State Restoration

State Restoration

It's like you never left…

Create Delightful Experiences

Delightful?

Meet or Exceed Expectations

Expectations?

Expectations Begin in the Physical World

Object Permanence

“The understanding that objects continue to exist even when they cannot be perceived.”

As a Baby

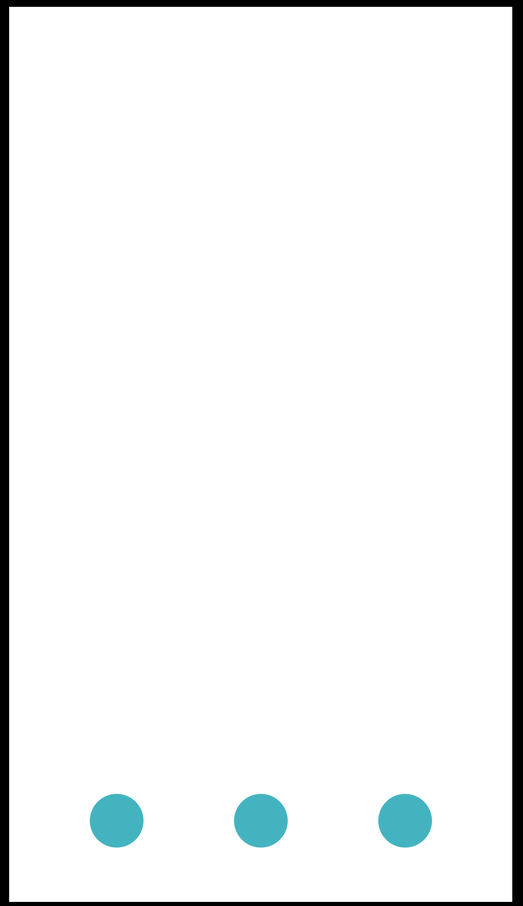
Peek A Boo

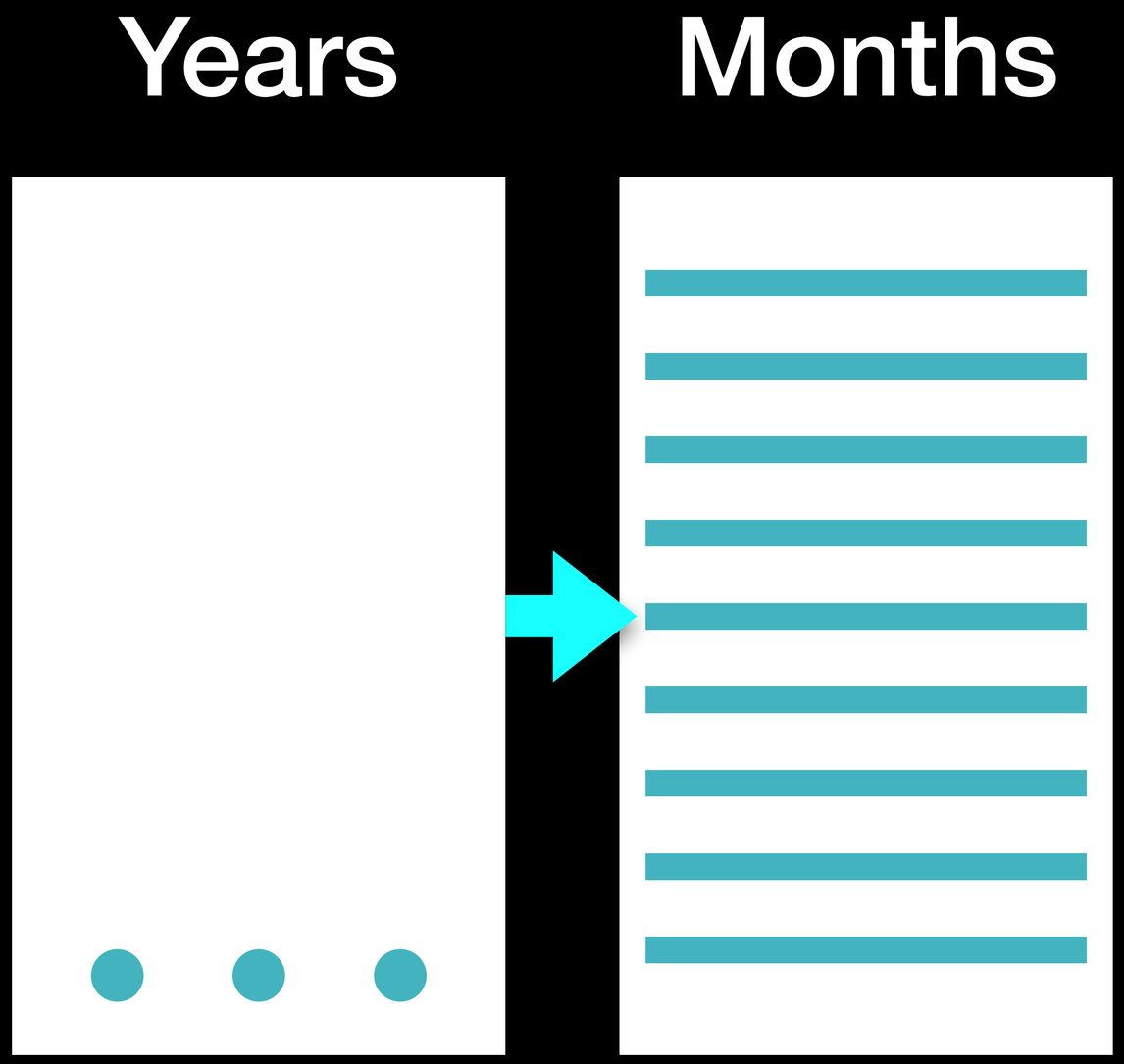
New Expectation

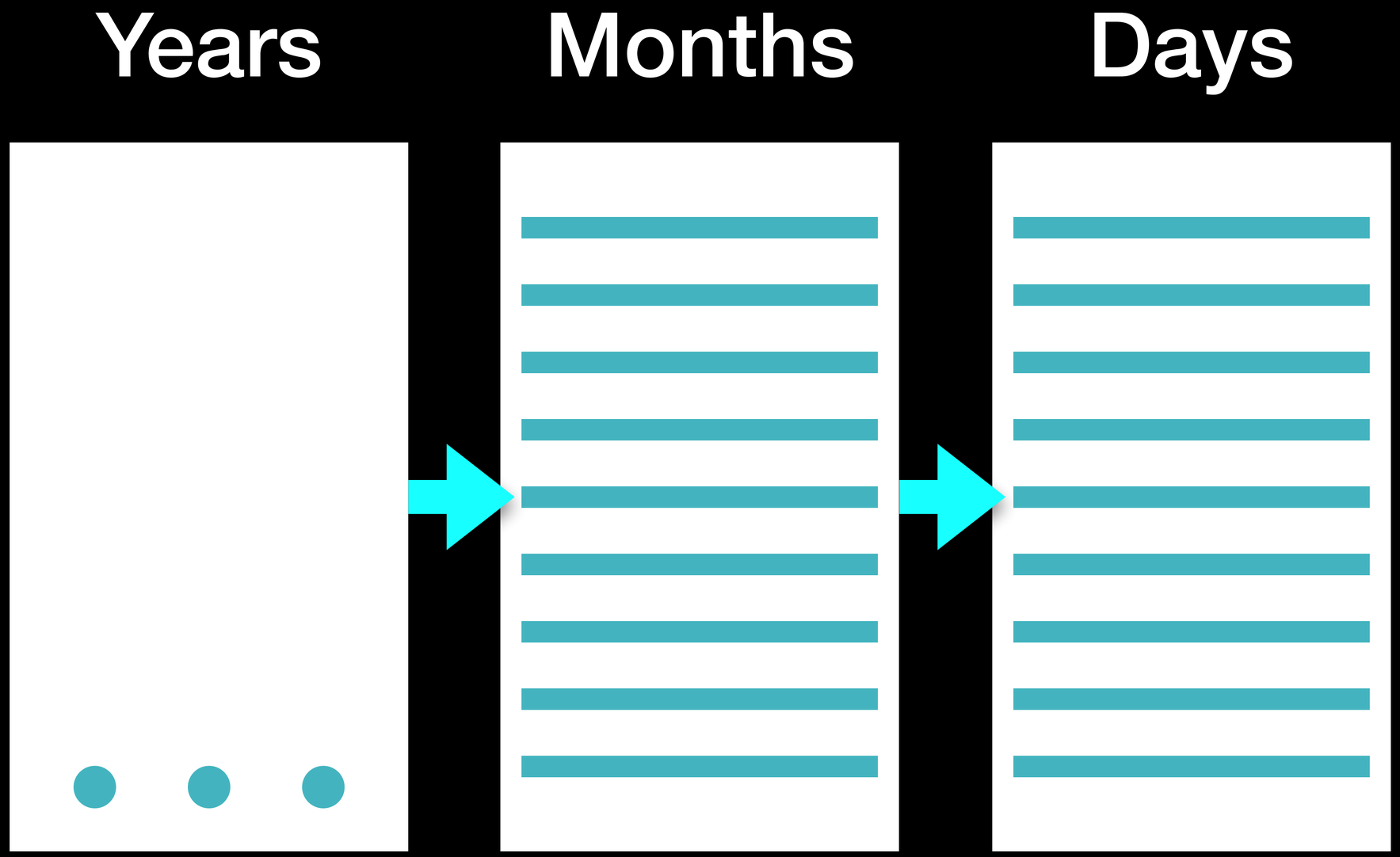
Mobile Experience

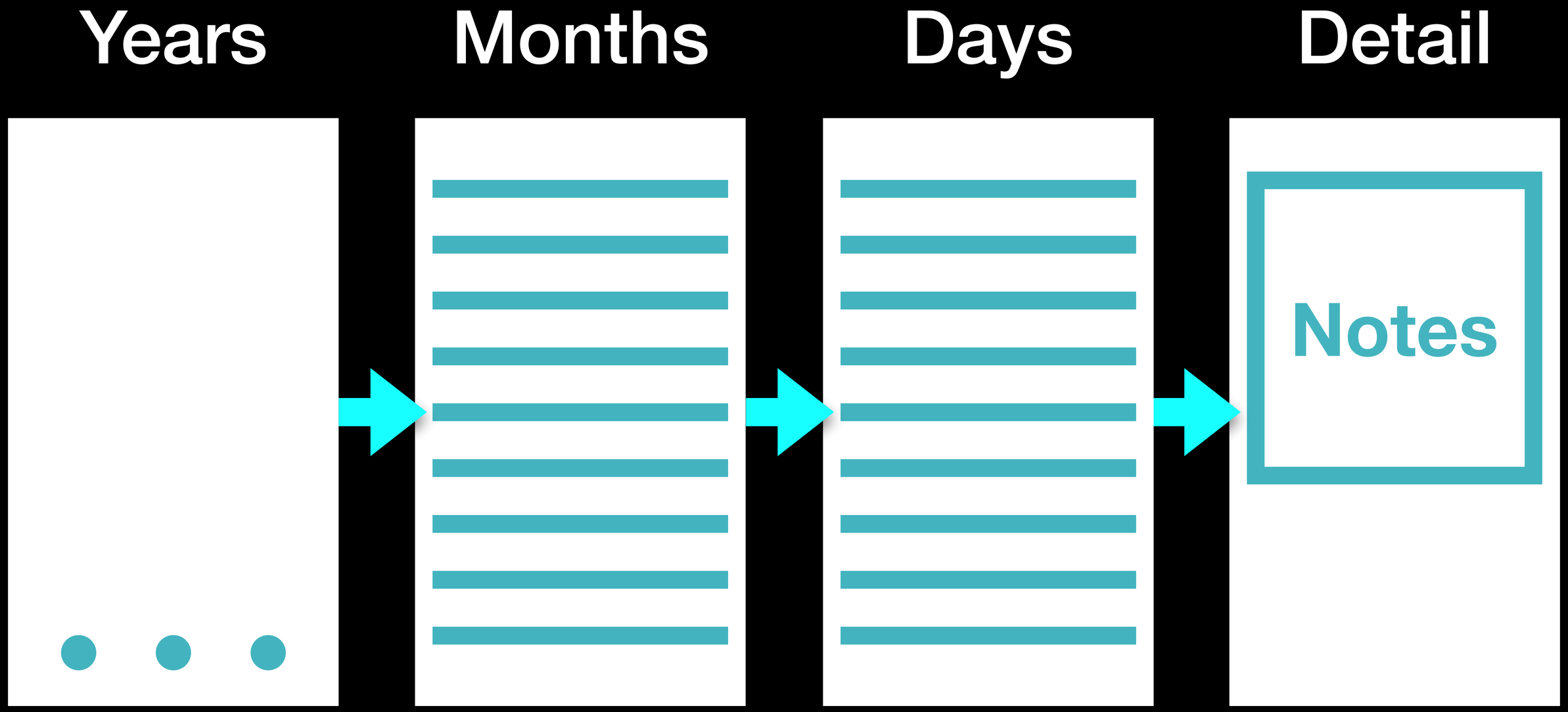
Peek A Boo Calendar

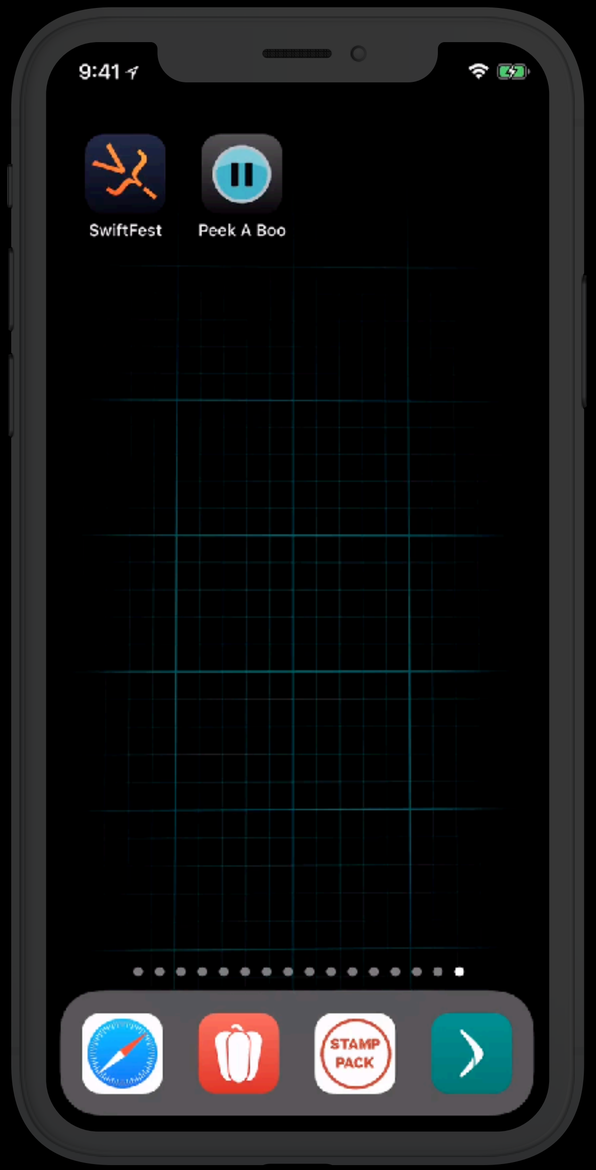
Years



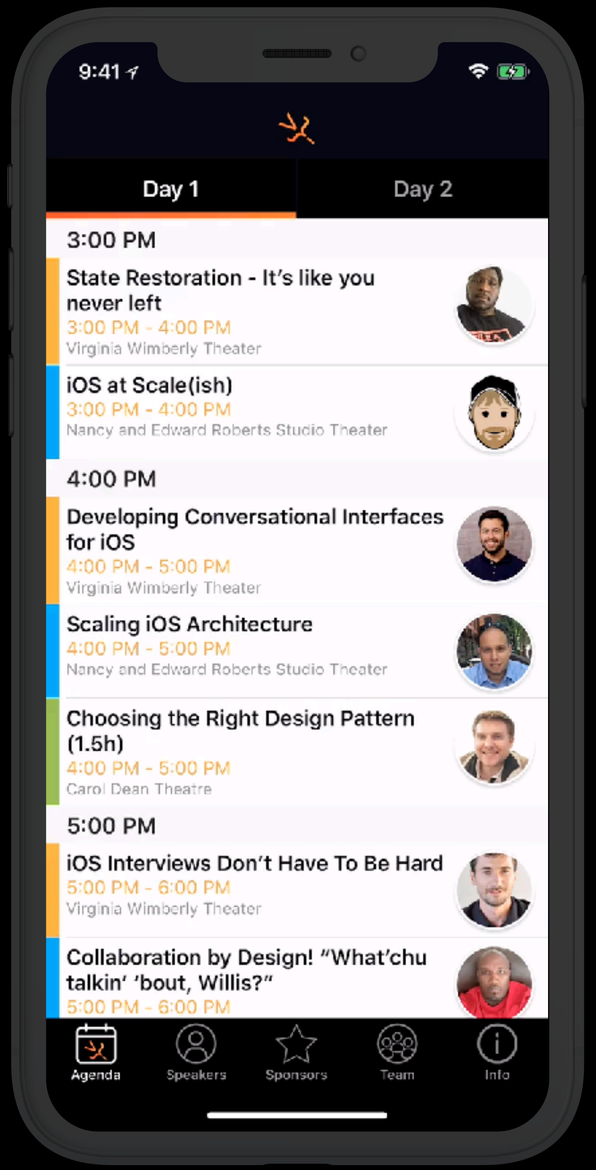

Years
Months


Years
Months
Days


Years
Months
Days
Detail
Notes



Peek A Boo


9:41
Day 1
Day 2
3:00 PM
State Restoration - It's like you never left
3:00 PM - 4:00 PM
Virginia Wimberly Theater
iOS at Scale(ish)
3:00 PM - 4:00 PM
Nancy and Edward Roberts Studio Theater
4:00 PM
Developing Conversational Interfaces for iOS
4:00 PM - 5:00 PM
Virginia Wimberly Theater
Scaling iOS Architecture
4:00 PM - 5:00 PM
Nancy and Edward Roberts Studio Theater
Choosing the Right Design Pattern (1.5h)
4:00 PM - 5:00 PM
Carol Dean Theatre
5:00 PM
iOS Interviews Don't Have To Be Hard
5:00 PM - 6:00 PM
Virginia Wimberly Theater
Collaboration by Design! "What'chu talkin' 'bout, Willis?"
5:00 PM - 6:00 PM
Agenda
Speakers
Sponsors
Team
Info

Peek A Boo

How can we improve this? 🤔

Adding State Restoration

3 Requirements

- Opt In to State Preservation
- Assign Restoration Identifiers to Your View Controllers
- Opt In to State Restoration

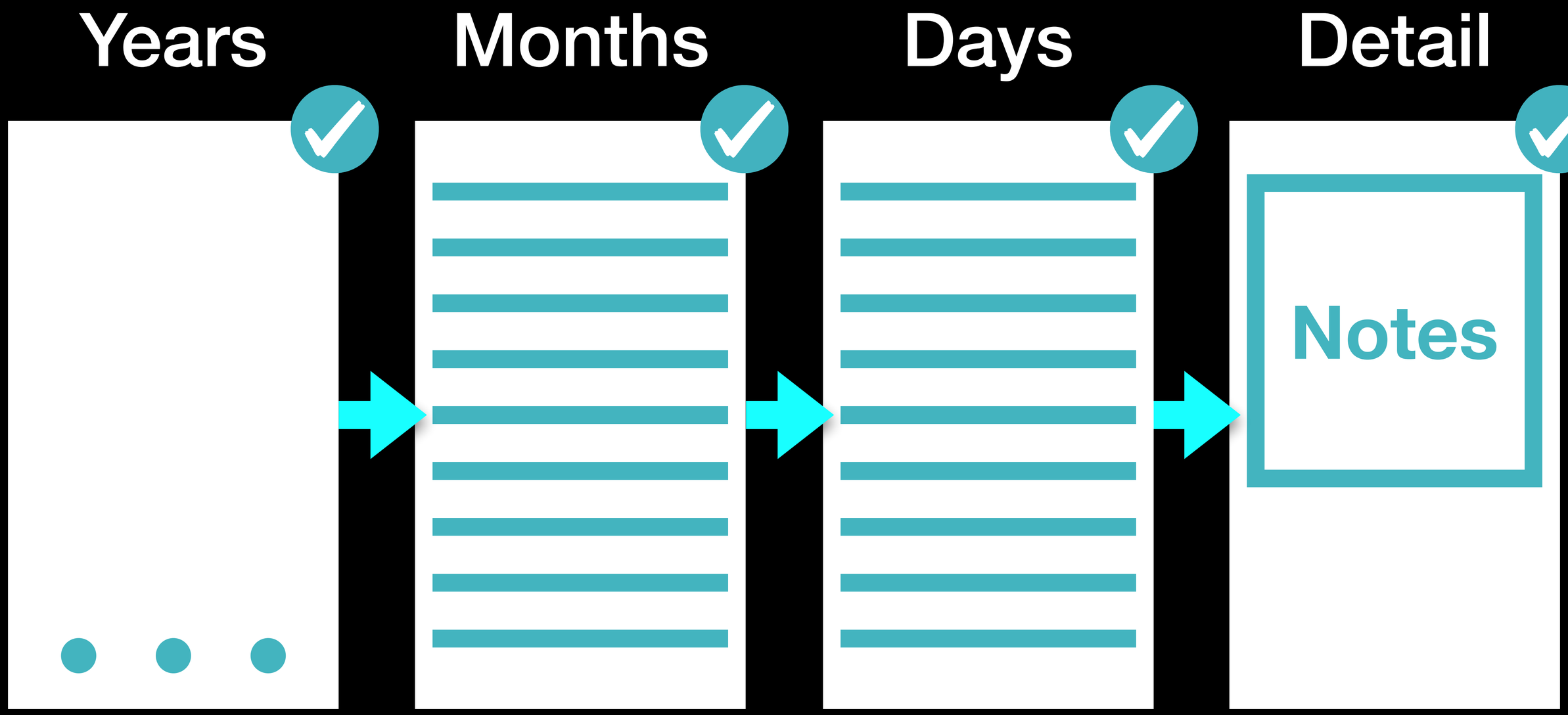
Opting In to State Preservation

AppDelegate.swift

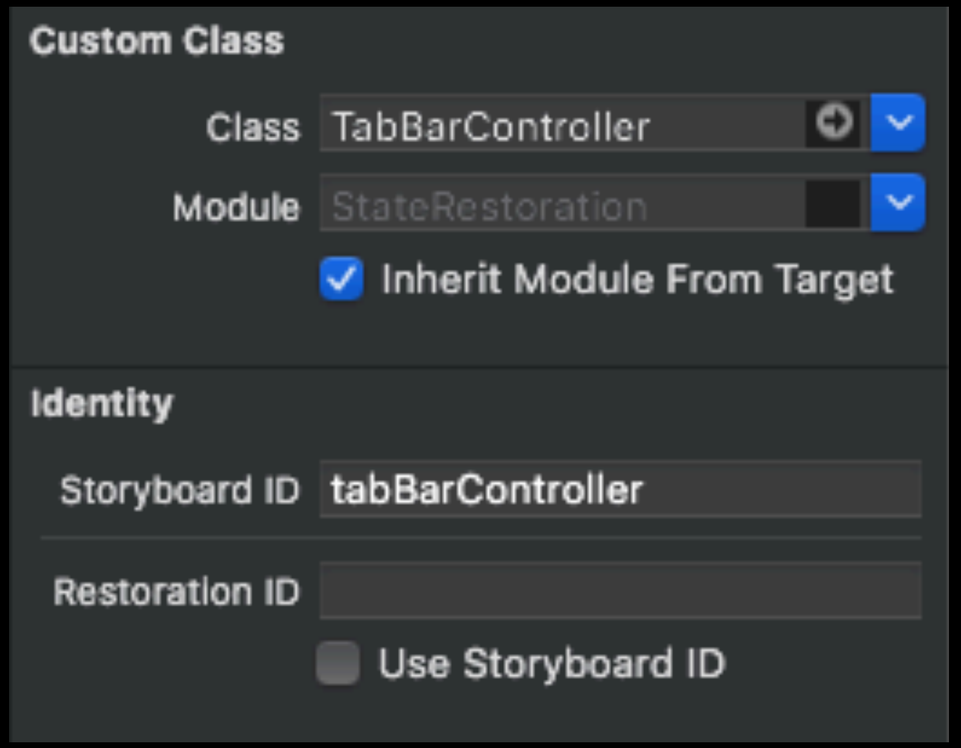
```
 //State Preservation

func application(_ application: UIApplication, shouldSaveApplicationState coder: NSCoder) -> Bool {

        return true

}
```

Assign Restoration Identifiers

- Must be unique
- Must be set on every ViewController in the hierarchy
- Storyboard or Code


Years
Months
Days
Detail
Notes

Set Restoration ID



Set Restoration ID

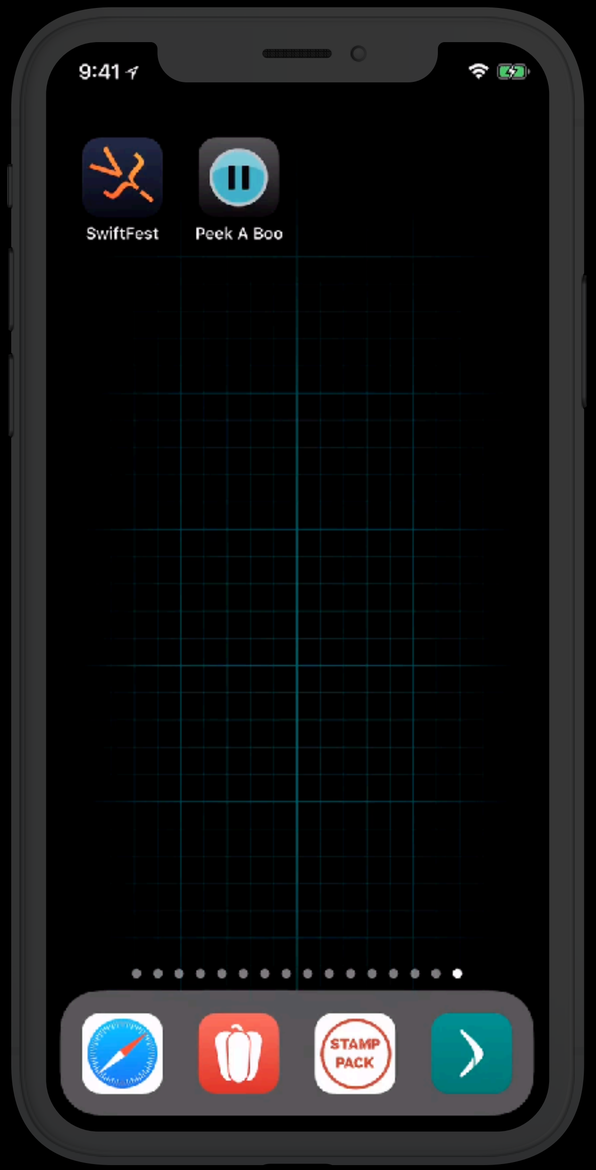
Set Restoration ID

```
//Manually Set Restoration Identifier
self.restorationIdentifier = "DetailViewController"
```

Opting In to State Restoration

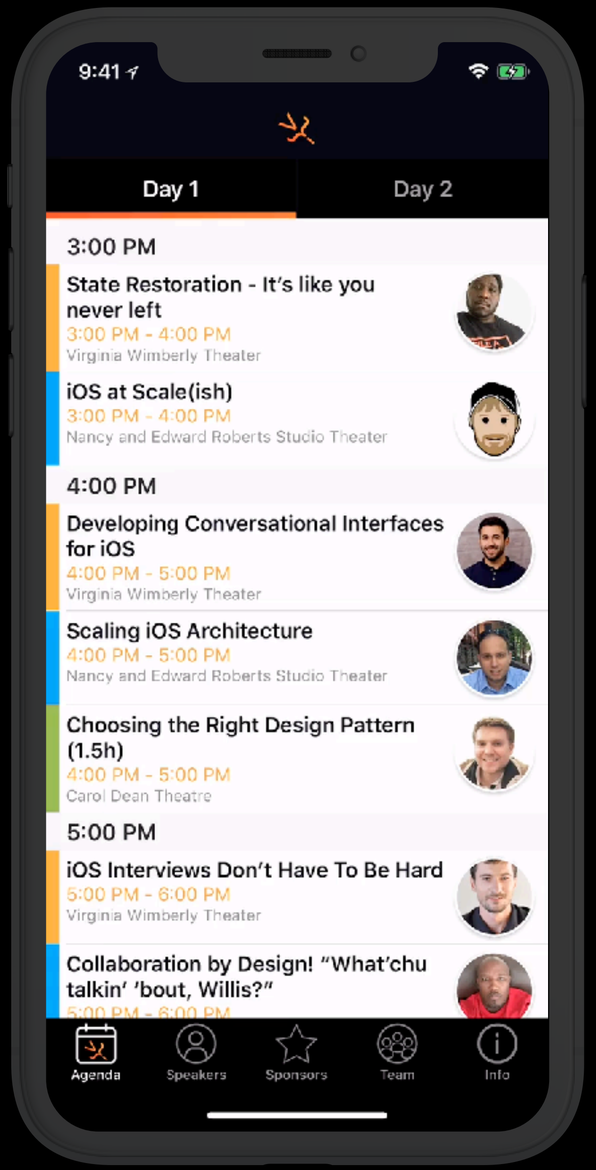
AppDelegate.swift

```
 //State Restoration

func application(_ application: UIApplication, shouldRestoreApplicationState coder:
NSCoder) -> Bool {

        return true
    }
```



Peek A Boo

Basic State Restoration



Peek A Boo

Basic State Restoration

What went wrong? 🤔

By Default Data Isn’t Preserved

Encode and Decode Custom Information

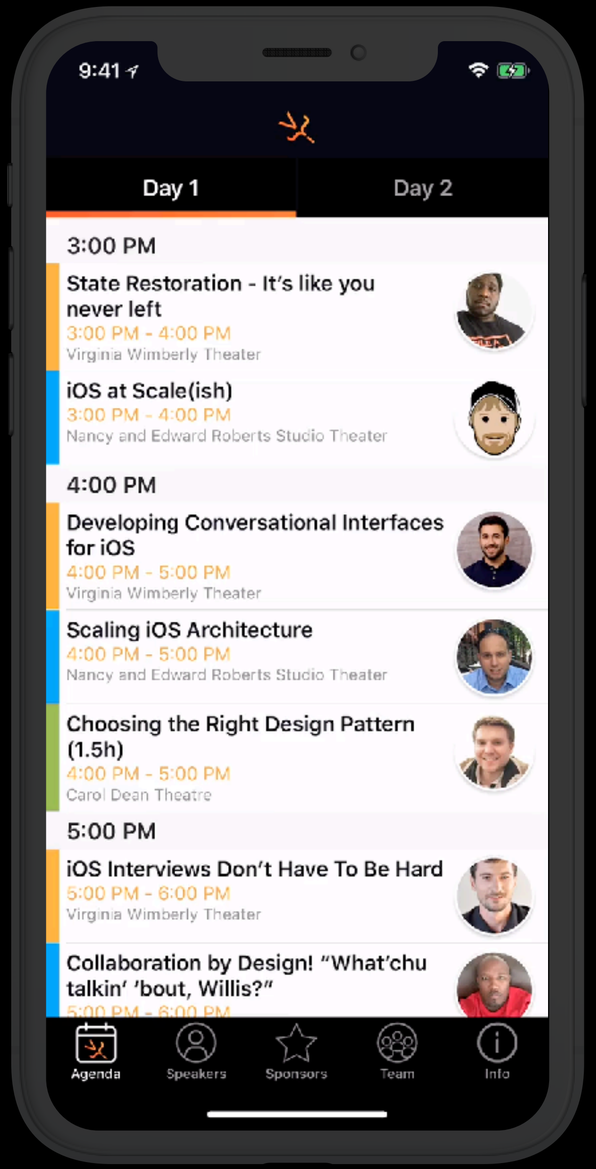
```
//Save Data
    override func encodeRestorableState(with coder: NSCoder) {
        super.encodeRestorableState(with: coder)
        //...
    }
//Restore Data
    override func decodeRestorableState(with coder: NSCoder) {
        super.decodeRestorableState(with: coder)
        //...
    }
```

Encoding

- *encodeRestorableState(with:)* is called before app goes to the background
- Don’t encode data that belongs in the persistent store
- Don’t depend on encoded data. Have a backup plan.

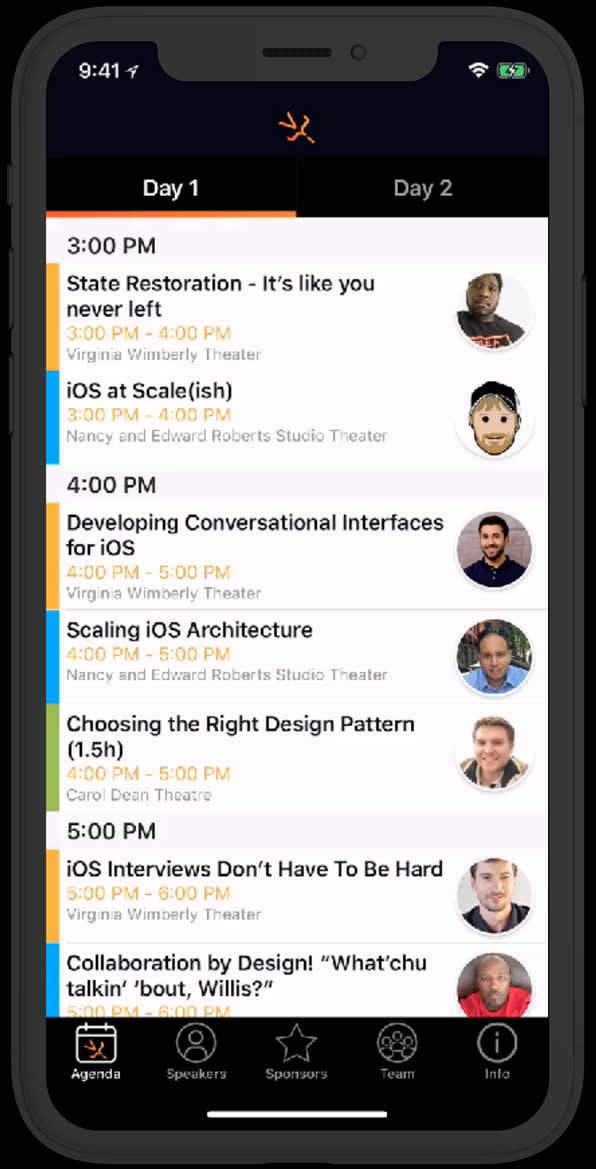
Decoding

- decodeRestorableState is called AFTER viewDidLoad()
- prepareForSegue() is called BEFORE viewDidLoad()



Peek A Boo

Encoding/Decoding Data



Peek A Boo

Encoding/Decoding Data

How could it be better? 🤔

Preserving Scroll Position

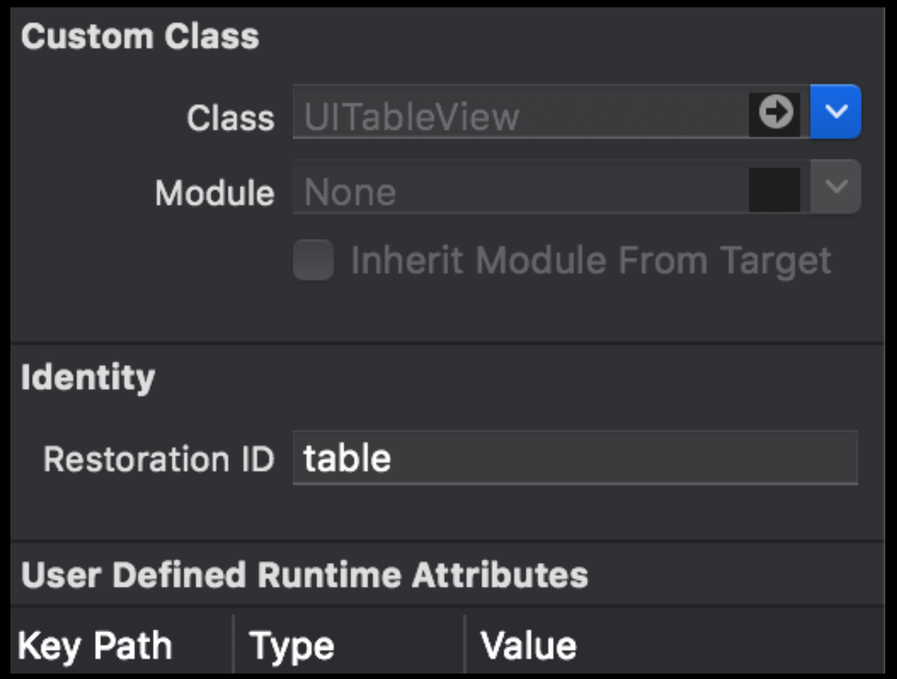
Preserving Scroll Position

- Set restoration ID on UIScrollView
- Storyboard or Code

Set Restoration ID

```
//Set Restoration Identifier
self.tableView.restorationIdentifier = "table"
```

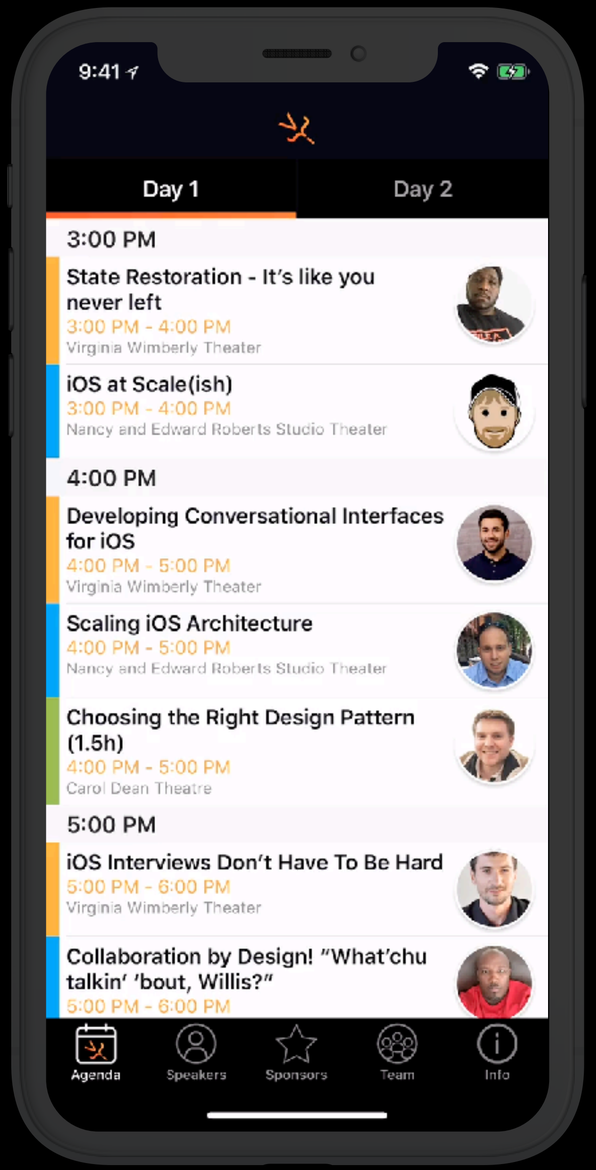
Set Restoration ID



UITableView & UICollectionView

UITableView & UICollectionView

```
extension DaysTVC:UIDataSourceModelAssociation{
    func modelIdentifierForElement(at idx: IndexPath, in view: UIView) -> String? {

    }

    func indexPathForElement(withModelIdentifier identifier: String, in view: UIView) -> IndexPath?
    {

    }

}
```

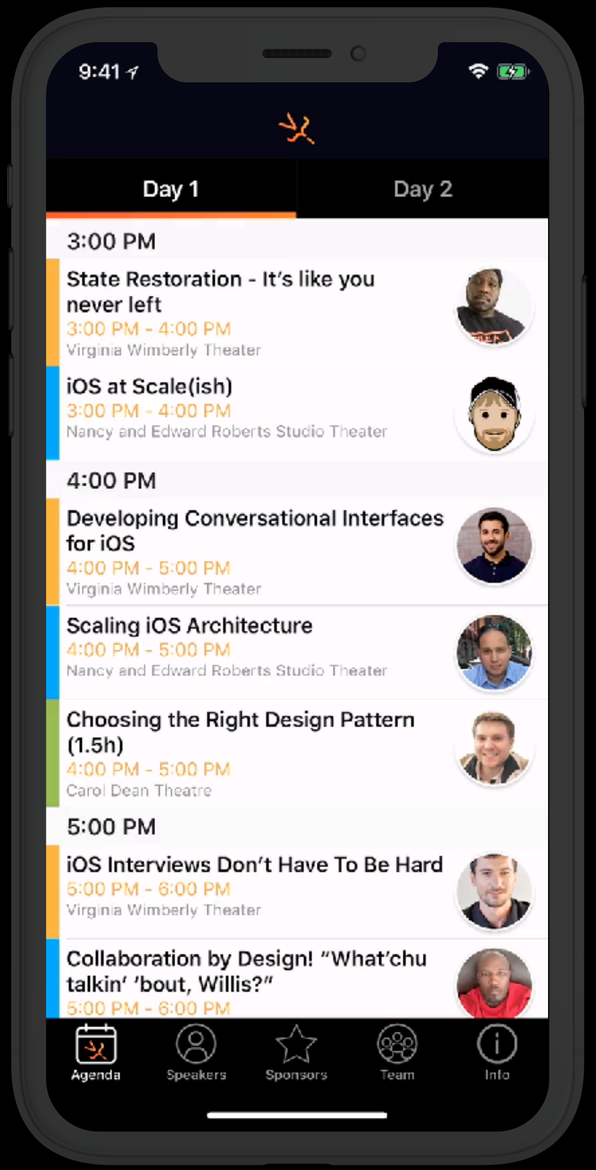


Peek A Boo

Preserved Scrolling

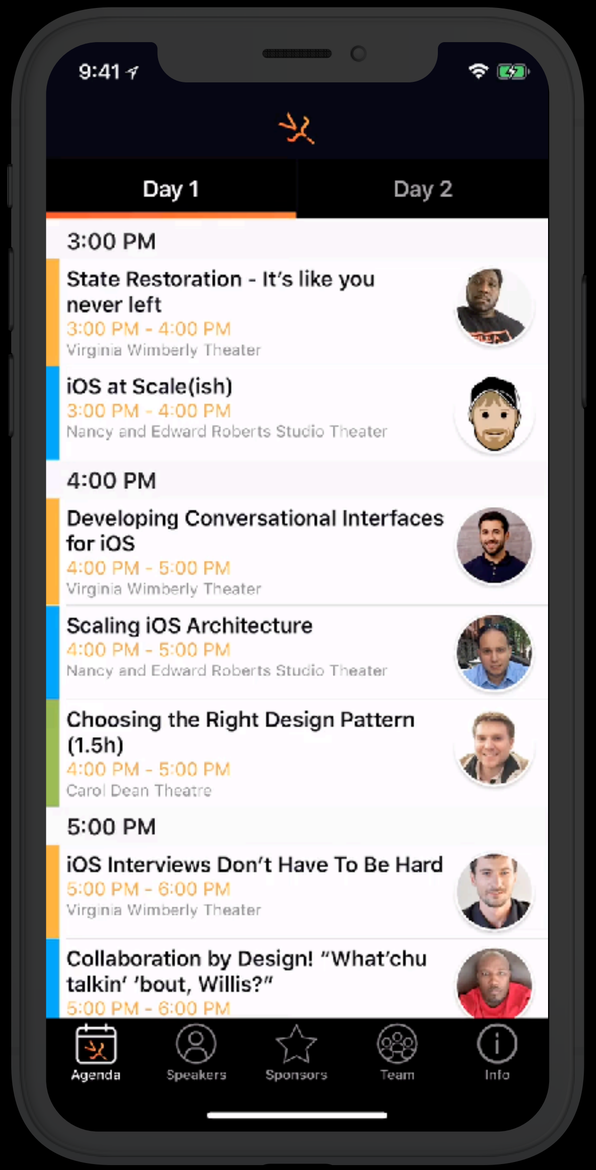
Dynamic Modal

```
let story = UIStoryboard(name: "Main", bundle: nil)
guard let detail = story.instantiateViewController(withIdentifier: "detail") as? DetailVC else {return}
let nav = PeekABooNav(rootViewController: detail)
self.present(nav, animated: true, completion: nil)
```



Peek A Boo

Dynamic Modal



Peek A Boo

Dynamic Modal

What went wrong? 🤔

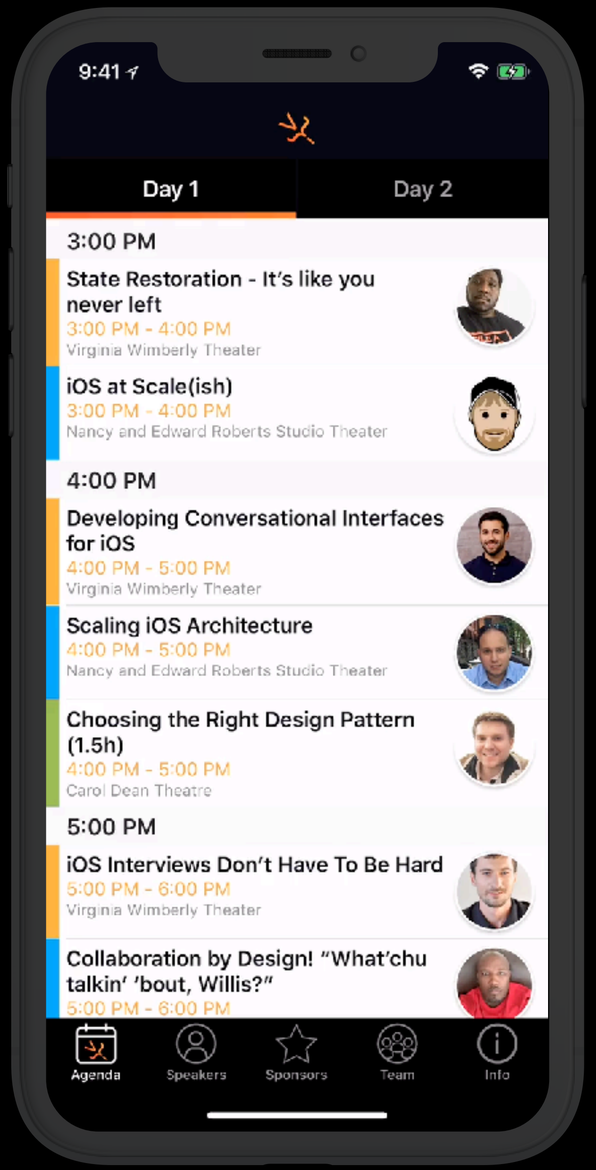
Dynamic Modal

- Set restoration ID in code
- Add AppDelegate Method

Restoring View Controllers

AppDelegate.swift

```
func application(_ application: UIApplication, viewControllerWithRestorationIdentifierPath
identifierComponents: [String], coder: NSCoder) -> UIViewController? {
        guard let lastIdentifier = identifierComponents.last  else {return nil}

        if lastIdentifier == "detailNav" {
            let nav = PeekABooNav()
            nav.restorationIdentifier = "detailNav"
            return nav
        }
        return nil
    }
```



Peek A Boo

New Beginnings

Opting Out Conditionally

Opting Out Conditionally

AppDelegate.swift

```
func application(_ application: UIApplication, shouldSaveApplicationState coder: NSCoder) -> Bool {
        // Save the current app version to the archive.
        coder.encode(1.0, forKey: "MyAppVersion")
        // Always save state information.
        return true
    }


func application(_ application: UIApplication, shouldRestoreApplicationState coder: NSCoder) -> Bool {
        // Restore the state only if the app version matches.
        let version = coder.decodeFloat(forKey: "MyAppVersion")
        if version == 1.0 {
            return true
        }
        // Do not restore from old data.
        return false
    }
```

Review

Preserving UI State

Check for Opt-In

1

App Delegate

```
func application(_ application: UIApplication,
shouldSaveApplicationState coder: NSCoder) -> Bool
```

Start App Preservation

2

App Delegate

```
func application(_ application: UIApplication,
willEncodeRestorableStateWith coder: NSCoder)
```

Gather Restorable Objects

UIViewController or UIView Objects

```
var restorationIdentifier: String?
```

3

Encode Restorable Objects

UIViewController or UIView Objects

```
func encodeRestorableState(with coder: NSCoder)
```

4

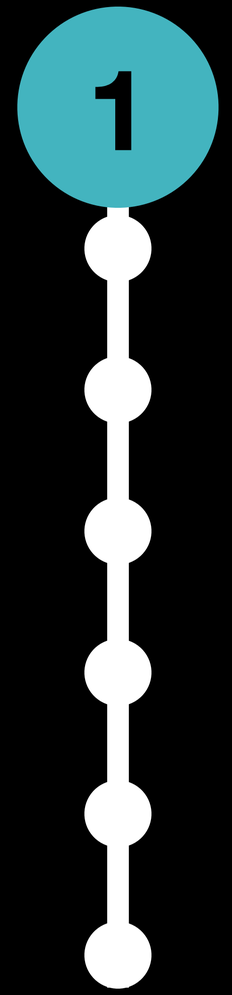
Encode Restorable Objects

UIViewController Objects

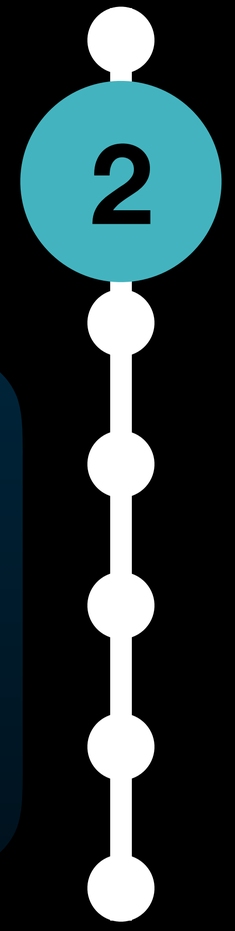
```
var restorationClass: UIViewControllerRestoration.Type?
```

4

Load Initial UI



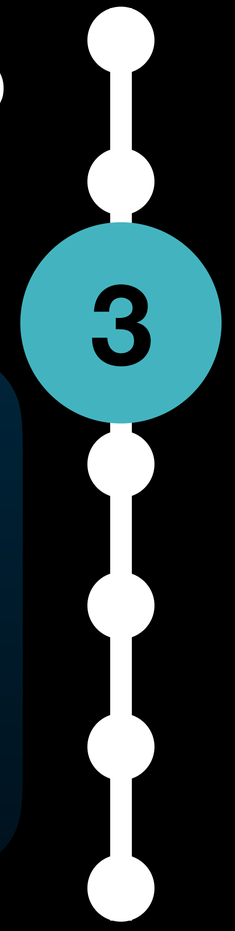
First App Initialization



App Delegate

```
func application(_ application: UIApplication,
willFinishLaunchingWithOptions launchOptions:
[UIApplication.LaunchOptionsKey : Any]? = nil) -> Bool
```

Is Restoration Supported?



App Delegate

```
func application(_ application: UIApplication,
shouldRestoreApplicationState coder: NSCoder) -> Bool
```

Obtain View Controllers

App Delegate

```
func application(_ application: UIApplication,
  viewControllerWithRestorationIdentifierPath
identifierComponents: [String], coder: NSCoder) ->
                    UIViewController?
```

Obtain View Controllers

4

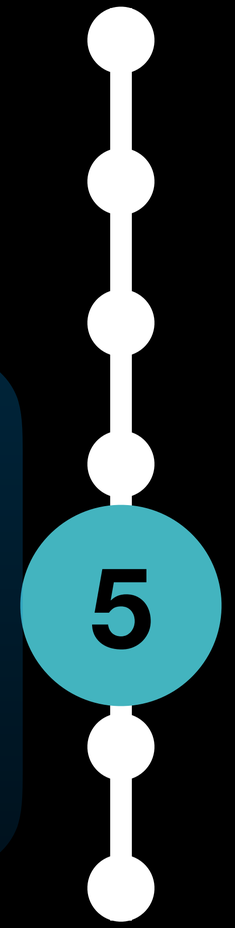
Restoration Classes

```
func viewController(withRestorationIdentifierPath
identifierComponents: [String], coder: NSCoder) ->
UIViewController?
```

Decode Restorable Objects

View Controller or View Object

```
func decodeRestorableState(with coder: NSCoder)
```



Finish Restoration

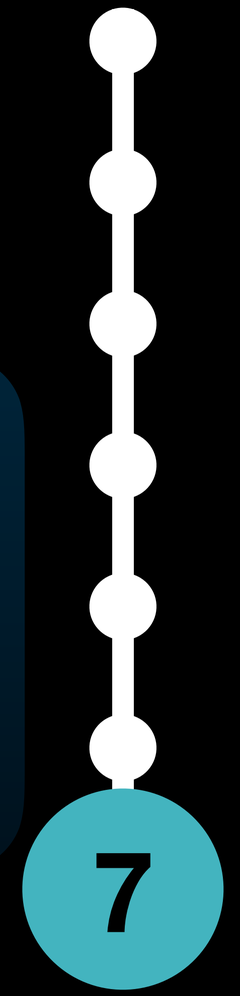
App Delegate

```
func application(_ application: UIApplication,
 didDecodeRestorableStateWith coder: NSCoder)
```

Finish App Initialization

App Delegate

```
func application(_ application: UIApplication,
 didFinishLaunchingWithOptions launchOptions:
[UIApplication.LaunchOptionsKey : Any]? = nil) -> Bool
```



@ishabazz