

EMIL ATANASOV

FROM SWIFT TO SWIFTUI

AGENDA

- ▶ `KeyPath`
- ▶ `@propertyWrapper`
- ▶ `Combine`
- ▶ `@resultBuilder`



Swift Evolution

Q Search

339 proposals

Active Review

SE-0339 Module Aliasing For Disambiguation

Author: Ellie Shin

Review Manager: John McCall

Implementation: swift#40899, swift-package-

Active Review

SE-0338 Clarify the Execution of Non-Atomic

Author: John McCall

Review Manager: Doug Gregor

Active Review

SE-0337 Incremental migration to concurrent

Authors: Doug Gregor, Becca Royal-Gordon

Review Manager: Ben Cohen

Implementation: swift#40680

Active Review

SE-0334 Pointer API Usability Improvements

Authors: Guillaume Lessard, Andrew Trick

Review Manager: Ben Cohen

Bug: SR-11156 (Unassigned, Open)

SWIFT

EVOLUTION

KEYPATH

KEYPATH

- ▶ `\<type name>.path`
- ▶ Compile time it's replaced by an instance of `KeyPath` class
- ▶ Access values - read & write
 - ▶ `instance[keyPath: pathToProp]`
- ▶ Short form without `<type name>`
- ▶ Identity `KeyPath` - `\.self`

```
class Person {
    var name: String
    var friends: [Person] = []
    var bestFriend: Person? = nil
    init(name: String) {
        self.name = name
    }
}

var han = Person(name: "Han Solo")
var luke = Person(name: "Luke Skywalker")
luke.friends.append(han)

// create a key path and use it
let firstFriendsNameKeyPath = \Person.friends[0].name
let firstFriend = luke[keyPath: firstFriendsNameKeyPath] // "Han Solo"

// or equivalently, with type inferred from context
luke[keyPath: \.friends[0].name] // "Han Solo"
// The path must always begin with a dot, even if it starts with a
// subscript component
luke.friends[keyPath: \.[0].name] // "Han Solo"
luke.friends[keyPath: \[Person].[0].name] // "Han Solo"

// rename Luke's first friend
luke[keyPath: firstFriendsNameKeyPath] = "A Disreputable Smuggler"

// optional properties work too
let bestFriendsNameKeyPath = \Person.bestFriend?.name
let bestFriendsName = luke[keyPath: bestFriendsNameKeyPath] // nil, if
```

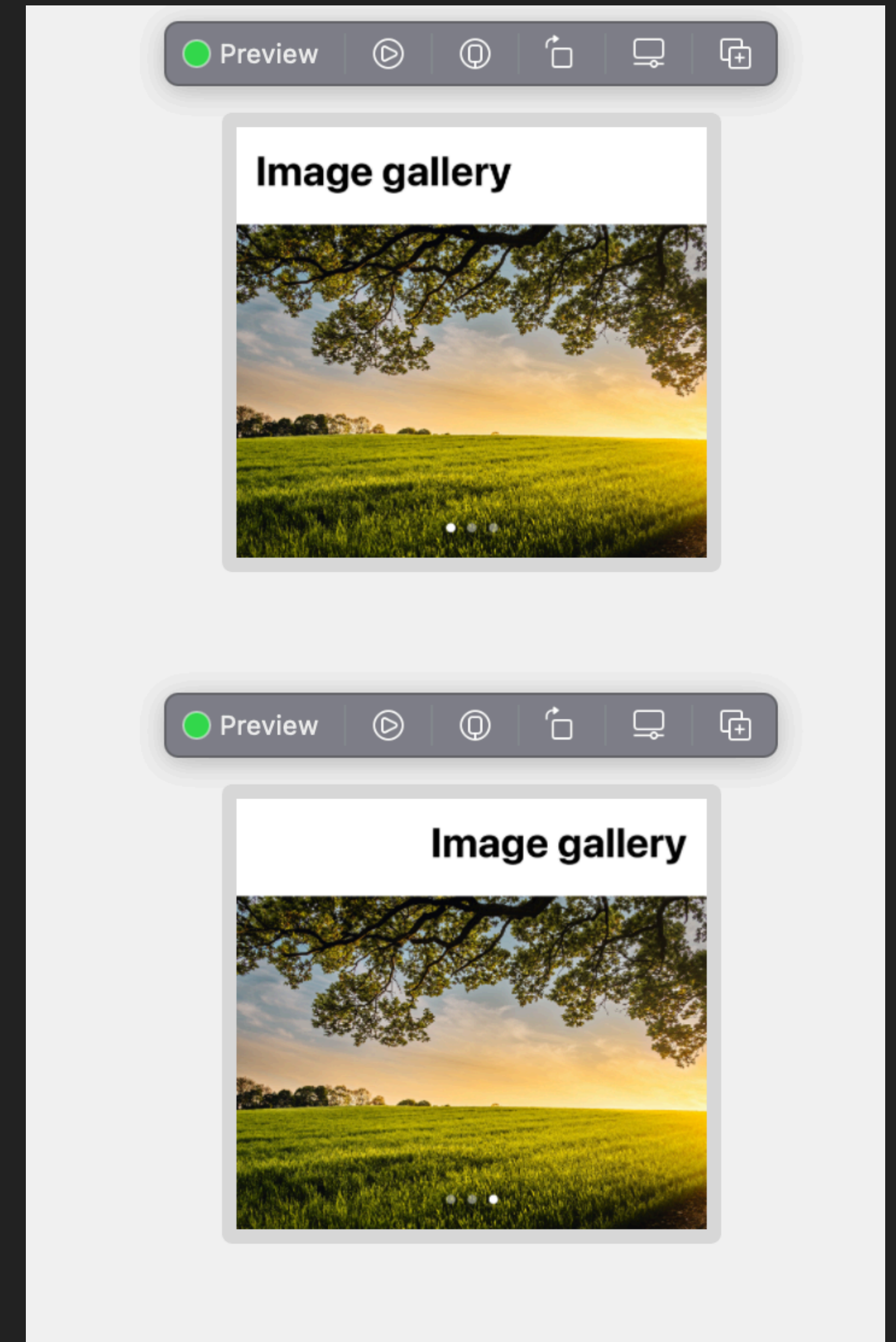
KEYPATH

- ▶ Can include subscripts []
- ▶ Can include value \.[index]
- ▶ Can use optional chaining
- ▶ Can use force unwrapping
 - ▶ `\[String: [Int]].["items"]![0]`
- ▶ Can replace functions
 - ▶ `.filter(\.ready).map(\.title)`

KEYPATH (DEMO)

KEYPATH

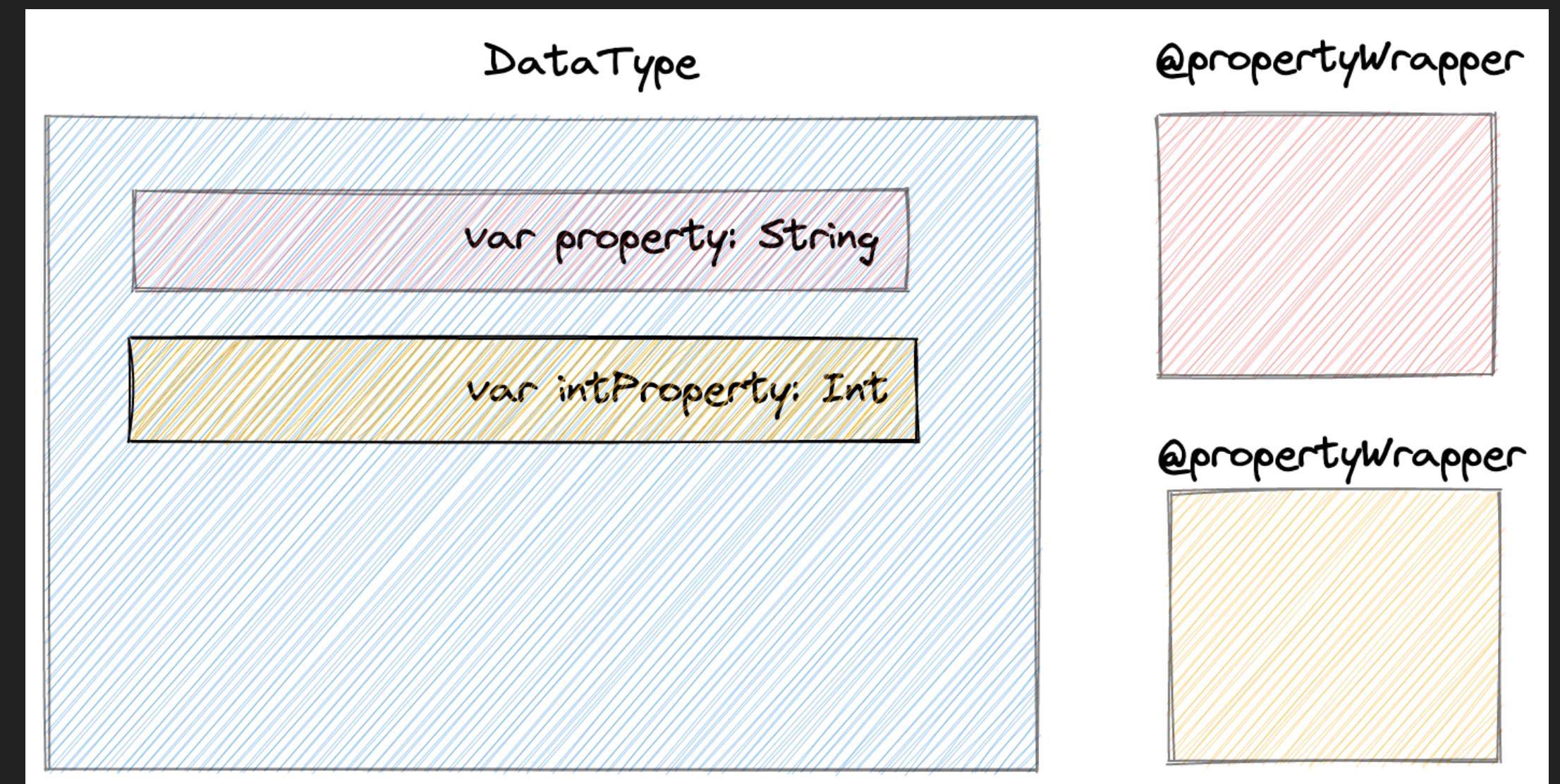
- ▶ Environment
- ▶ Preview component
- ▶ ForEach



PROPERTY WRAPPER

PROPERTY WRAPPER

- ▶ Easy and clean way to separate property function from the code
- ▶ Override read and write operation
- ▶ Add extra functionality to a property
- ▶ Projected Value (\$)



PROPERTY WRAPPER (DEMO)

PROPERTY WRAPPERS

- ▶ @State
- ▶ @Binding
- ▶ @Environment
- ▶ @EnvironmentObject
- ▶ @Namespace
- ▶ @ObservedObject
- ▶ @ScaledMetric
- ▶ @StateObject

Owns Data

@AppStorage
@Namespace
@ScaledMetric
@SceneStorage
@State
@StateObject
@Published
@FetchRequest

Manages Data

@Binding
@ObservedObject
@Environment
@EnvironmentObject
@FocusedBinding
@FocusedValue

PROPERTY WRAPPERS

- ▶ @SceneStorage
- ▶ @GestureState
- ▶ @FocusedValue
- ▶ @FocusedBinding
- ▶ @FetchRequest

COMBINE

COMBINE

- ▶ New Framework - iOS13+ (SwiftUI 1)
- ▶ Similar to ReactiveSwift, RxSwift
- ▶ Declarative API
- ▶ Publishers
- ▶ Subscribers
- ▶ @Published

Declarative

Describe the
Outcome
What to be done?
The system is
smart,
Devs are happy

Imperative

Explicit Instructions
How to do it?
The system is
not smart,
Devs should be smart

RESULT BUILDER

RESULT BUILDER

- ▶ A way to combine several expressions to a single value
- ▶ A function can be promoted to a builder
- ▶ @resultBuilder
- ▶ Can be enum, struct, class
- ▶ static func buildBlock()
- ▶ Apply it to a closure!

```
var body: some View {  
    VStack(alignment: .leading) {  
        Text("Image gallery")  
            .font(.largeTitle)  
            .fontWeight(.bold)  
            .padding()  
        HorizontalImageGallery()  
    }.environmentObject(gallery)  
}
```

RESULT BUILDER

(DEMO)

Q & A



SwiftFMI

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Team behind Swift and iOS courses
taught at FMI - Sofia University

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✉ swift.fmi@gmail.com

Achievements



Block or Report

📖 Overview

📁 Repositories

Pinned

📁 [iOS_2021_2022](#) Public
iOS Course at FMI - Sofia University
● Swift ⭐ 11

📁 [iOS_2019_2020](#) Public
iOS Course at FMI - Sofia University
● Swift ⭐ 8 🍴 2

14 contributions in the last year



Contribution activity

January 2022

📁 Created 7 repositories

WHERE TO FIND ME

GITHUB, LINKED IN, TWITTER

LIST OF RESOURCES

- ▶ [developer.apple.com](https://developer.apple.com/wwdc21/) (<https://developer.apple.com/wwdc21/>)
- ▶ <https://www.swiftbysundell.com/>
- ▶ Swift 5.5 (<https://docs.swift.org/swift-book/>)
- ▶ HackingWithSwift (<https://www.hackingwithswift.com>)
- ▶ Various articles and examples on github.com