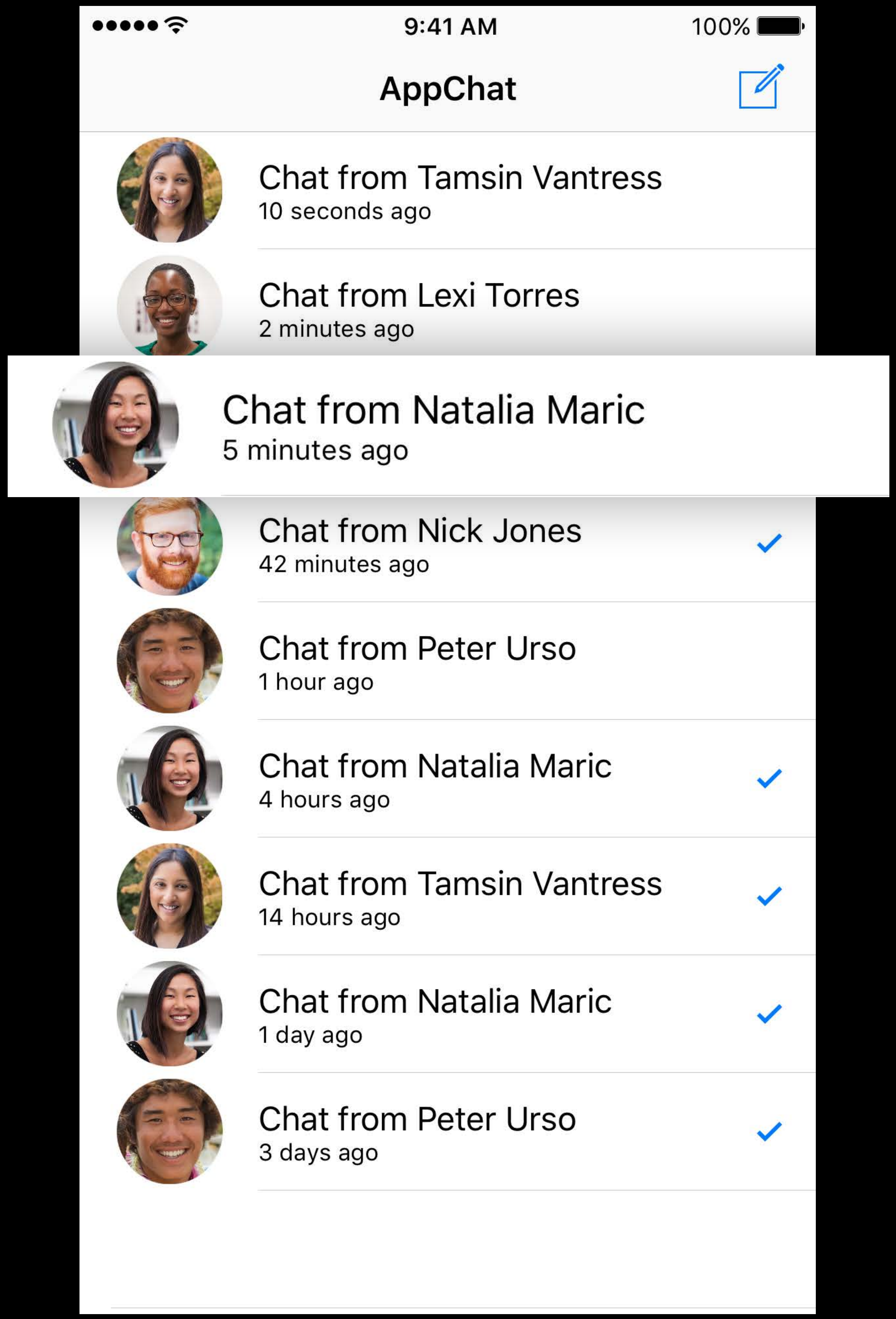
Previewed View Controller



Adding Peek and Pop to Your App

Components of the interaction

Registered View Controller



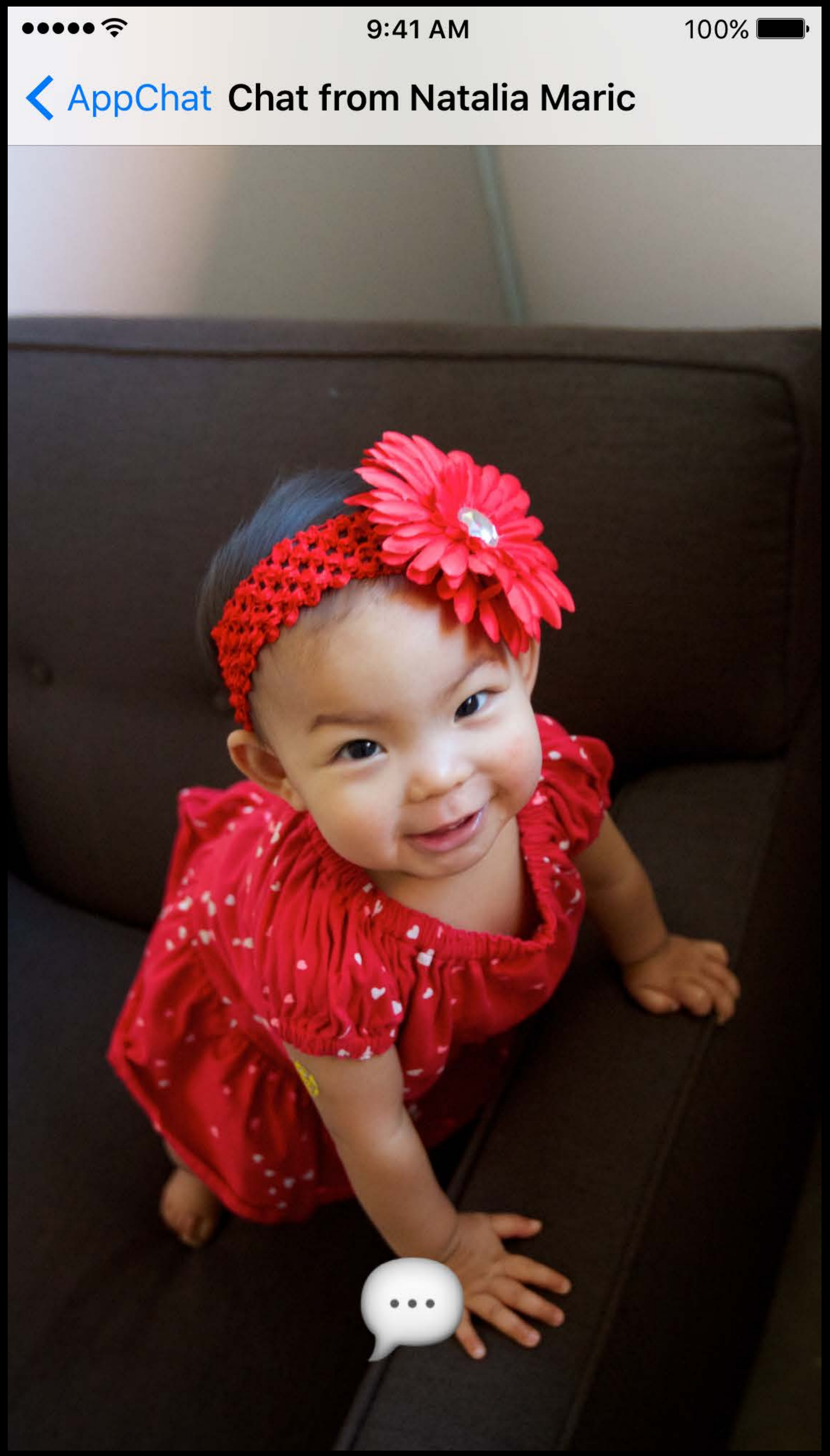
9:41 AM 100%

AppChat

- Chat from Tamsin Vantress
  10 seconds ago
- Chat from Lexi Torres
  2 minutes ago
- Chat from Natalia Maric
  5 minutes ago
- Chat from Nick Jones ✓
  42 minutes ago
- Chat from Peter Urso
  1 hour ago
- Chat from Natalia Maric ✓
  4 hours ago
- Chat from Tamsin Vantress ✓
  14 hours ago
- Chat from Natalia Maric ✓
  1 day ago
- Chat from Peter Urso ✓
  3 days ago

Source

Previewed View Controller



9:41 AM 100%

AppChat Chat from Natalia Maric

Adding Peek and Pop to Your App

Conforming to UIViewControllerPreviewingDelegate

```
class ChatTableViewController : UITableViewController,
                                UIViewControllerPreviewingDelegate
```

Adding Peek and Pop to Your App

Conforming to UIViewControllerPreviewingDelegate

```
class ChatTableViewController : UITableViewController,
                                UIViewControllerPreviewingDelegate
```

Adding Peek and Pop to Your App

Registering for previewing

```
override func viewDidLoad() {
    super.viewDidLoad()

    registerForPreviewing(with: self, sourceView: tableView)
}
```

Adding Peek and Pop to Your App

Registering for previewing

```
override func viewDidLoad() {
    super.viewDidLoad()

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}
```

Adding Peek and Pop to Your App

Registering for previewing

```swift
override func viewDidLoad() {
    super.viewDidLoad()

    registerForPreviewing(with: self, sourceView: tableView)
}
```

Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {











}
```

Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {









}
```

Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {
    guard let indexPath = tableView.indexPathForRow(at: location) else { return nil }







}
```

Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {
    guard let indexPath = tableView.indexPathForRow(at: location) else { return nil }

    let chatDetailViewController = ...
    chatDetailViewController.chatItem = chatItem(at: indexPath)





}
```

Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {
    guard let indexPath = tableView.indexPathForRow(at: location) else { return nil }

    let chatDetailViewController = ...
    chatDetailViewController.chatItem = chatItem(at: indexPath)
    let cellRect = tableView.rectForRow(at: indexPath)
    let sourceRect = previewingContext.sourceView.convert(cellRect, from: tableView)
    previewingContext.sourceRect = sourceRect



}
```

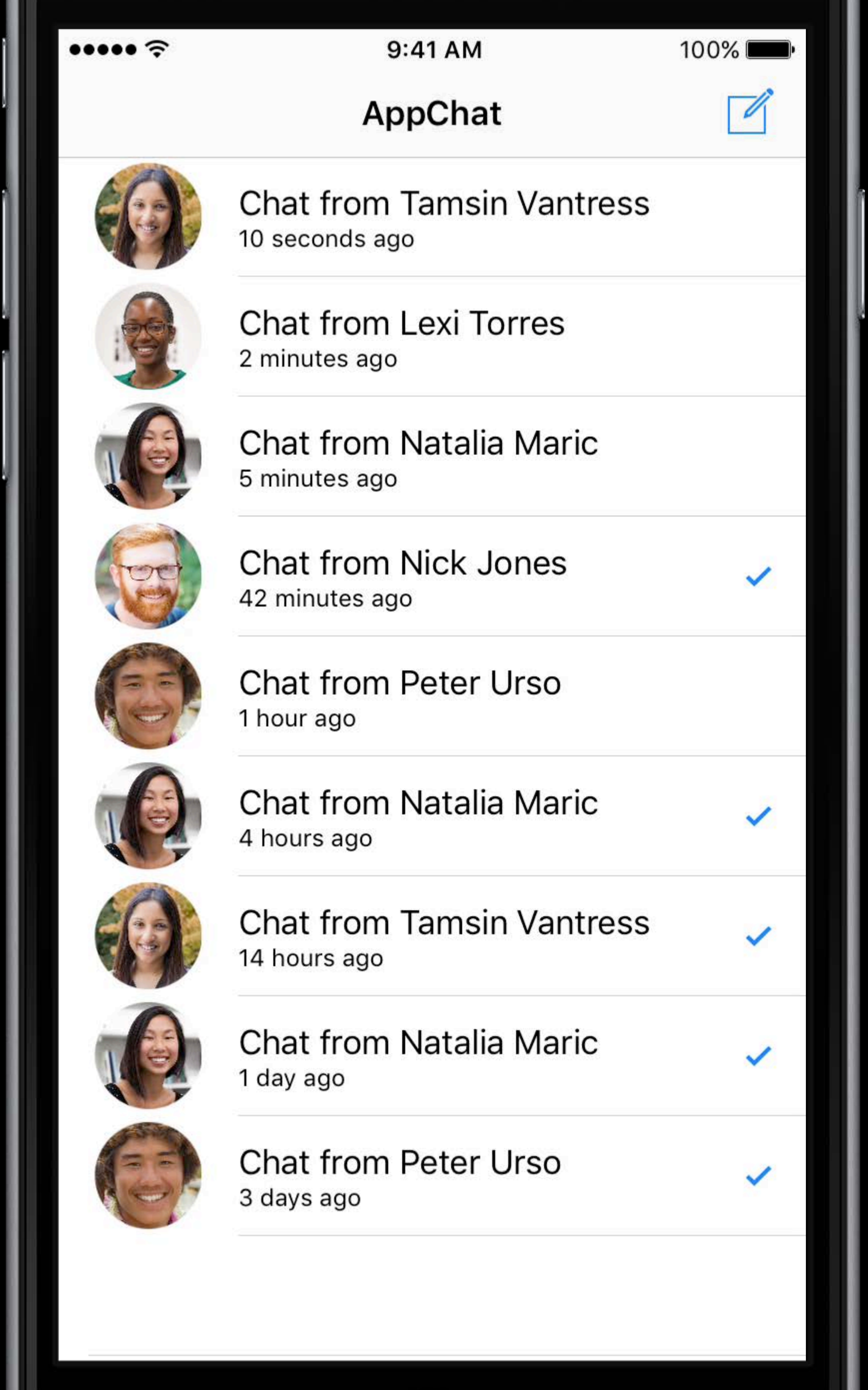
Adding Peek and Pop to Your App

Providing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
     viewControllerForLocation location: CGPoint) -> UIViewController? {
    guard let indexPath = tableView.indexPathForRow(at: location) else { return nil }

    let chatDetailViewController = ...
    chatDetailViewController.chatItem = chatItem(at: indexPath)
    let cellRect = tableView.rectForRow(at: indexPath)
    let sourceRect = previewingContext.sourceView.convert(cellRect, from: tableView)
    previewingContext.sourceRect = sourceRect

    return chatDetailViewController
}
```



●●●●● 9:41 AM 100%

AppChat

Chat from Tamsin Vantress
10 seconds ago

Chat from Lexi Torres
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4 hours ago

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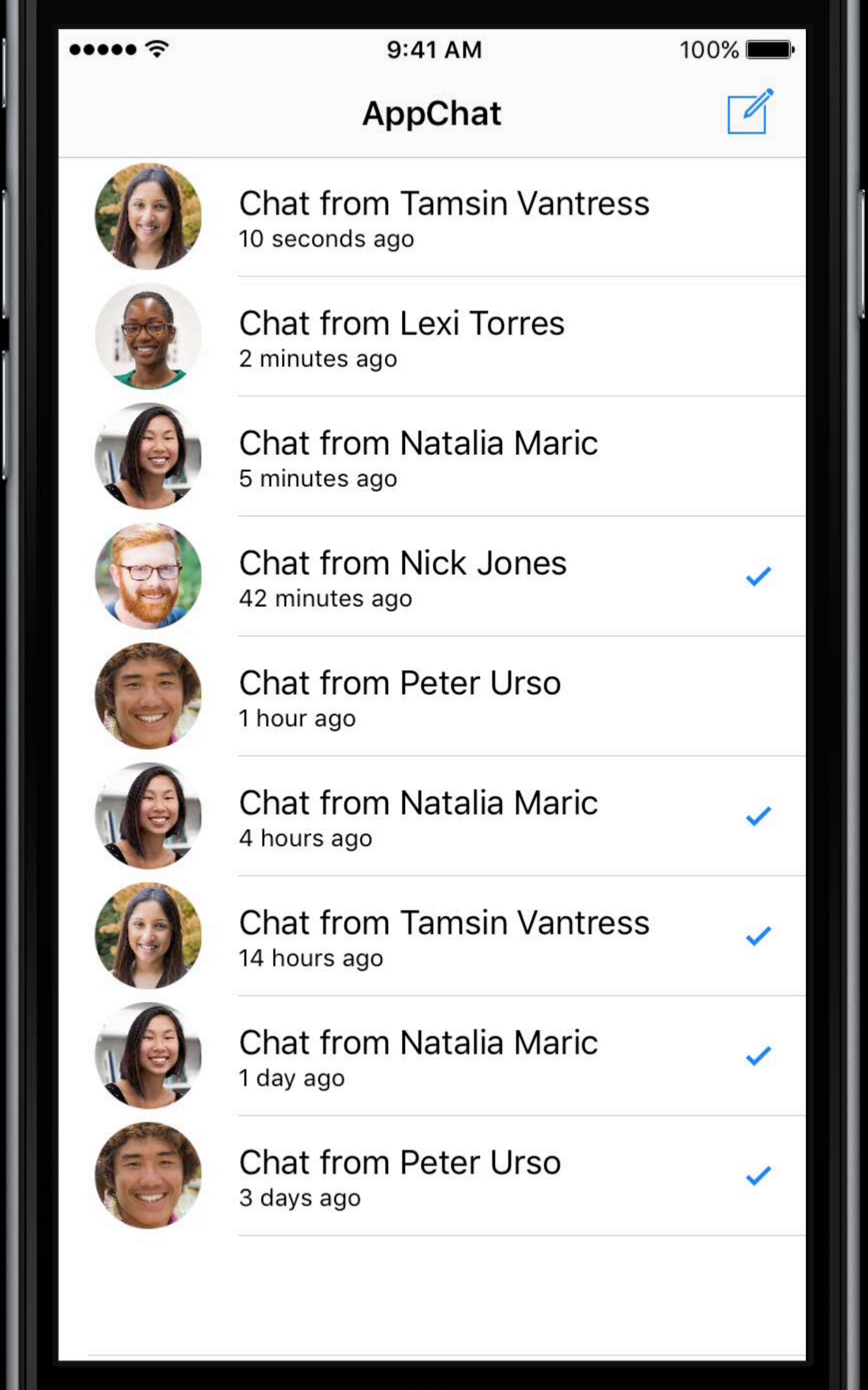
Chat from Peter Urso ✓
3 days ago



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Chat from Natalia Maric ✓
4 hours ago

Chat from Tamsin Vantress ✓
14 hours ago

Chat from Natalia Maric ✓
1 day ago

Chat from Peter Urso ✓
3 days ago

Adding Peek and Pop to Your App

Committing a preview view controller

```
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
                       commit viewControllerToCommit: UIViewController) {
    show(viewControllerToCommit, sender: self)
}
```

Adding Peek and Pop to Your App

Committing a preview view controller

```swift
func previewingContext(_ previewingContext: UIViewControllerPreviewing,
                        commit viewControllerToCommit: UIViewController) {
    show(viewControllerToCommit, sender: self)
}
```

Adding Peek and Pop to Your App

Committing a preview view controller

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func previewingContext(_ previewingContext: UIViewControllerPreviewing,
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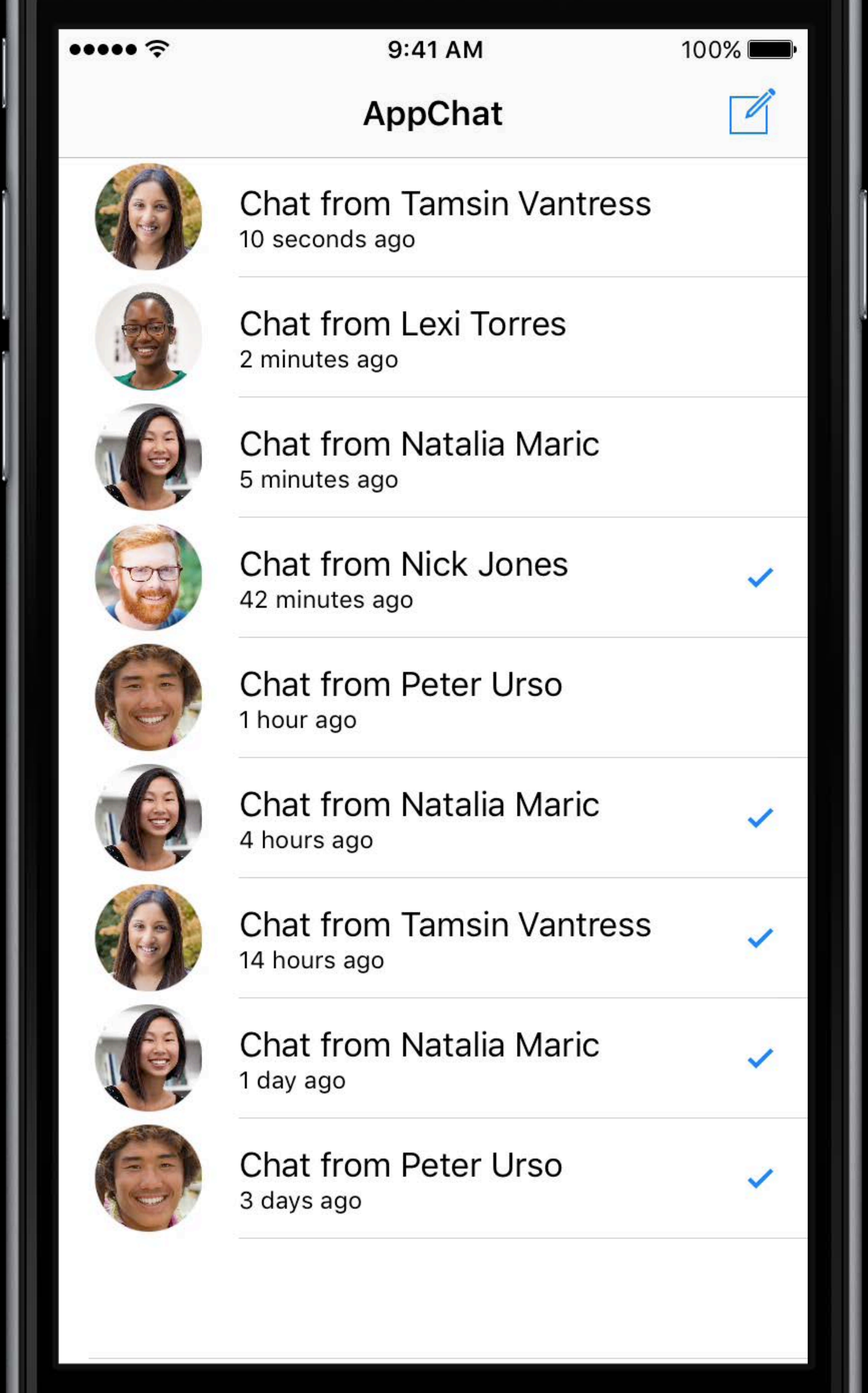
    show(viewControllerToCommit, sender: self)
}
```



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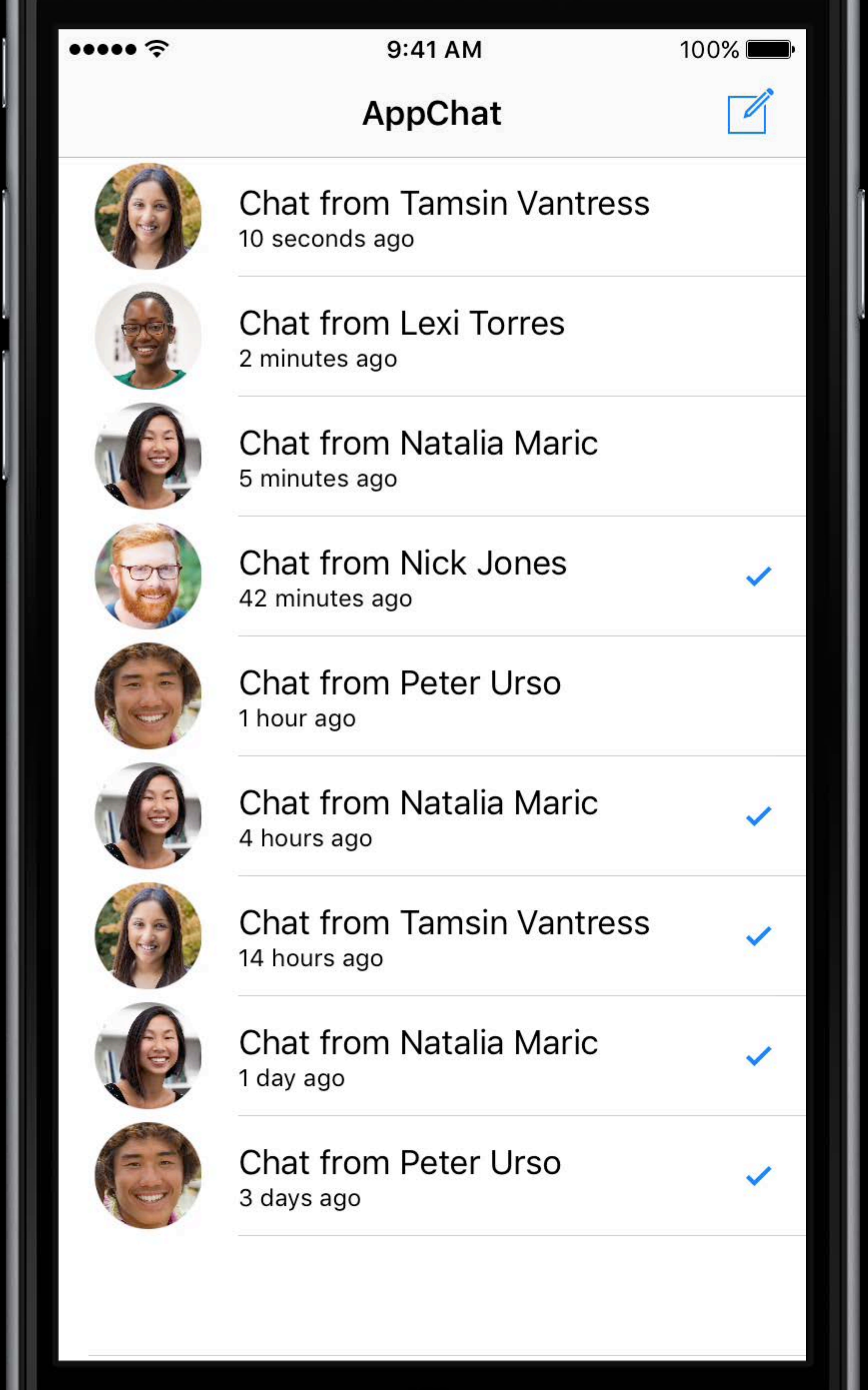
3 days ago



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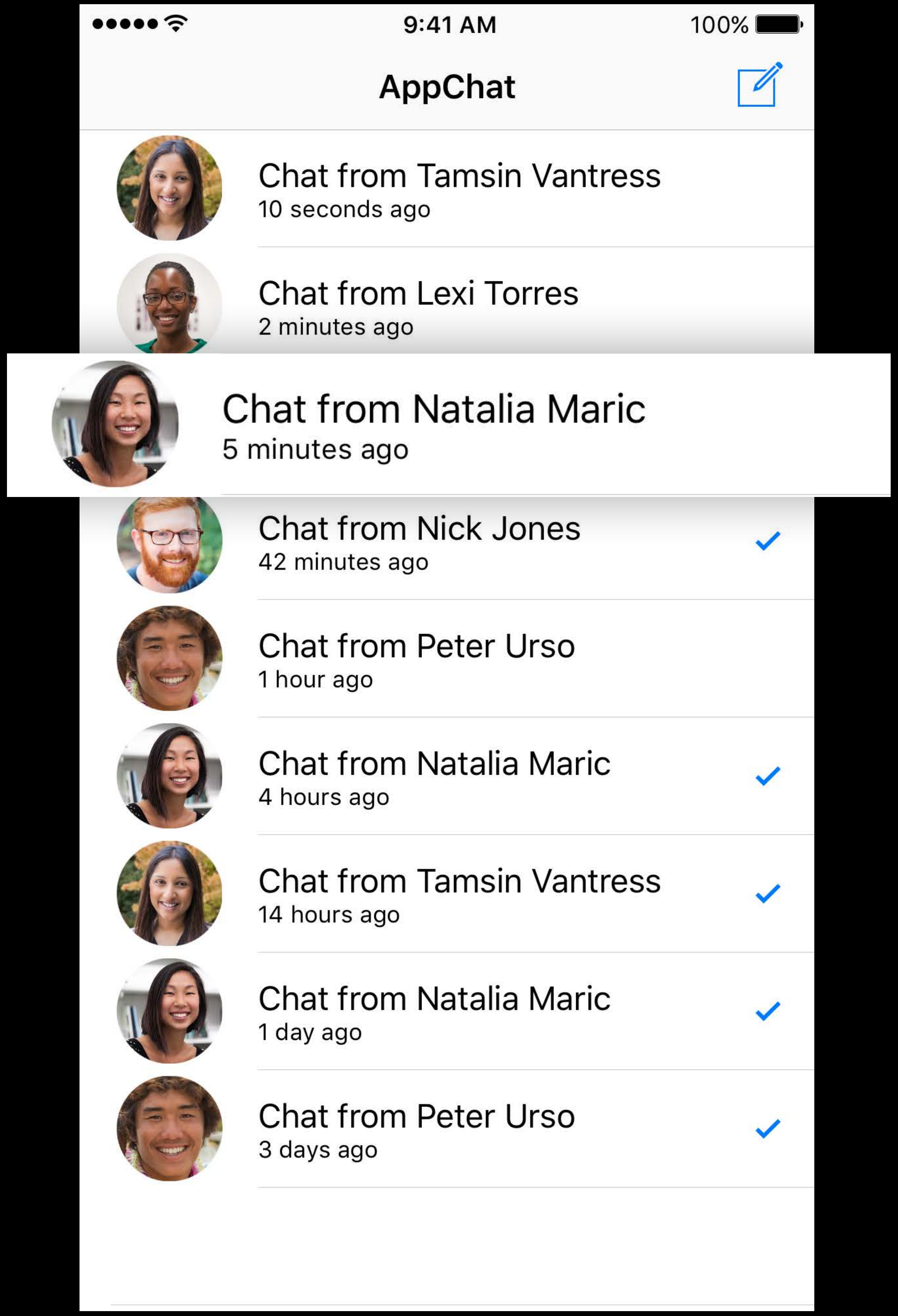
AppChat

Chat from Tamsin Vantress 10 seconds ago		
Chat from Lexi Torres 2 minutes ago		
Chat from Natalia Maric 5 minutes ago		
Chat from Nick Jones 42 minutes ago	✓	
Chat from Peter Urso 1 hour ago		
Chat from Natalia Maric 4 hours ago	✓	
Chat from Tamsin Vantress 14 hours ago	✓	
Chat from Natalia Maric 1 day ago	✓	
Chat from Peter Urso 3 days ago	✓	

Peek and Pop

Preview quick actions

Registered View Controller



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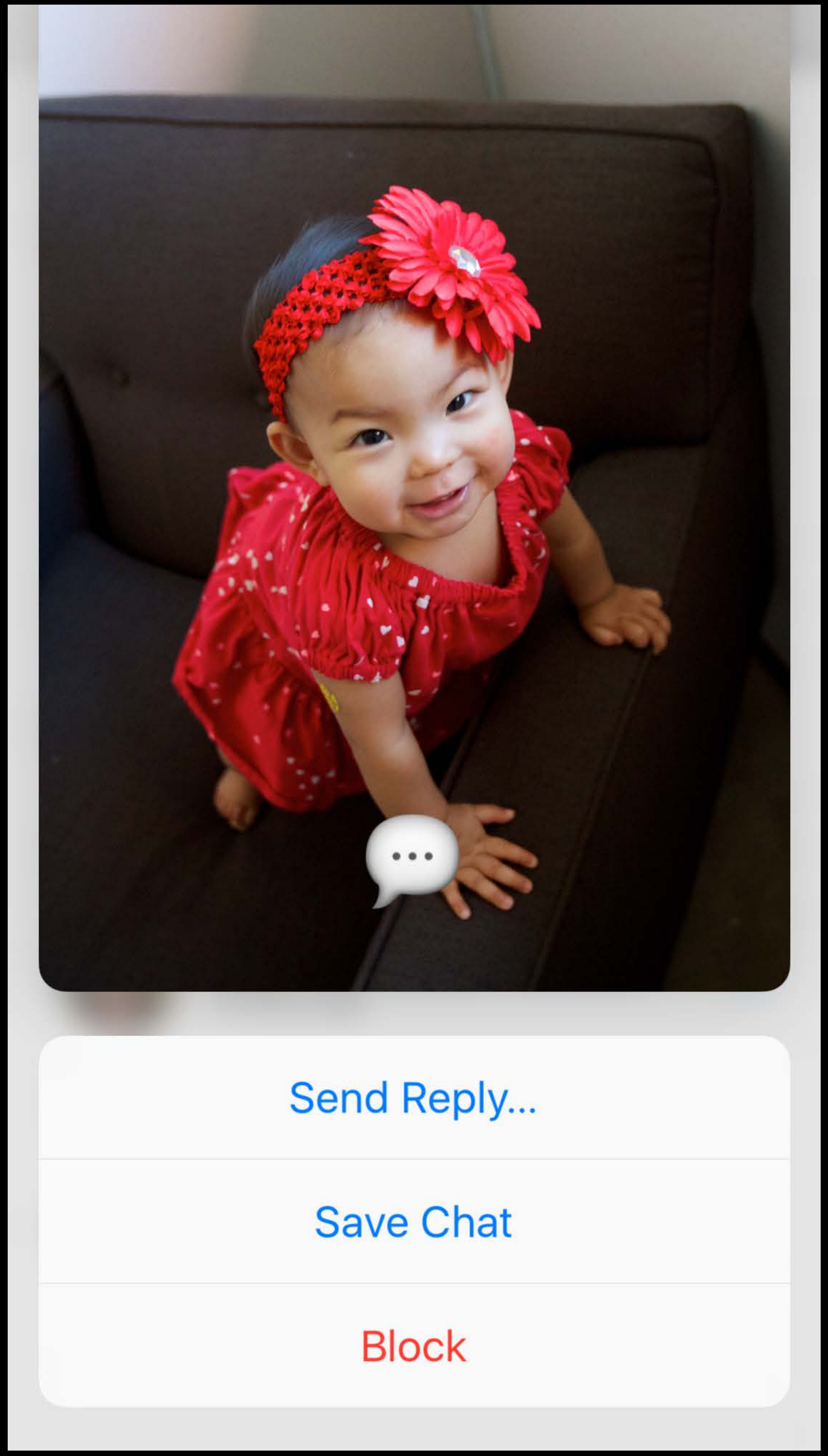
Chat from Tamsin Vantress ✓
14 hours ago

Chat from Natalia Maric ✓
1 day ago

Chat from Peter Urso ✓
3 days ago

Source

Previewed View Controller



Adding Peek and Pop to Your App

Preview quick actions

```swift
override func previewActionItems() -> [UIPreviewActionItem] {
    let heart = UIPreviewAction(title: "❤️", style: .default) { (action, viewController) in
        // Send a heart
    }
    return [heart]
}
```

Adding Peek and Pop to Your App

Preview quick actions

```swift
override func previewActionItems() -> [UIPreviewActionItem] {
    let heart = UIPreviewAction(title: "❤️", style: .default) { (action, viewController) in
        // Send a heart
    }
    return [heart]
}
```

Adding Peek and Pop to Your App

Preview quick action groups

```
let replyActions = [UIPreviewAction(title: "❤️", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😁", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "👍", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😯", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😢", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😈", style: .default, handler: replyActionHandler)]
let sendReply = UIPreviewActionGroup(title: "Send Reply…",
                                     style: .default,
                                     actions: replyActions)
```

Adding Peek and Pop to Your App

Preview quick action groups

```
let replyActions = [UIPreviewAction(title: "❤️", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😁", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "👍", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😯", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😢", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😈", style: .default, handler: replyActionHandler)]
let sendReply = UIPreviewActionGroup(title: "Send Reply…",
                                     style: .default,
                                     actions: replyActions)
```

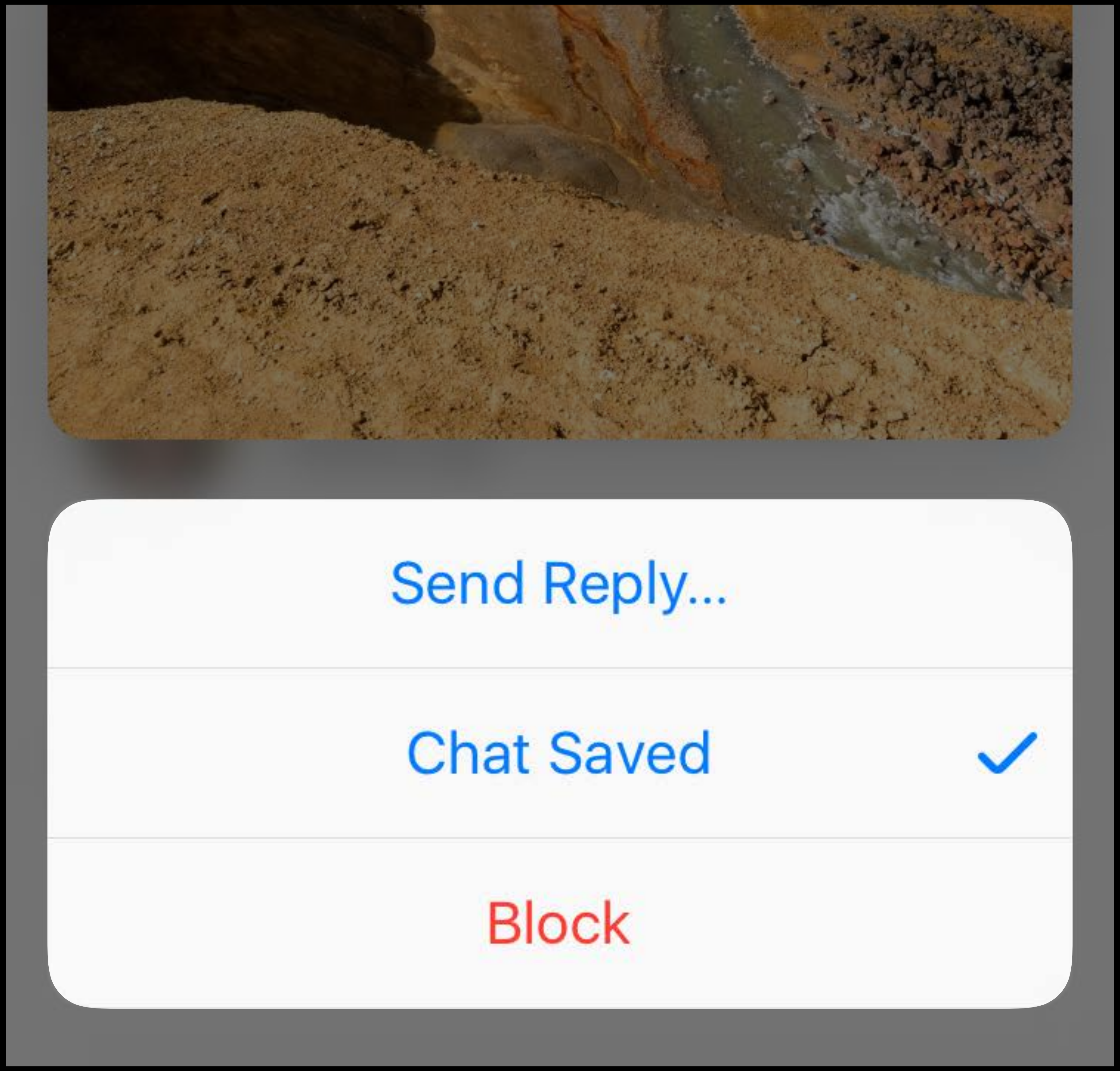
Adding Peek and Pop to Your App

Preview quick action groups

```swift
let replyActions = [UIPreviewAction(title: "❤️", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😄", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "👍", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😯", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😢", style: .default, handler: replyActionHandler),
                    UIPreviewAction(title: "😈", style: .default, handler: replyActionHandler)]
let sendReply = UIPreviewActionGroup(title: "Send Reply…",
                                     style: .default,
                                     actions: replyActions)
```

Adding Peek and Pop to Your App

Other preview quick action styles



Send Reply...

Chat Saved ✓

Block

```
let save = UIPreviewAction(title: "Chat Saved", style: .selected, handler: saveHandler)
let block = UIPreviewAction(title: "Block", style: .destructive, handler: blockHandler)
```

Peek and Pop

Best practices

Peek and Pop

Best practices

Content that can be tapped should support Peek and Pop

Peek and Pop

Best practices

Content that can be tapped should support Peek and Pop

Return a preview view controller consistently

Peek and Pop

Best practices

Content that can be tapped should support Peek and Pop

Return a preview view controller consistently

Don’t take too long in the previewing delegate

Peek and Pop

Best practices

Content that can be tapped should support Peek and Pop

Return a preview view controller consistently

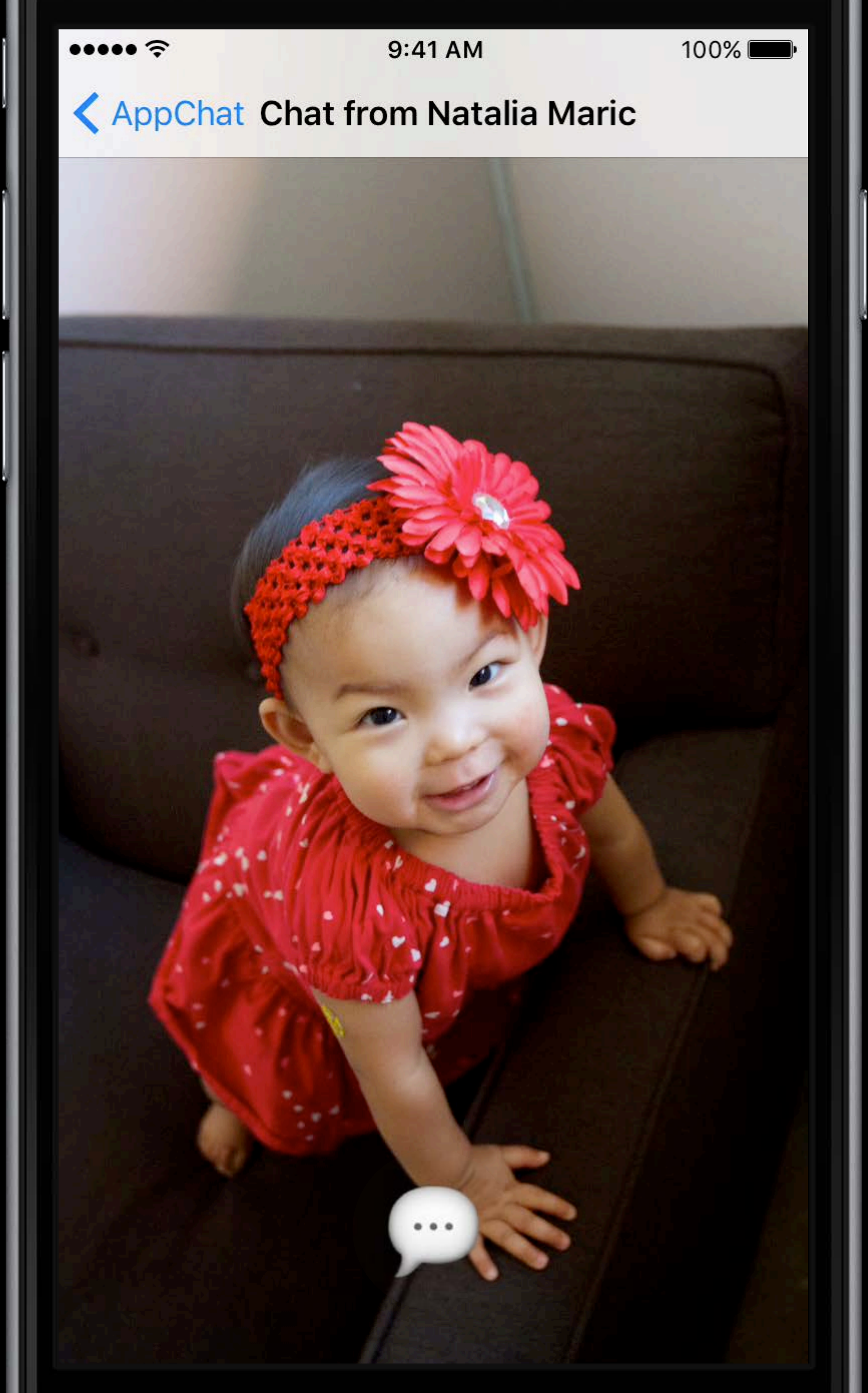
Don’t take too long in the previewing delegate

Set the previewing context `sourceRect`

NEW

UIPreviewInteraction

Peek and Pop feel with your user interface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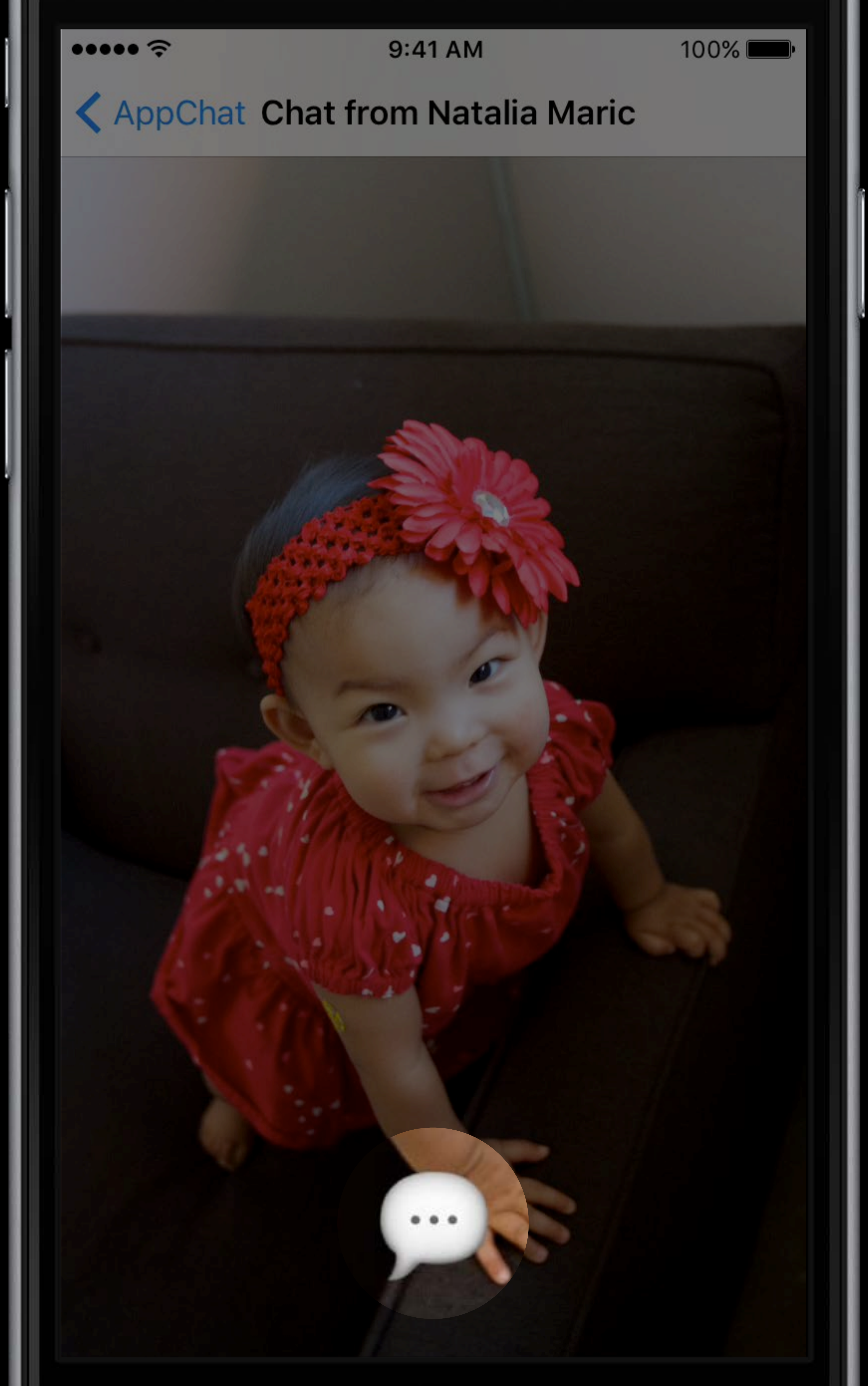
AppChat
Chat from Natalia Maric



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AppChat
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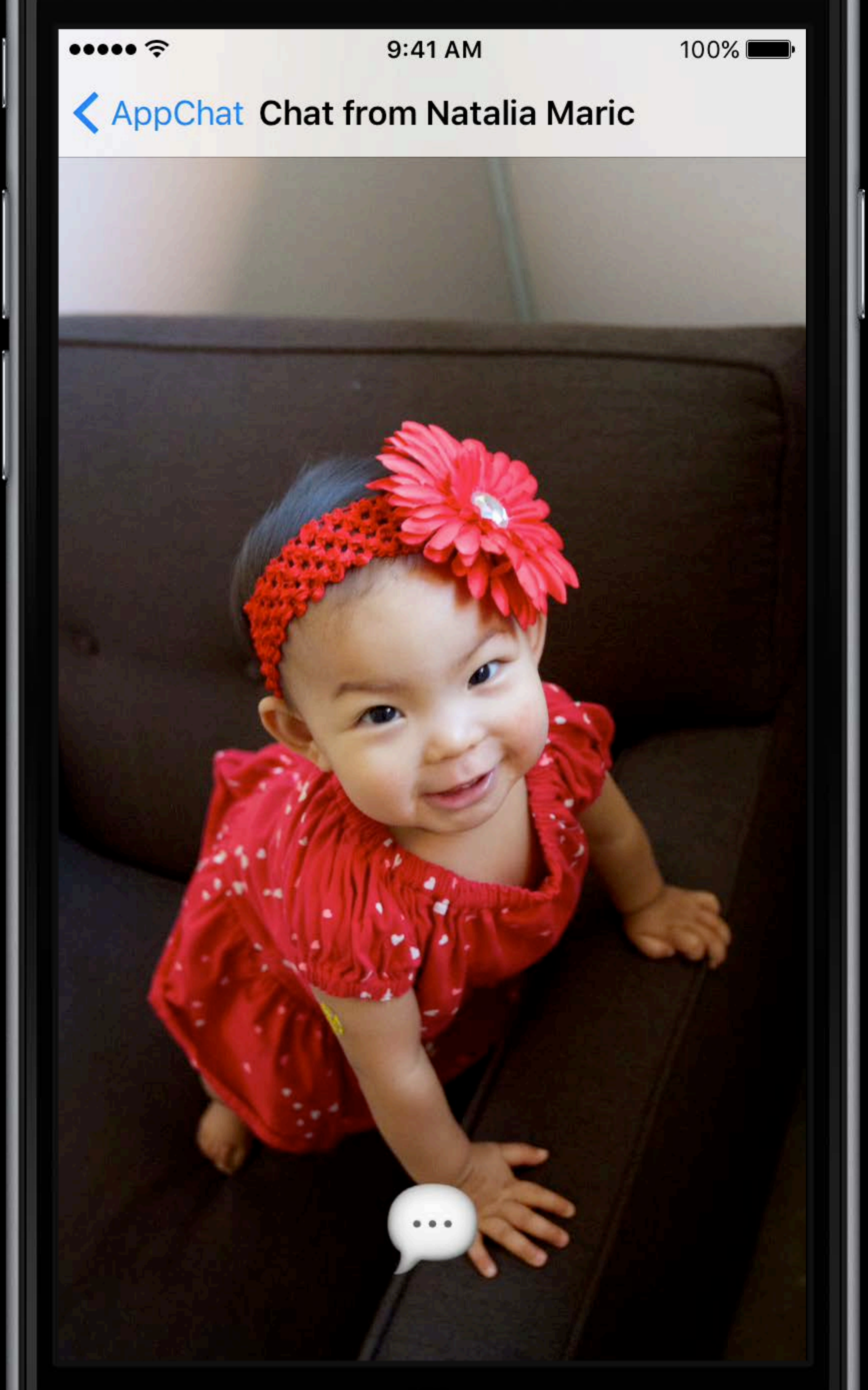

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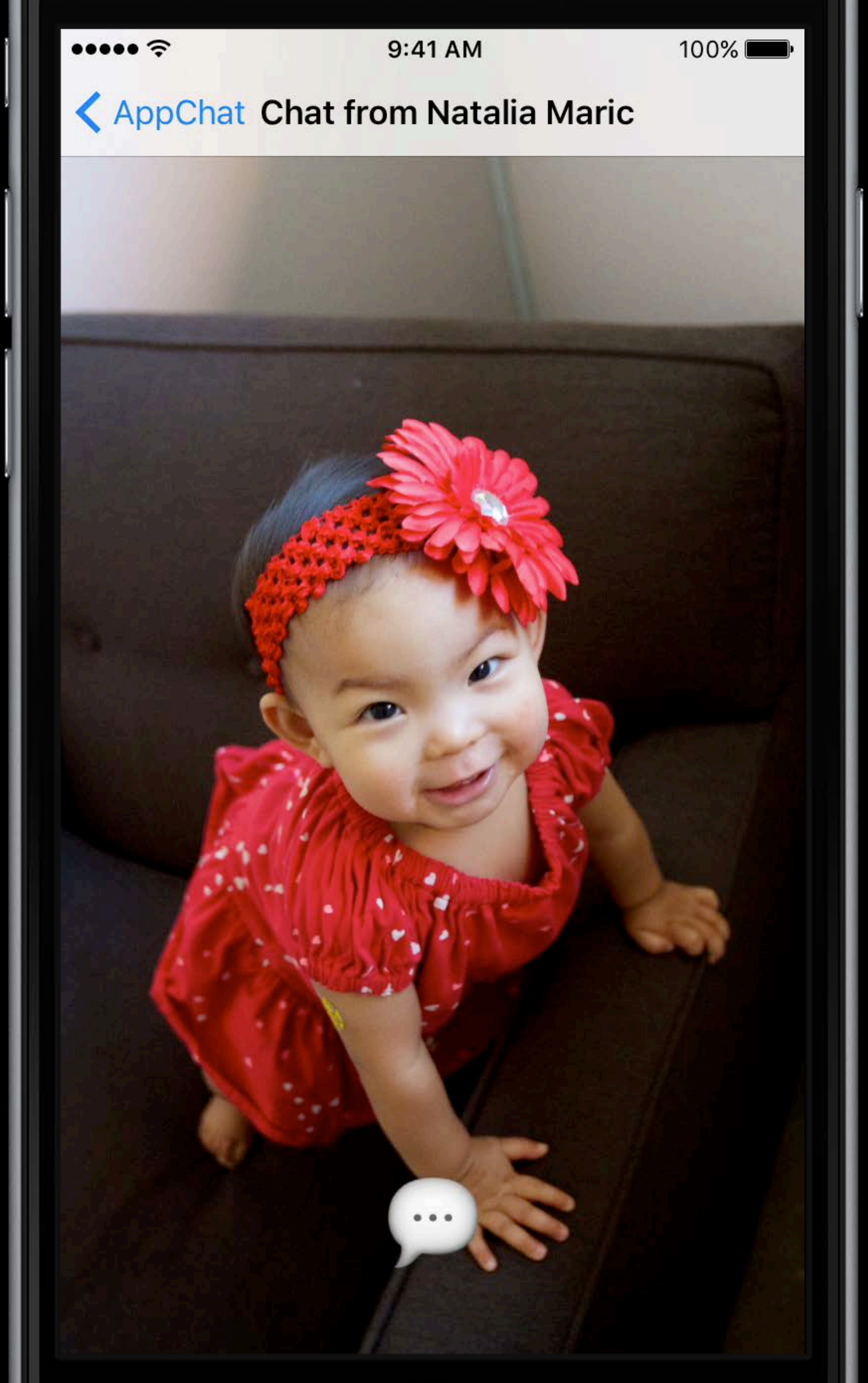
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AppChat
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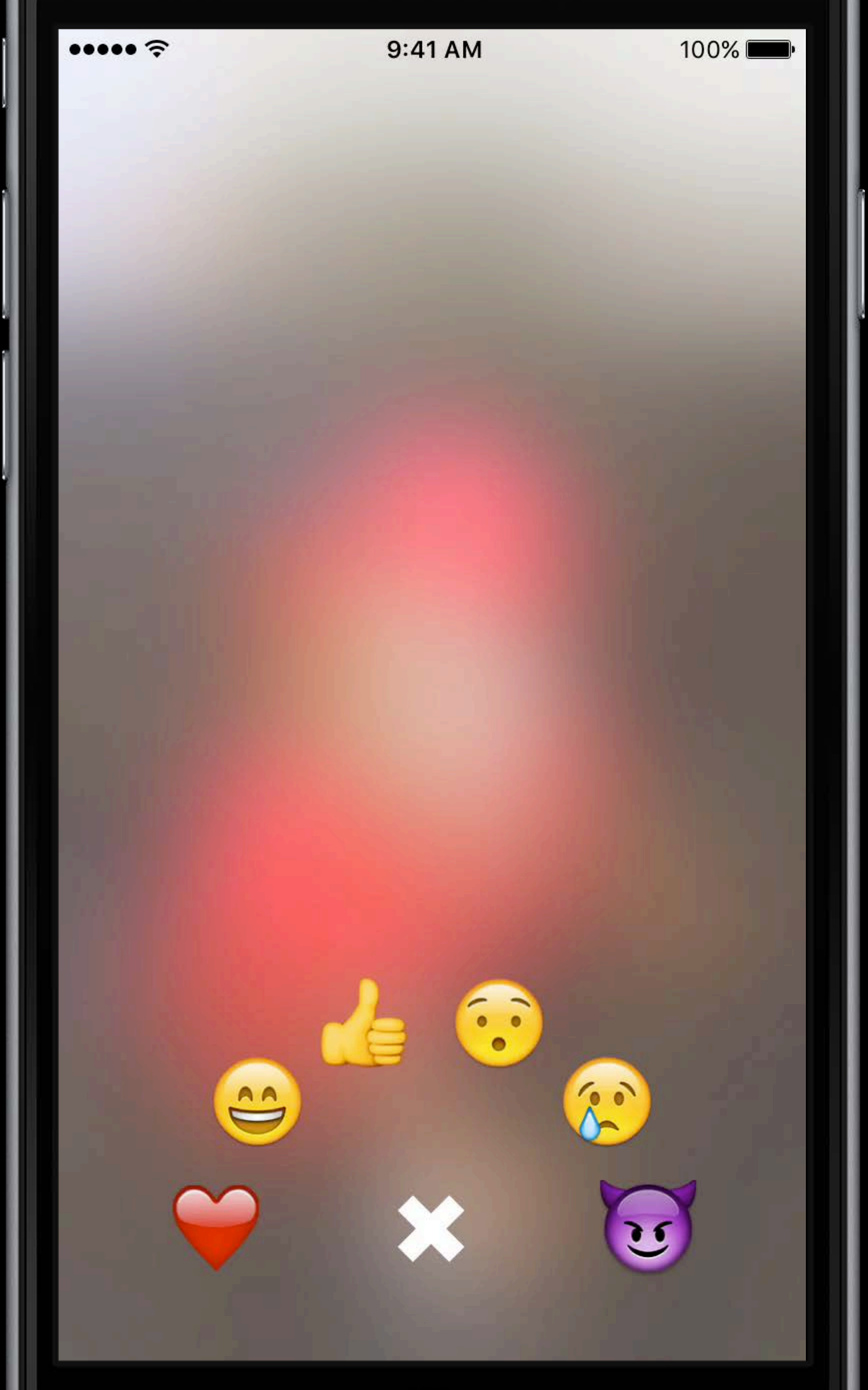
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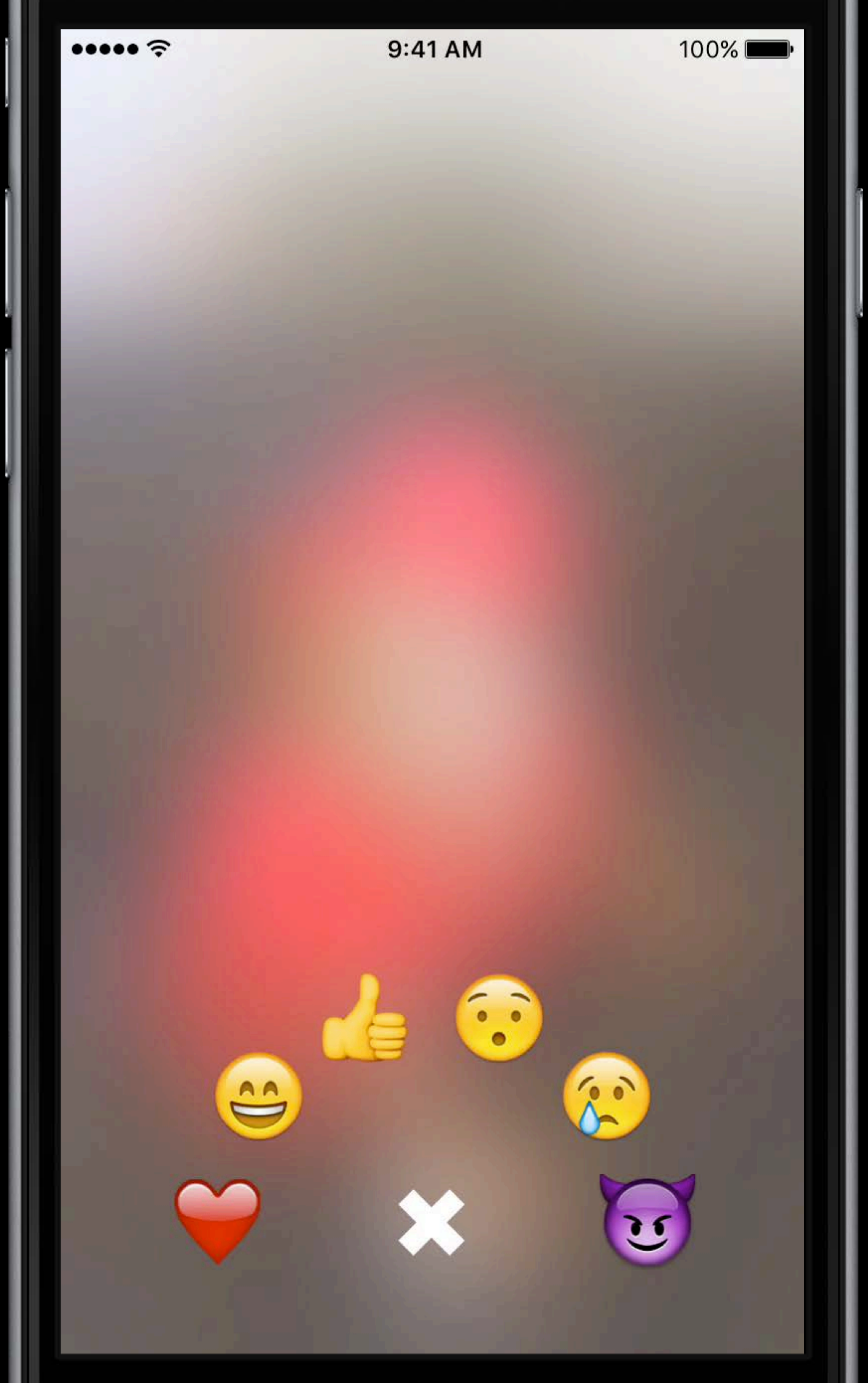
😄 👍 😯 😢
❤️ ✖ 😈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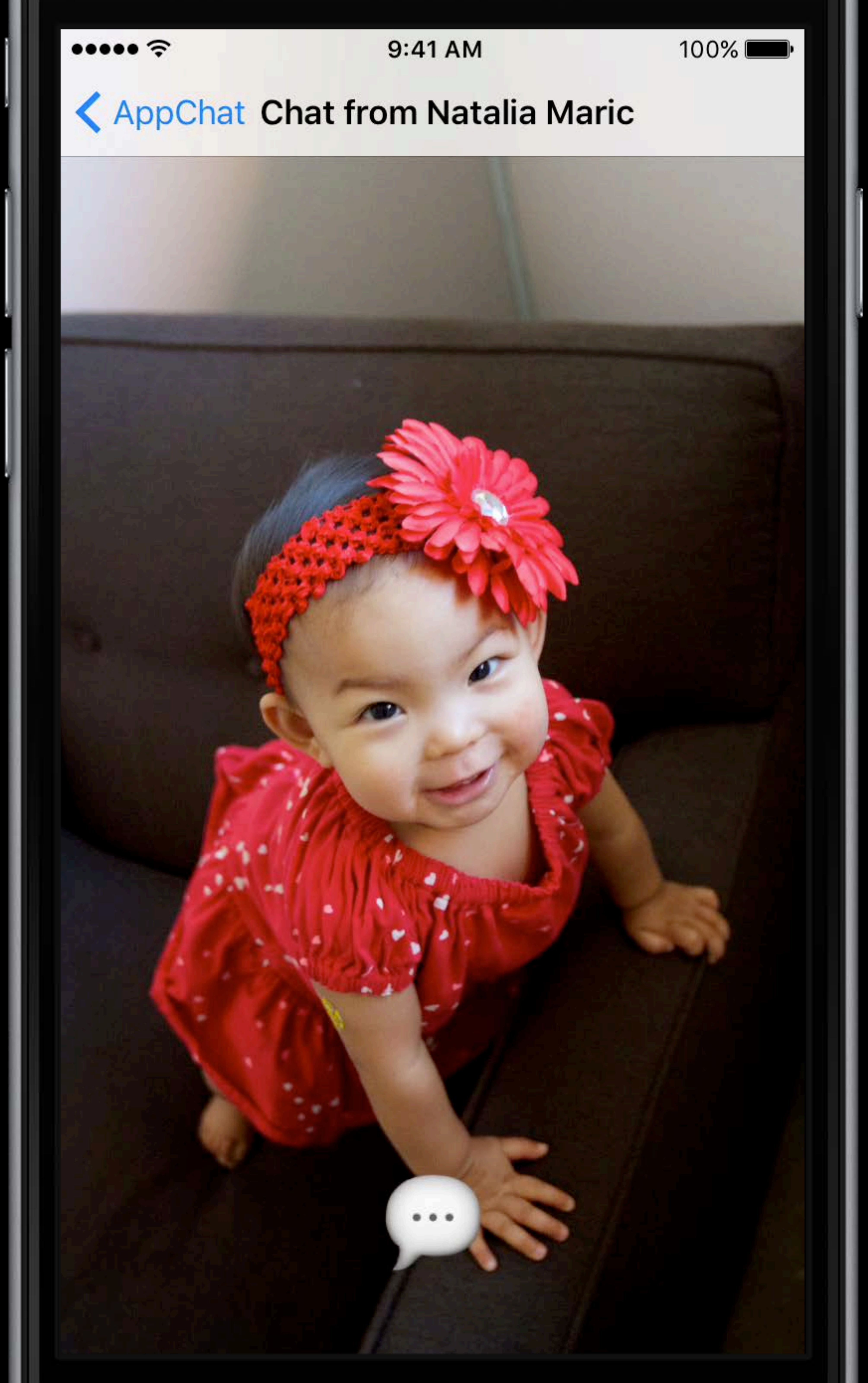
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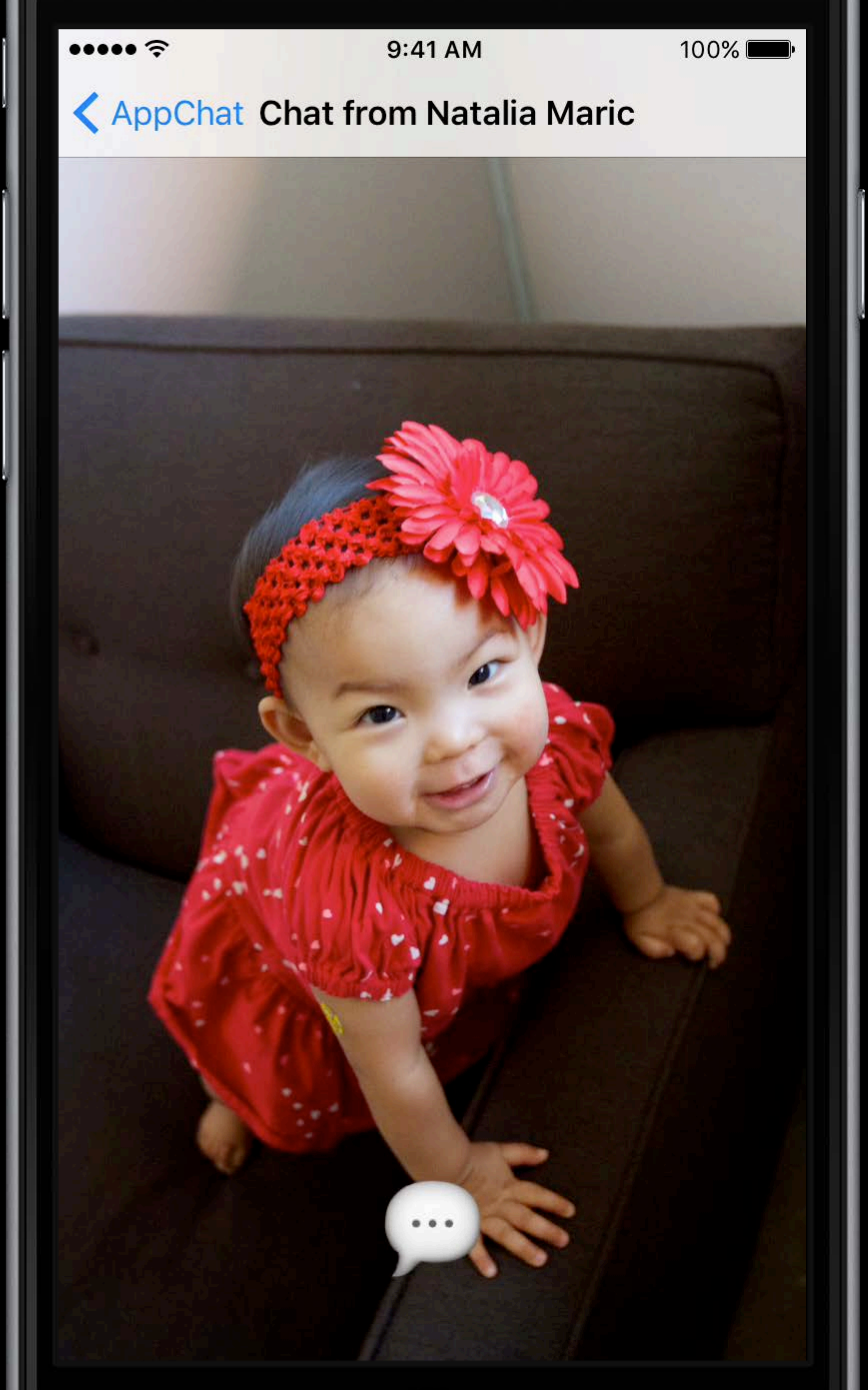
AppChat
Chat from Natalia Maric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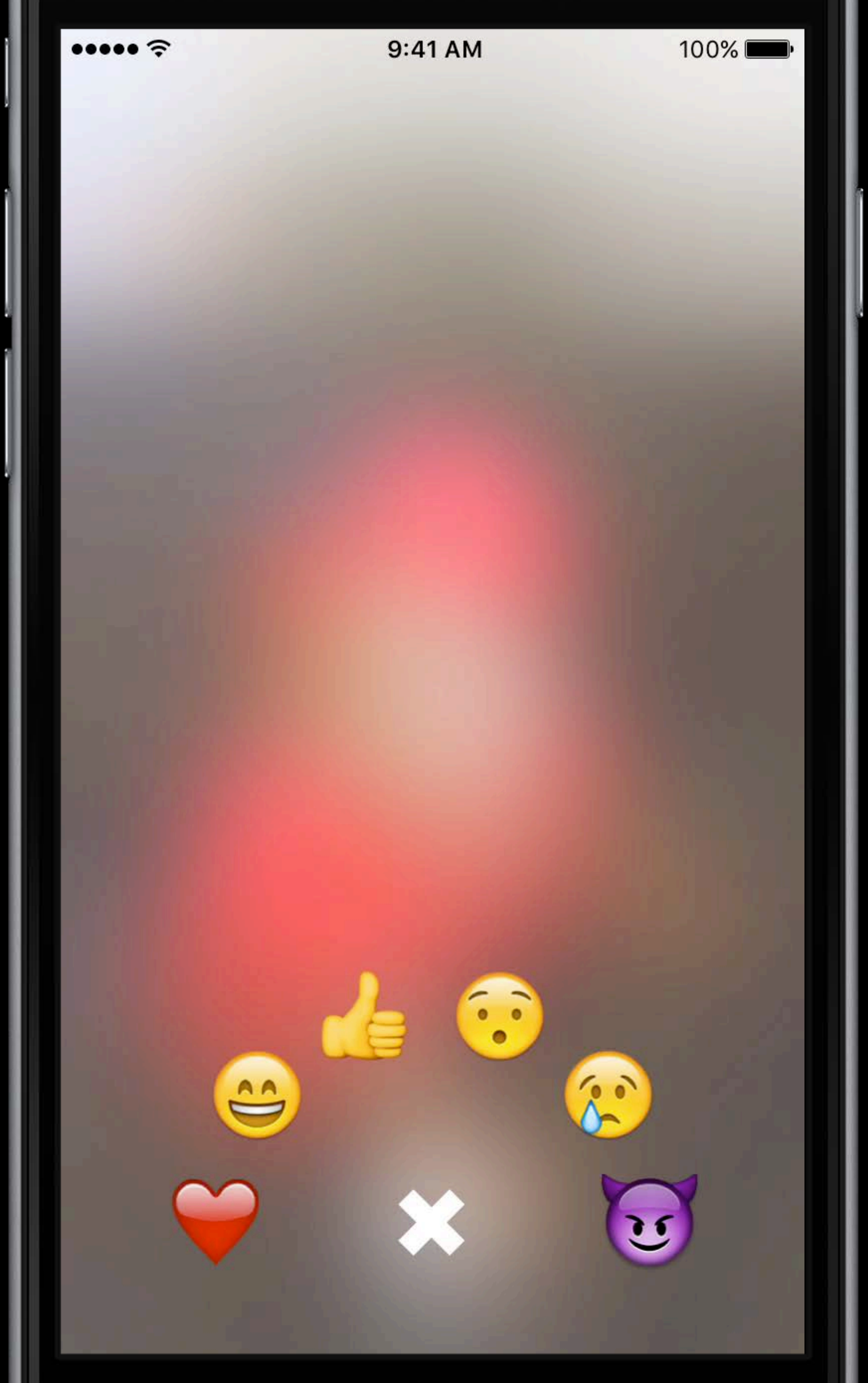
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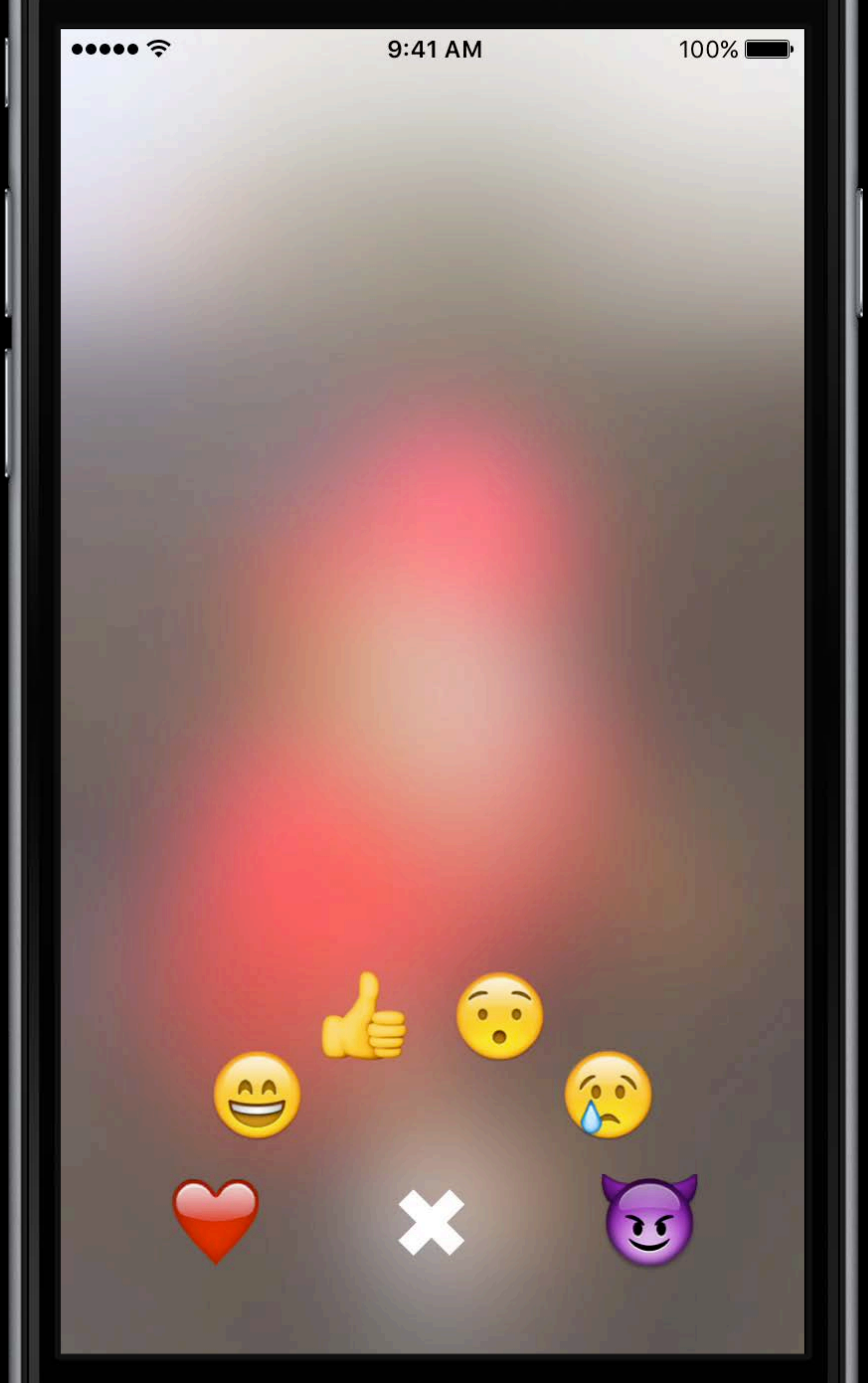
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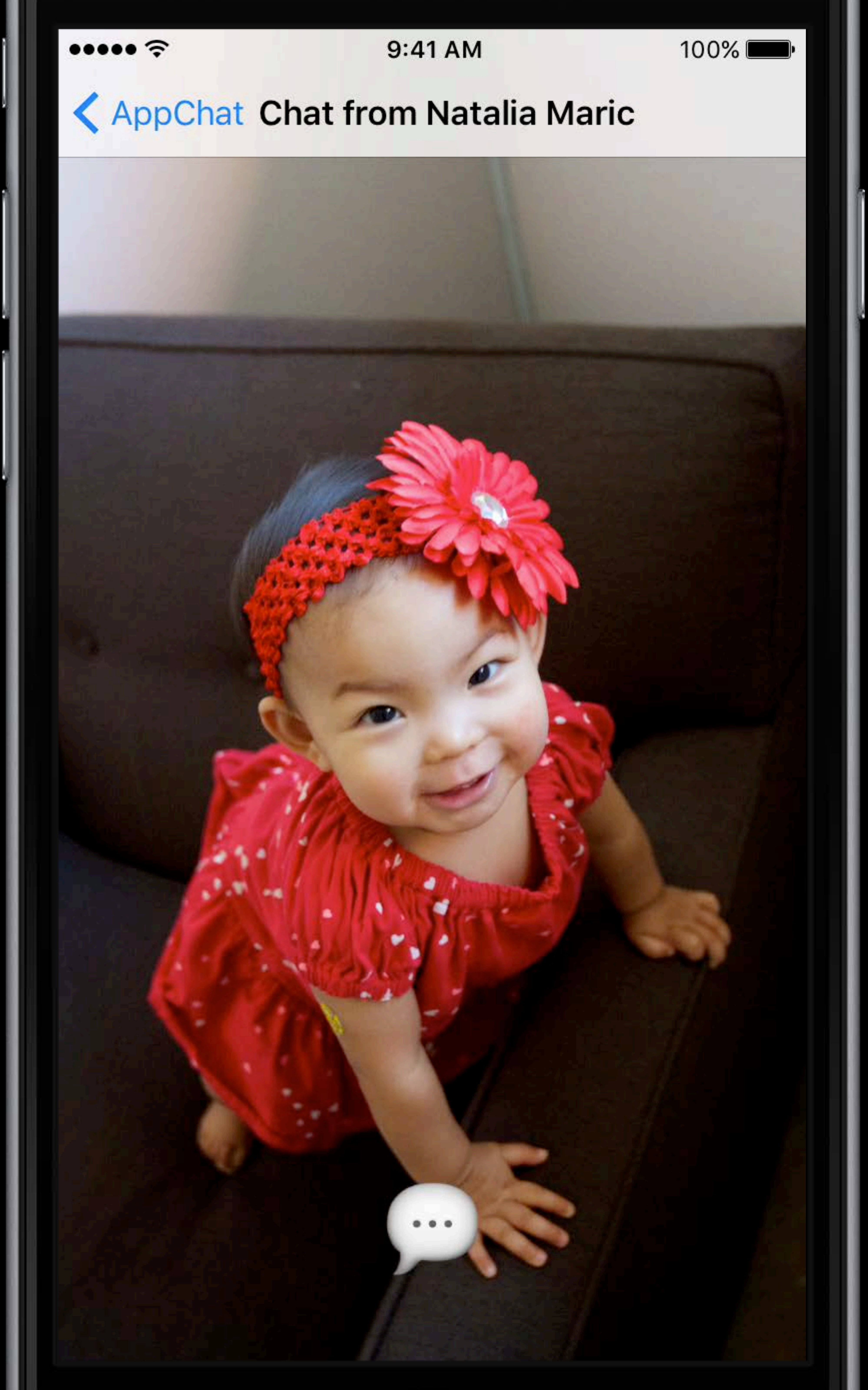
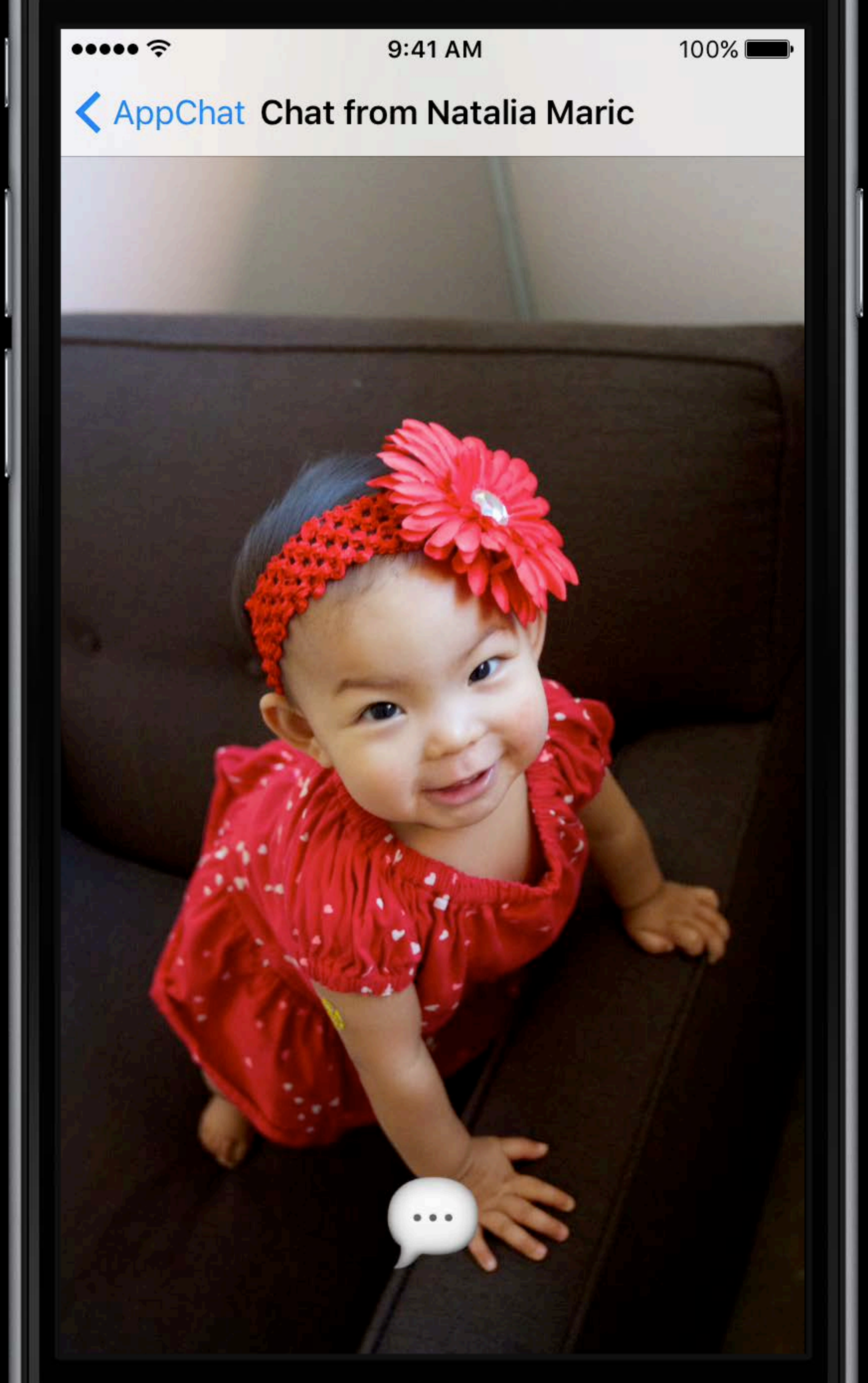


Chat from Natalia Maric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100%
AppChat
Chat from Natalia Maric

UIPreviewInteraction

Same Peek and Pop Force Processing

+

Automatic Haptic Feedback

+

Your User Interface

UIPreviewInteraction

UIPreviewInteractionDelegate

```
extension ChatDetailViewController : UIPreviewInteractionDelegate
```

UIPreviewInteraction

Creating the UIPreviewInteraction

```
override func viewDidLoad() {
    super.viewDidLoad()

    replyPreviewInteraction = UIPreviewInteraction(view: view)
    replyPreviewInteraction.delegate = self
}
```

UIPreviewInteraction

Creating the UIPreviewInteraction

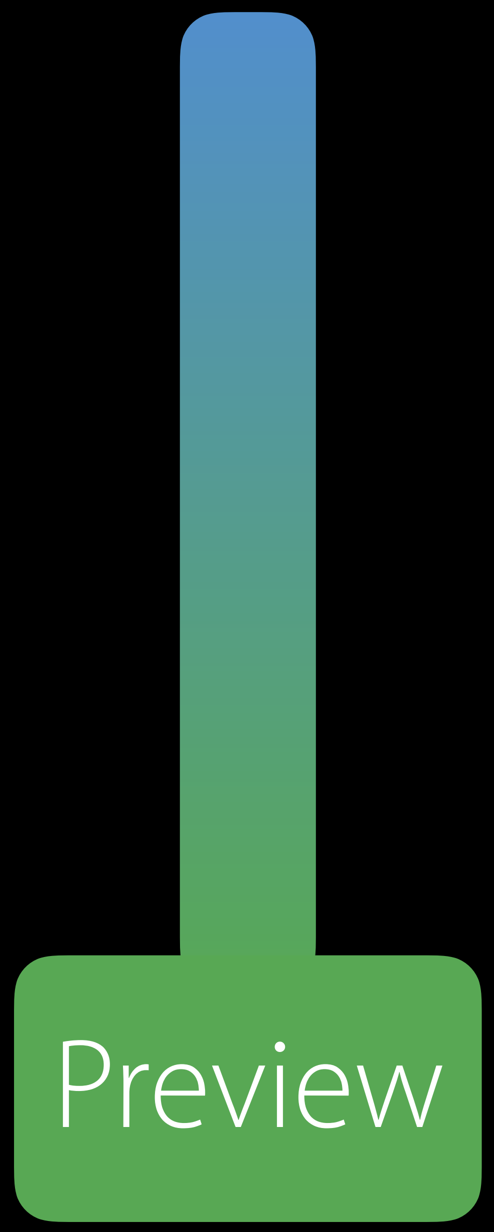
```swift
override func viewDidLoad() {
    super.viewDidLoad()

    replyPreviewInteraction = UIPreviewInteraction(view: view)
    replyPreviewInteraction.delegate = self
}
```

UIPreviewInteraction

Starting the interaction

`previewInteractionShouldBegin()`



Preview

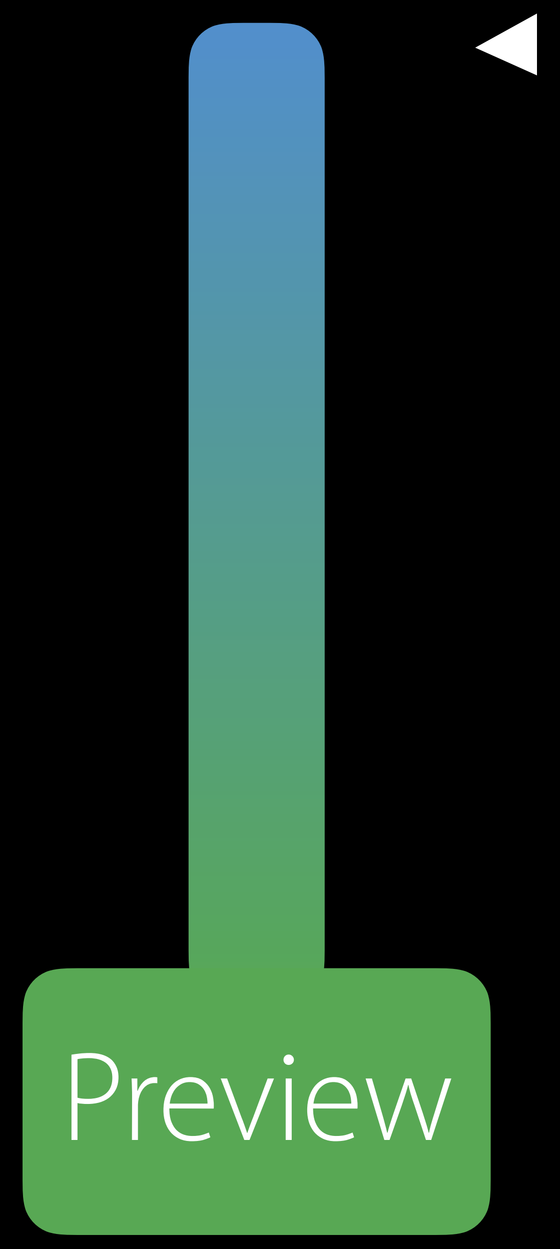
UIPreviewInteraction

State transitions

UIPreviewInteraction

State transitions

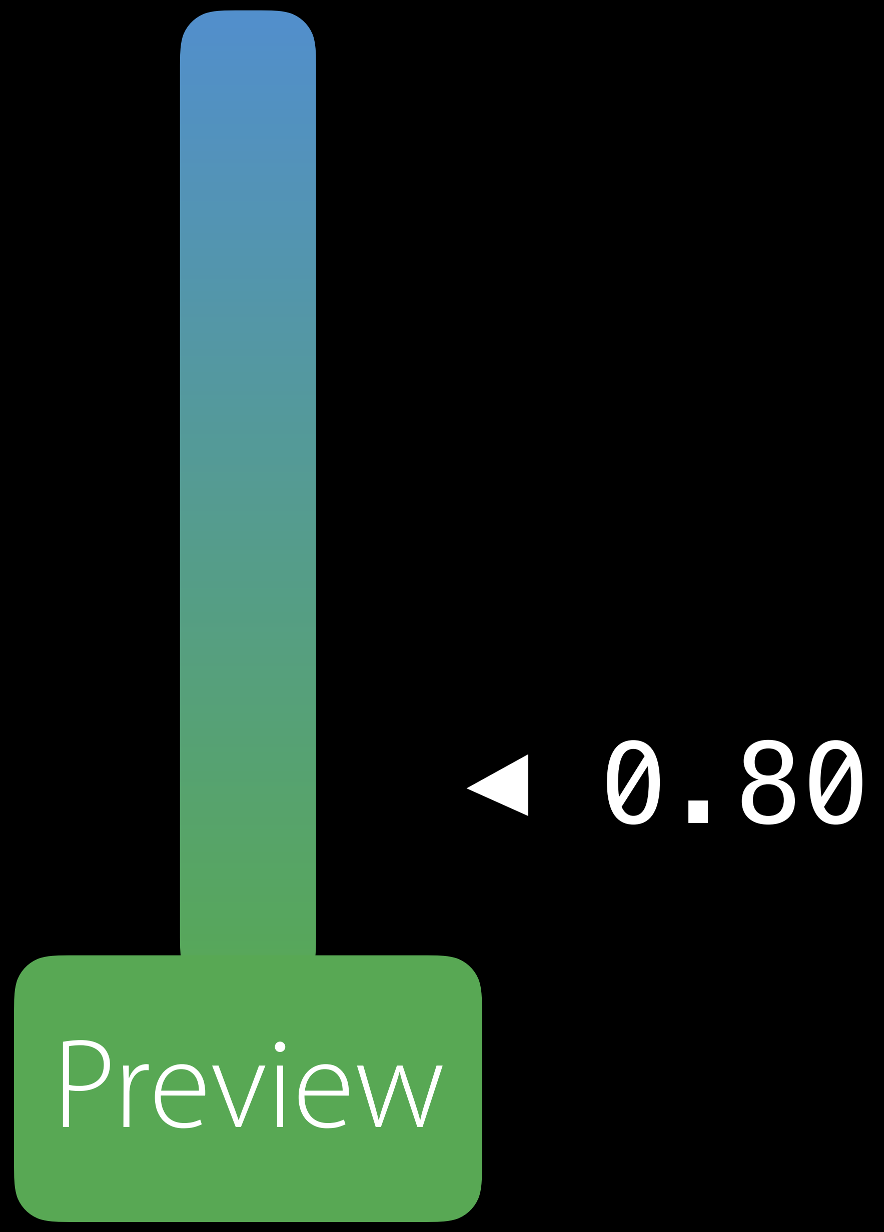
```
previewInteraction(didUpdatePreviewTransition:ended:)
```



UIPreviewInteraction

State transitions

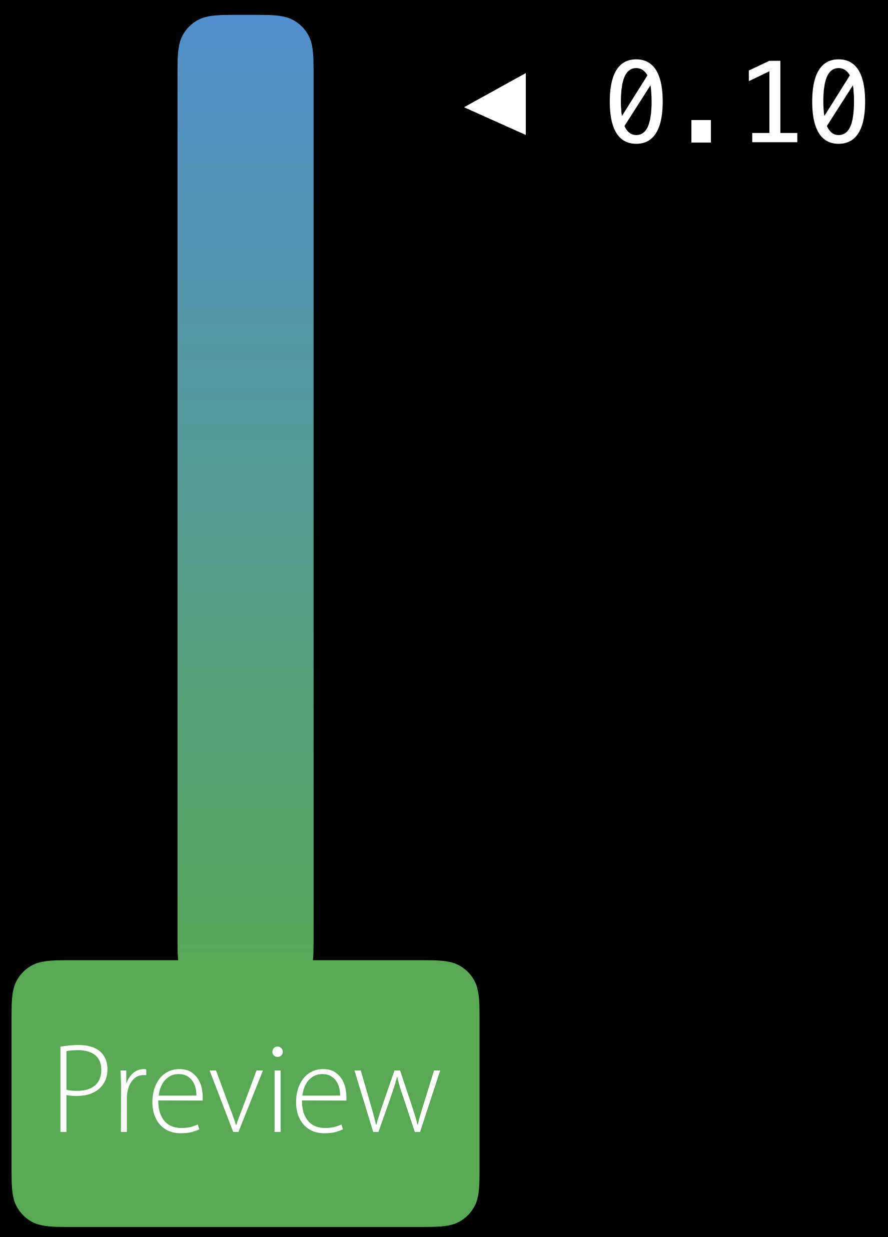
`previewInteraction(didUpdatePreviewTransition:ended:)`



UIPreviewInteraction

State transitions

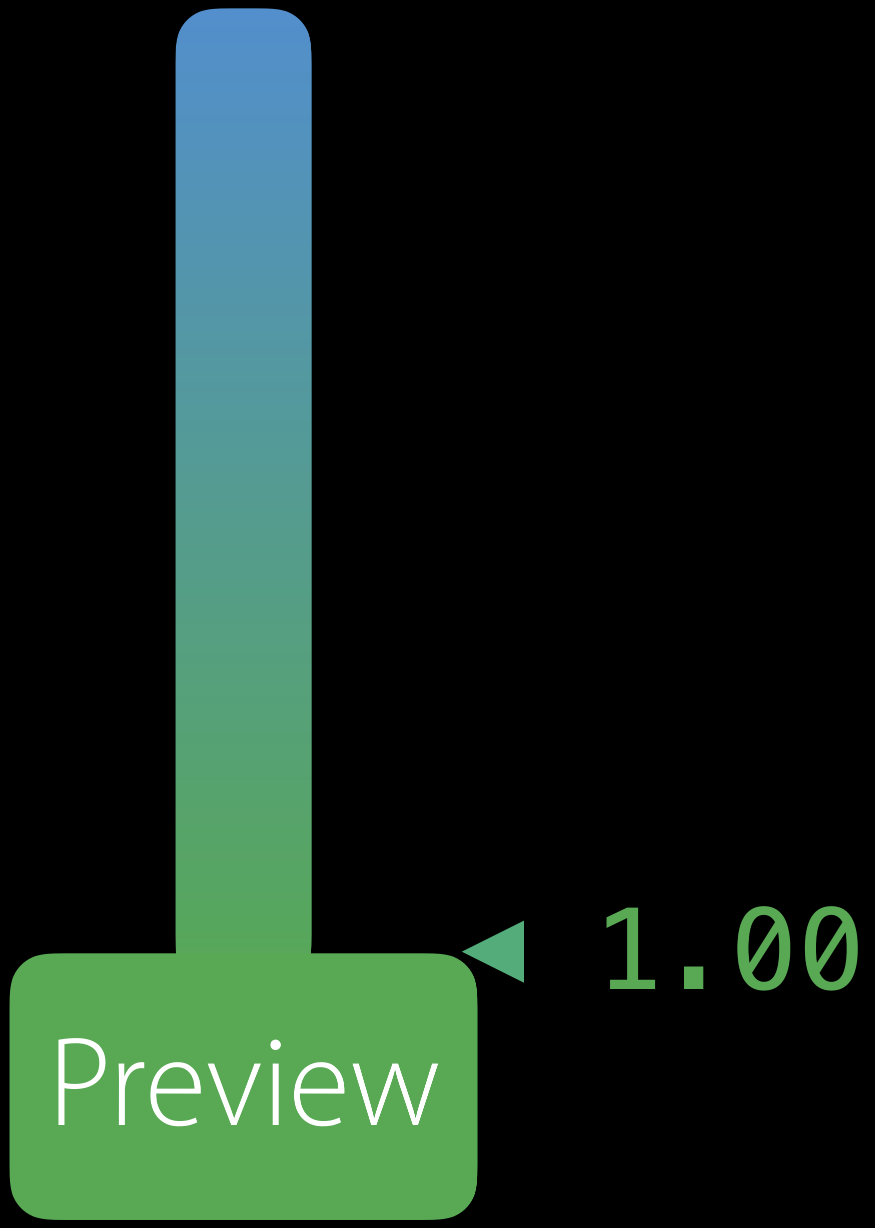
```
previewInteraction(didUpdatePreviewTransition:ended:)
```



UIPreviewInteraction

State transitions

```
previewInteraction(didUpdatePreviewTransition:ended:)
```



UIPreviewInteraction

Preview transition

```
func previewInteraction(_  previewInteraction: UIPreviewInteraction,
                        didUpdatePreviewTransition transitionProgress: CGFloat,
                        ended: Bool) {
    updateForPreview(progress: transitionProgress)

    if ended {
        completePreview()
    }
}
```

UIPreviewInteraction

Preview transition

```
func previewInteraction(_  previewInteraction: UIPreviewInteraction,
                        didUpdatePreviewTransition transitionProgress: CGFloat,
                        ended: Bool) {
    updateForPreview(progress: transitionProgress)

    if ended {
        completePreview()
    }
}
```

UIPreviewInteraction

Preview transition

```
func previewInteraction(_  previewInteraction: UIPreviewInteraction,
                        didUpdatePreviewTransition transitionProgress: CGFloat,
                        ended: Bool) {
    updateForPreview(progress: transitionProgress)

    if ended {
        completePreview()
    }
}
```

UIPreviewInteraction

Cancellation

```
func previewInteractionDidCancel(_ previewInteraction: UIPreviewInteraction) {
    UIView.animate(withDuration: 0.4) {
        self.updateForPreview(progress: 0)
        self.resetToInitialAppearance()
    }
}
```

UIPreviewInteraction

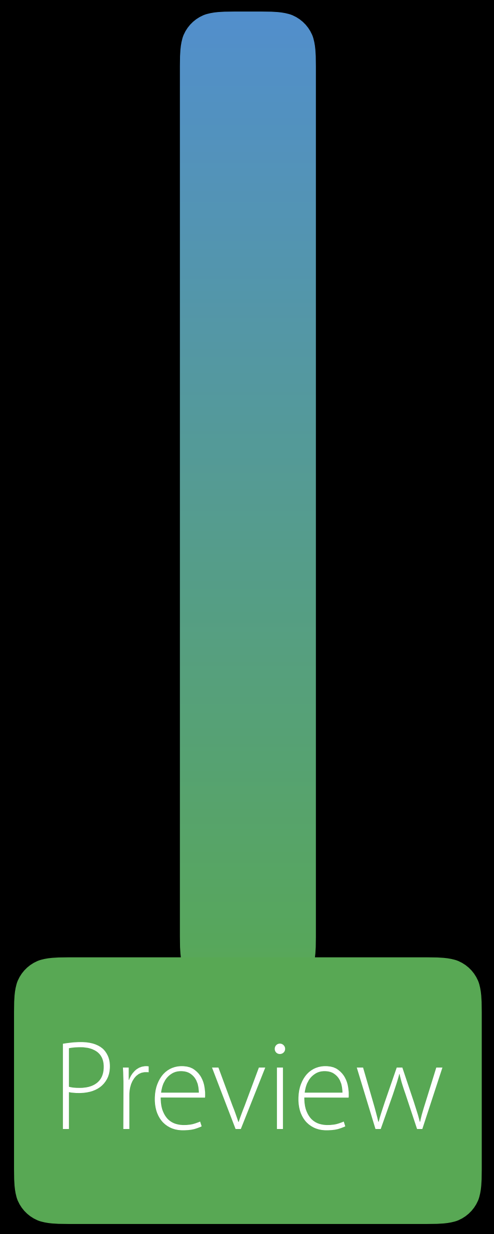
Cancellation

```
func previewInteractionDidCancel(_ previewInteraction: UIPreviewInteraction) {
    UIView.animate(withDuration: 0.4) {
        self.updateForPreview(progress: 0)
        self.resetToInitialAppearance()
    }
}
```

UIPreviewInteraction

State transitions

```
previewInteraction(didUpdatePreviewTransition:ended:)
```

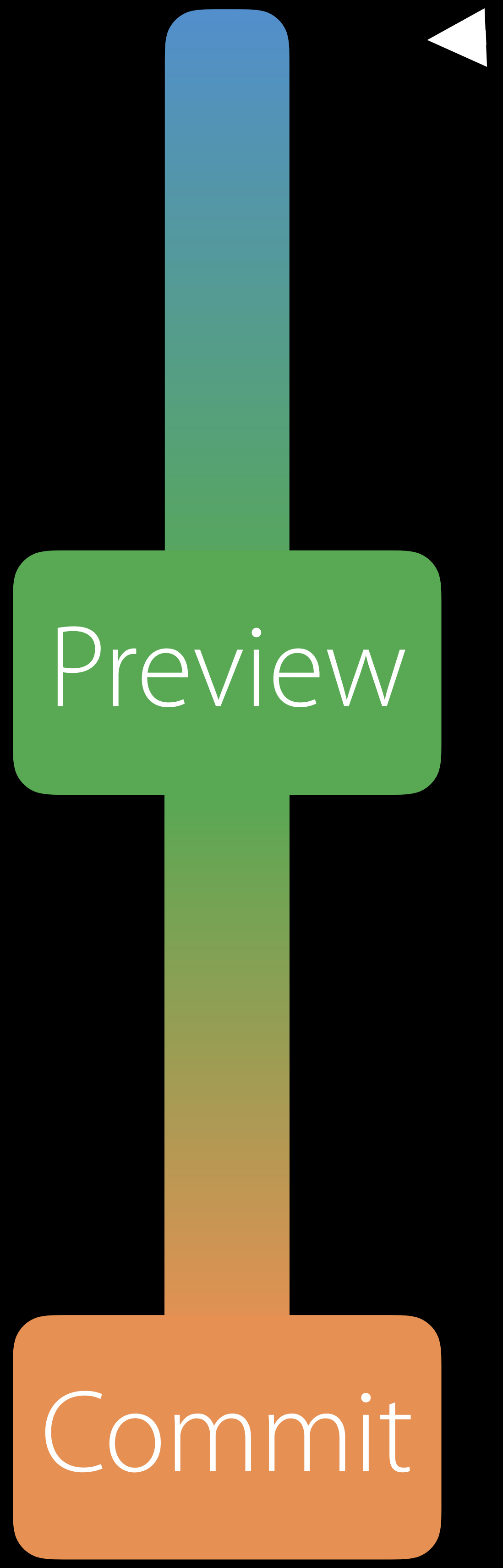


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

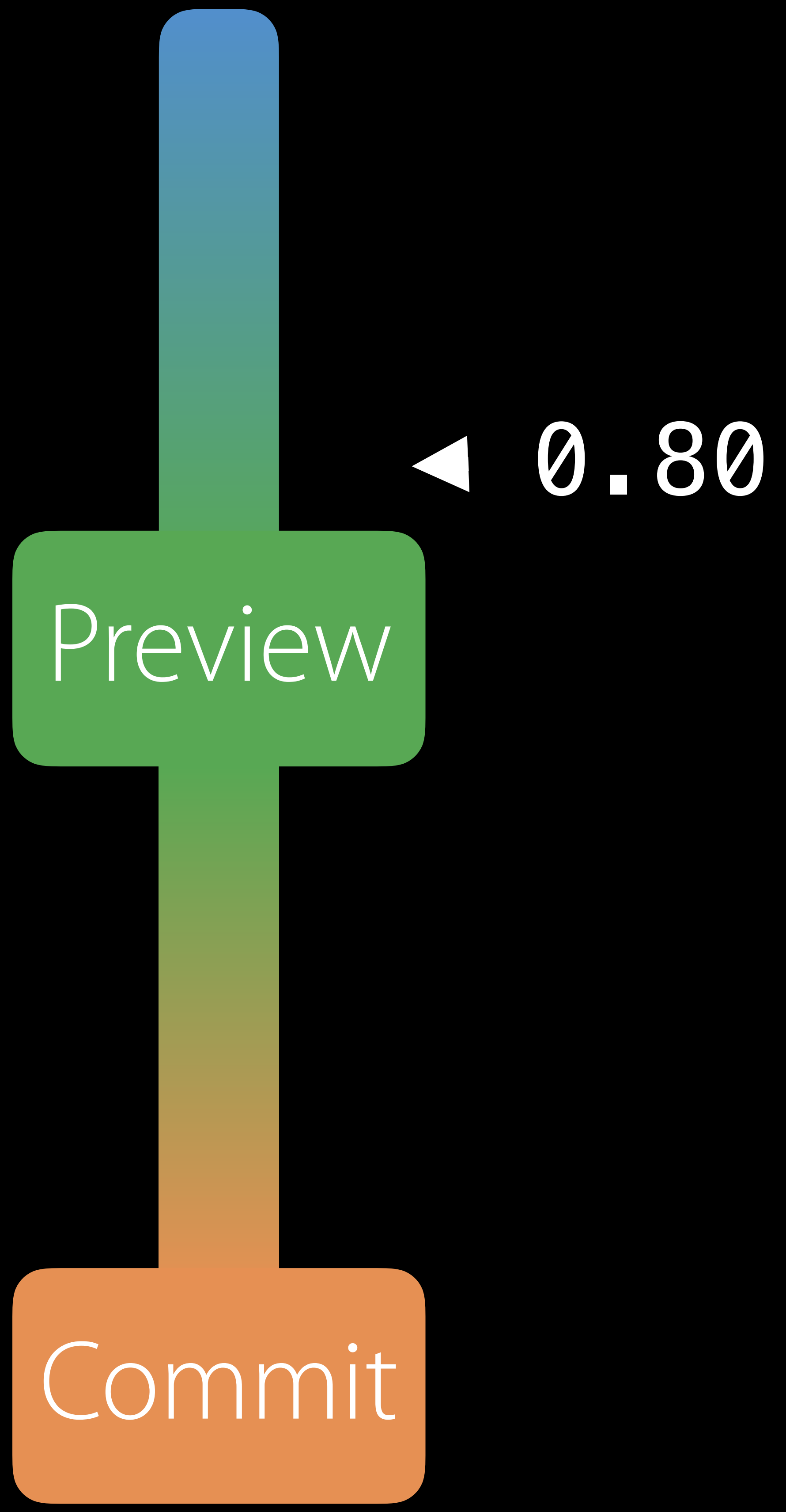


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

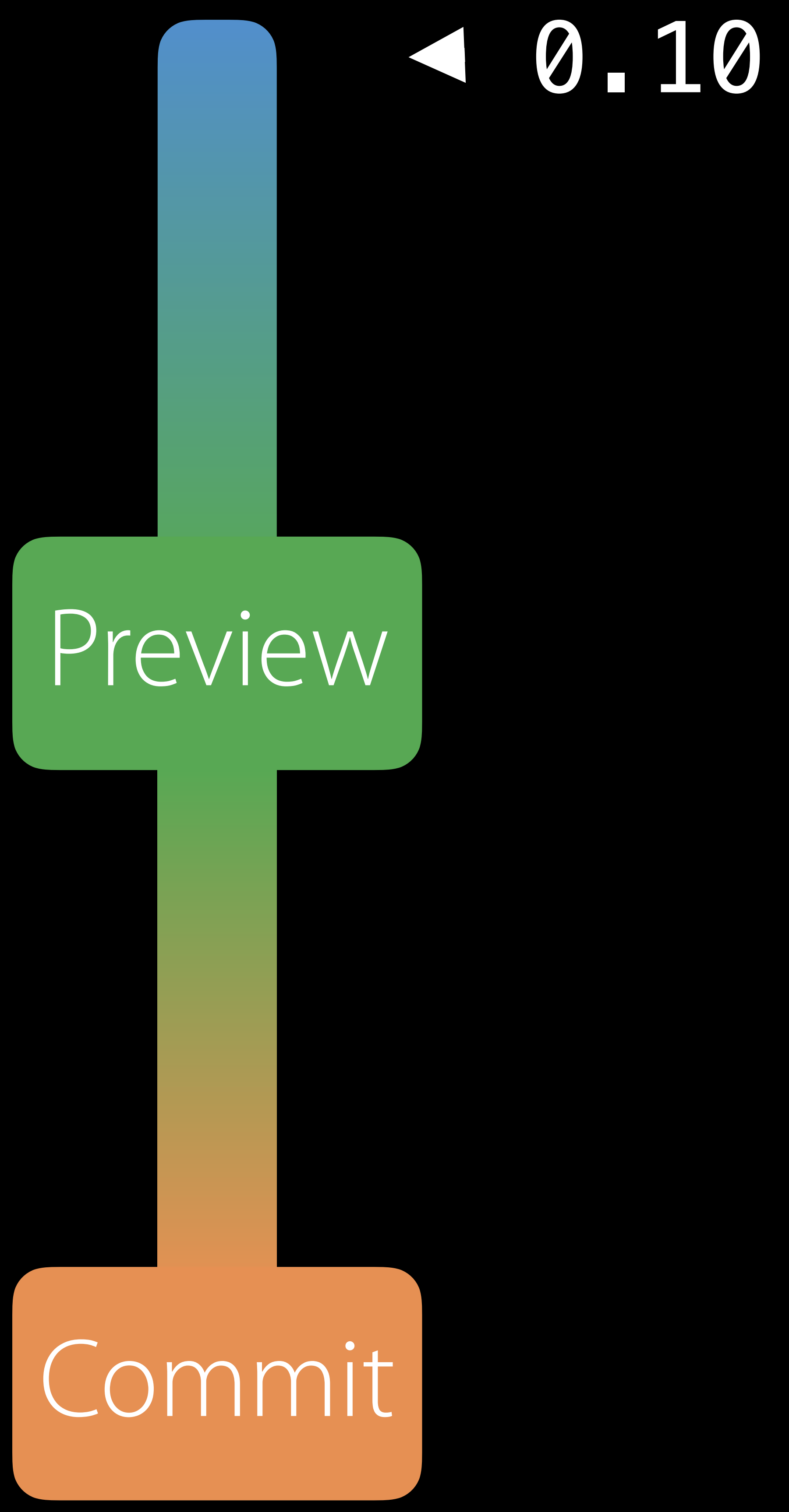


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

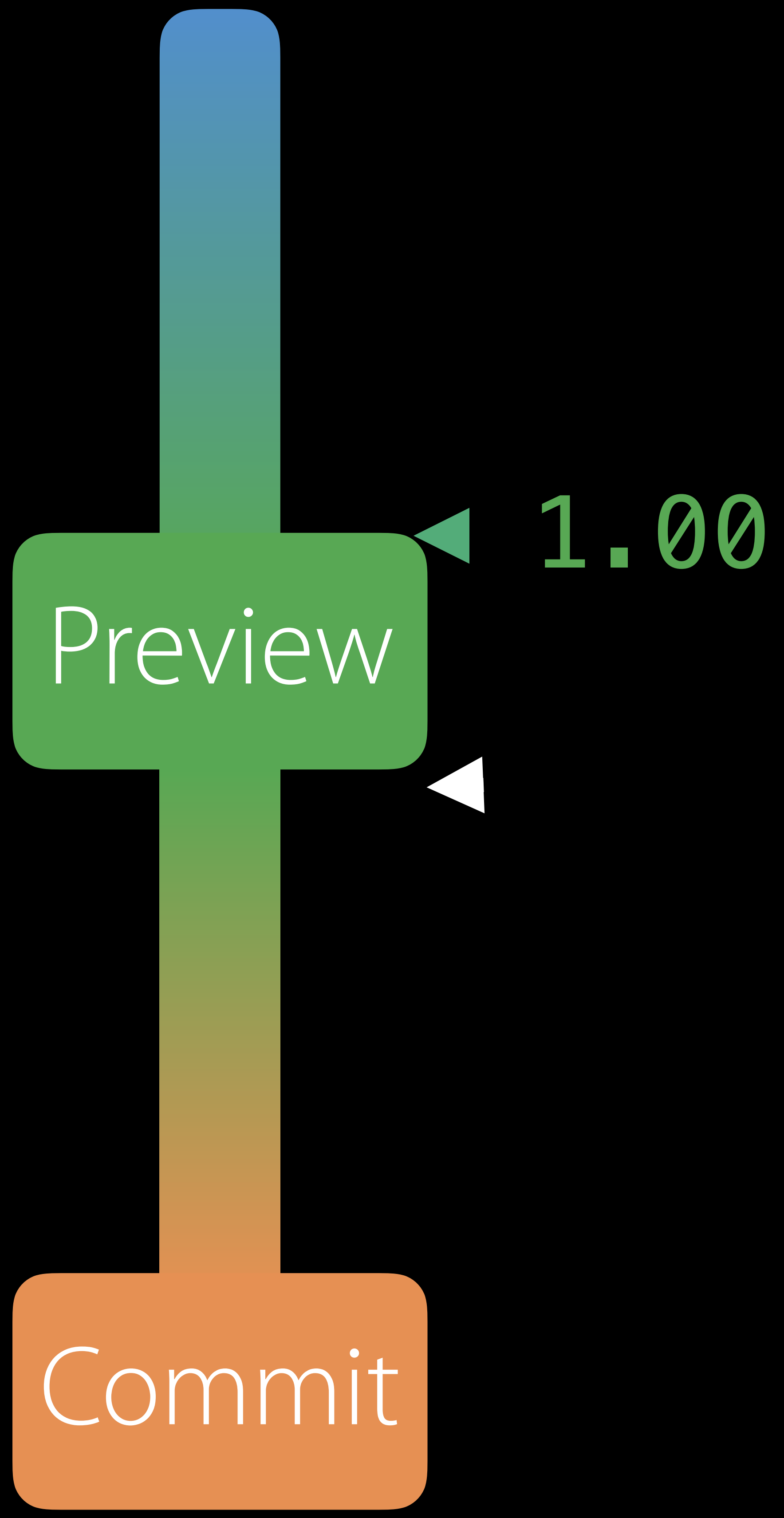


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

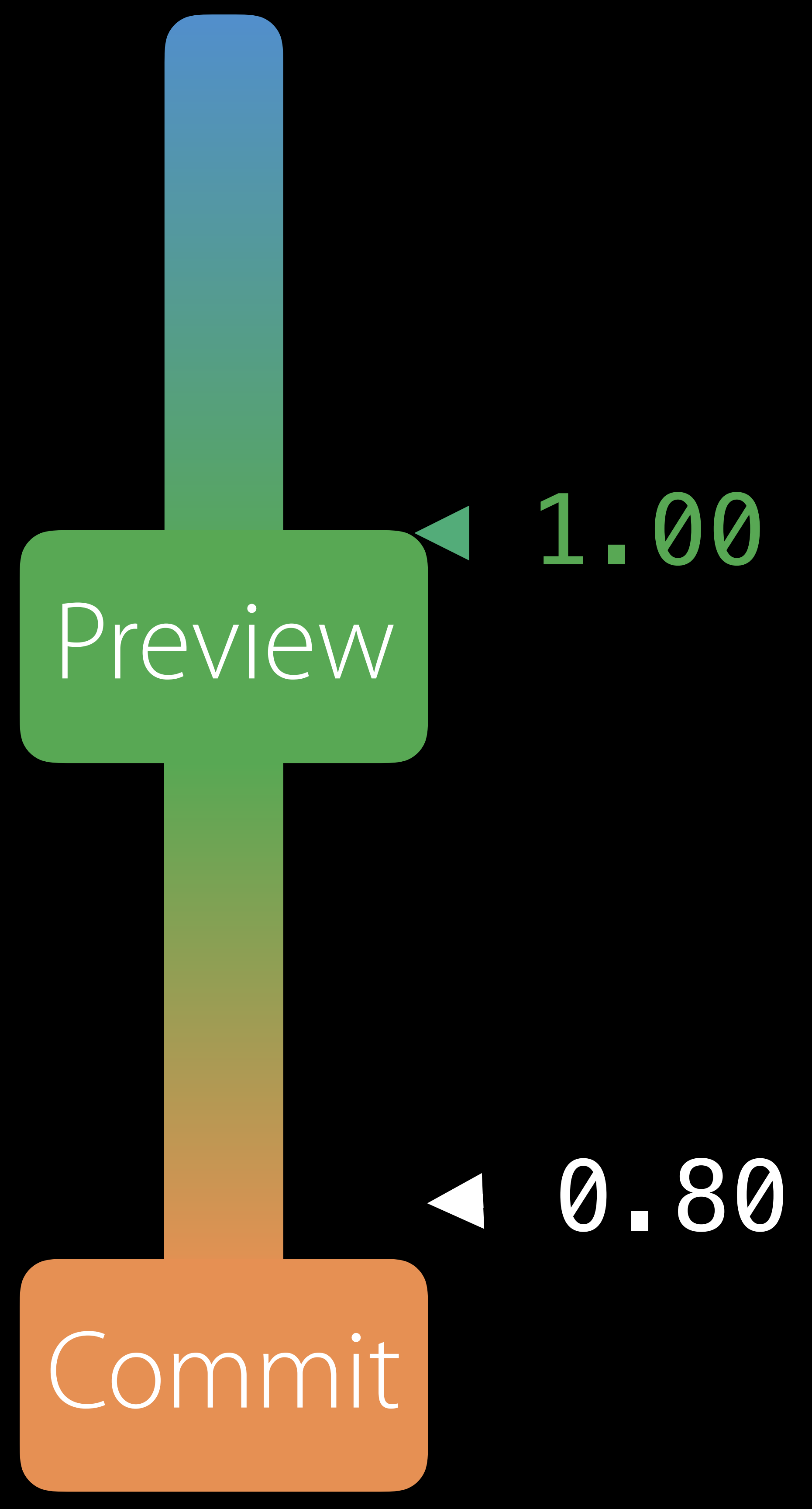


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

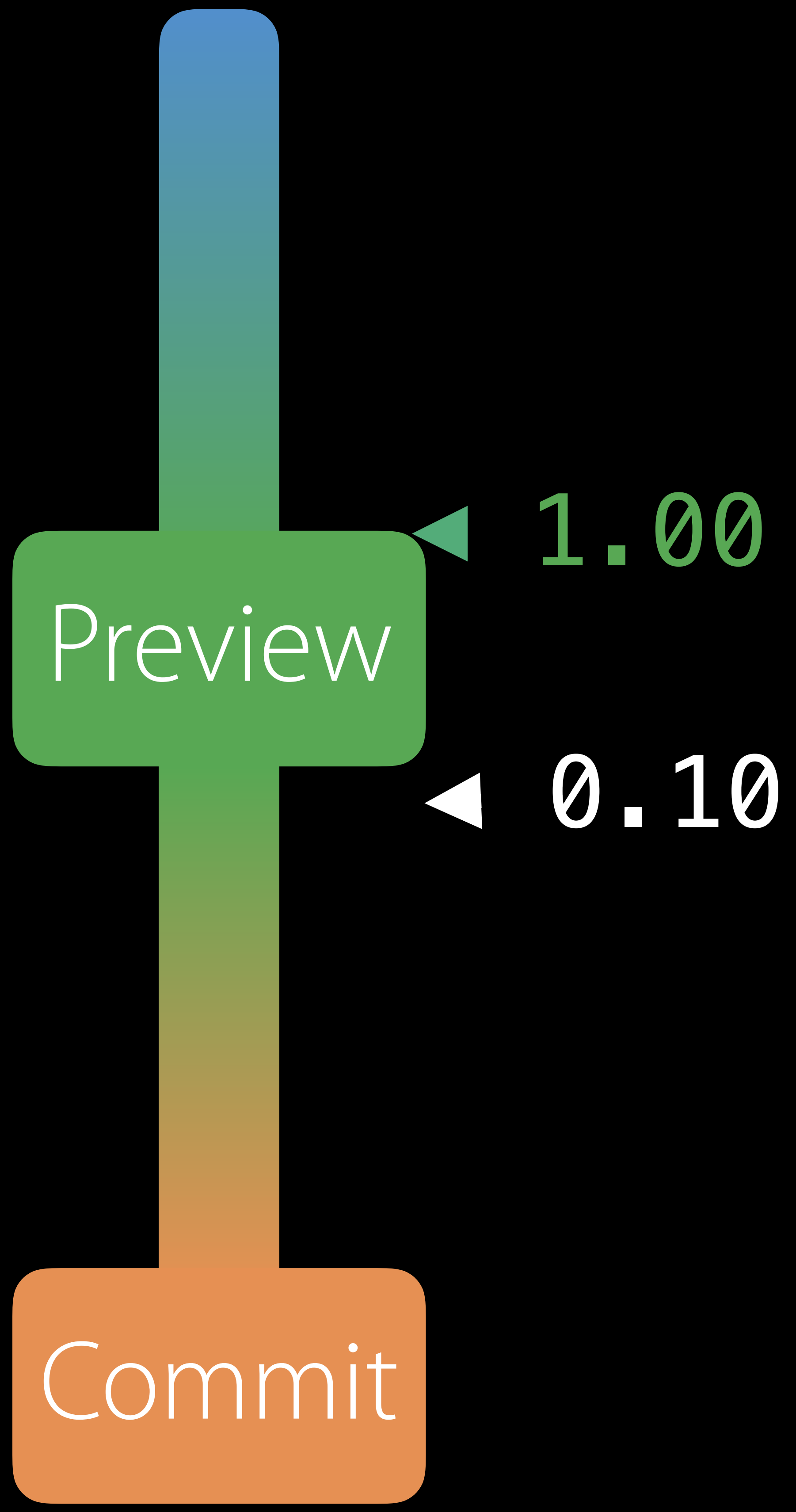


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`

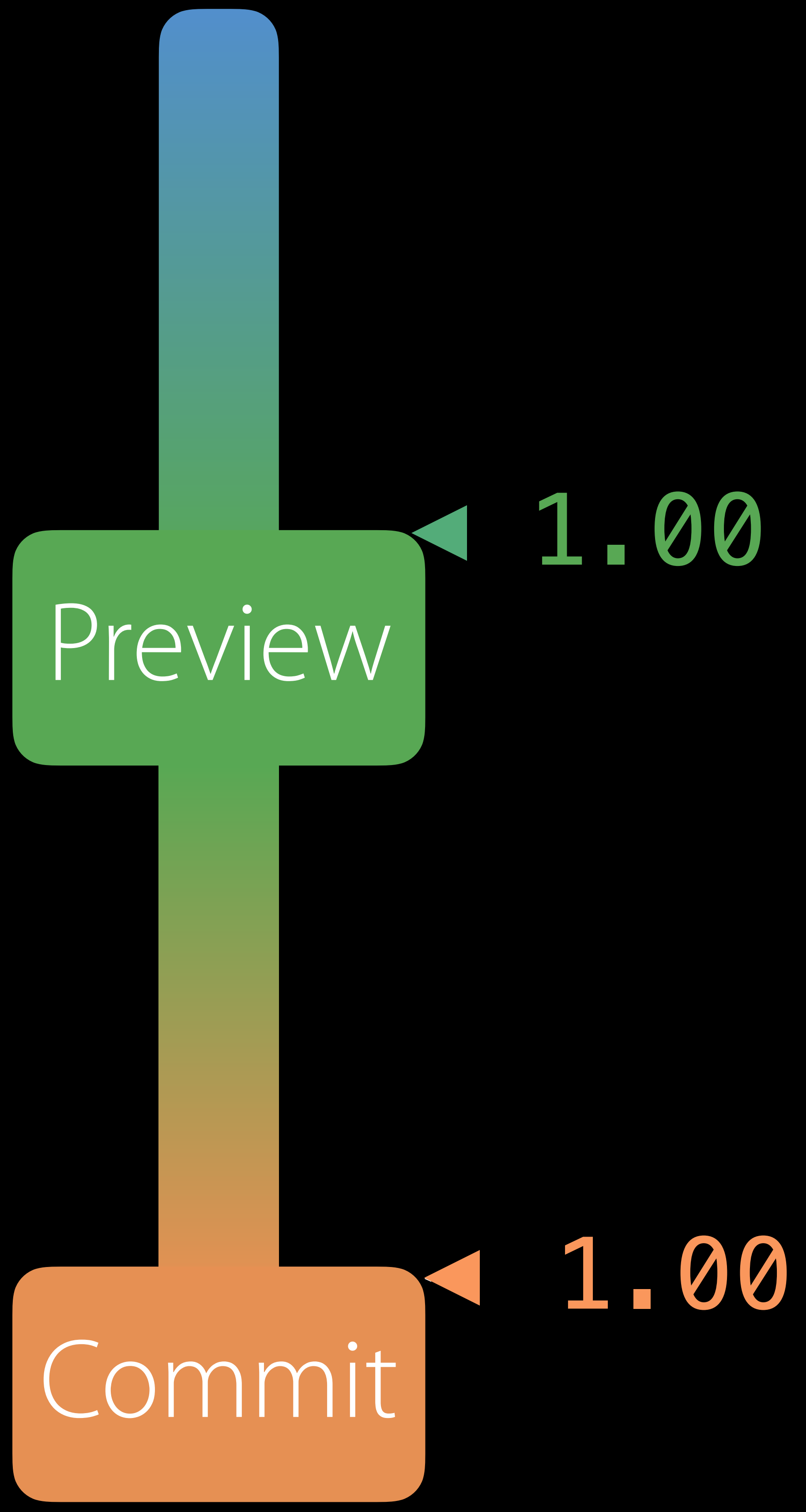


UIPreviewInteraction

State transitions

`previewInteraction(didUpdatePreviewTransition:ended:)`

`previewInteraction(didUpdateCommitTransition:ended:)`



UIPreviewInteraction

Commit transition

```
func previewInteraction(_ previewInteraction: UIPreviewInteraction,
                        didUpdateCommitTransition transitionProgress: CGFloat,
                        ended: Bool) {
    updateForCommit(progress: transitionProgress)

    if ended {
        completeCommit()
    }
}
```

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Low-Level Force API

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Normalized access to force data

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Properties on UITouch: `force` and `maximumPossibleForce`

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Available on devices that support 3D Touch or Apple Pencil

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Leveraging Touch Input on iOS Pacific Heights Thursday 10:00AM

Summary

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Home screen quick actions let you jump straight into action

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Peek and Pop allow you to quickly preview and navigate to content

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Users expect your apps to support 3D Touch

More Information

https://developer.apple.com/wwdc16/228

Related Sessions

Advances in UIKit Animations and Transitions	Pacific Heights	Wednesday 5:00PM
Leveraging Touch Input on iOS	Pacific Heights	Thursday 10:00AM

Labs

Cocoa Touch and 3D Touch Lab	Frameworks Lab C Friday 10:30AM

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