RxSwift Classroom FrenchKit 2017

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Agenda

- Setup
- Taming `flatMap()`
- Learning to `share()`
- Introducing `RxFeedback`

Prepare for the class

- Clone `https://github.com/FrenchKit/RxSwiftClassroom`
- Open `Playground/Playground.xcworkspace`
- Build `RxSwift-macOS` scheme

Taming flatMap

Taming flatMap

Use `flatMap` whenever `map`ing to a single value is not enough

Most crucial and useful operator to know inside out

1. Regular flatMap

Turn input into a network request

2. Errors

Beware errors emitted by inner sequences

Catching errors inside `flatMap` prevents breaking the overall sequence

4. Using flatMapLatest

When you only want to see the freshest results

Learning to share

Expensive observables

- Computation (i.e. preparing thuumbnails)
- Network requests
- Side effects

Forms of share

- `share()`
- `shareReplay(_:)`
- `shareReplayLatestWhileConnected()`
- `share(replay:scope:)`

Standard `share()`

— Subscribes to inner observable with first observer

— Unsubscribes when no more observers

— ⚠️ Side effect: zero observers = next observer restarts inner subscription

`shareReplay`

— Replays the last N emitted elements
— Event if # subscribers fell to zero

👉 Experiment with the playground!

`shareReplayLatestWhileConnected`

- Replays the last emitted element
- Clears buffer when no more subscribers

`share(replay:scope:)`

- Most flexible variant
- Control whether buffering 'sticks' when subscribers drop to zero

Introducing RxFeedback

Introducing RxFeedback

https://github.com/kzaher/RxFeedback

```
pod 'RxFeedback'
```

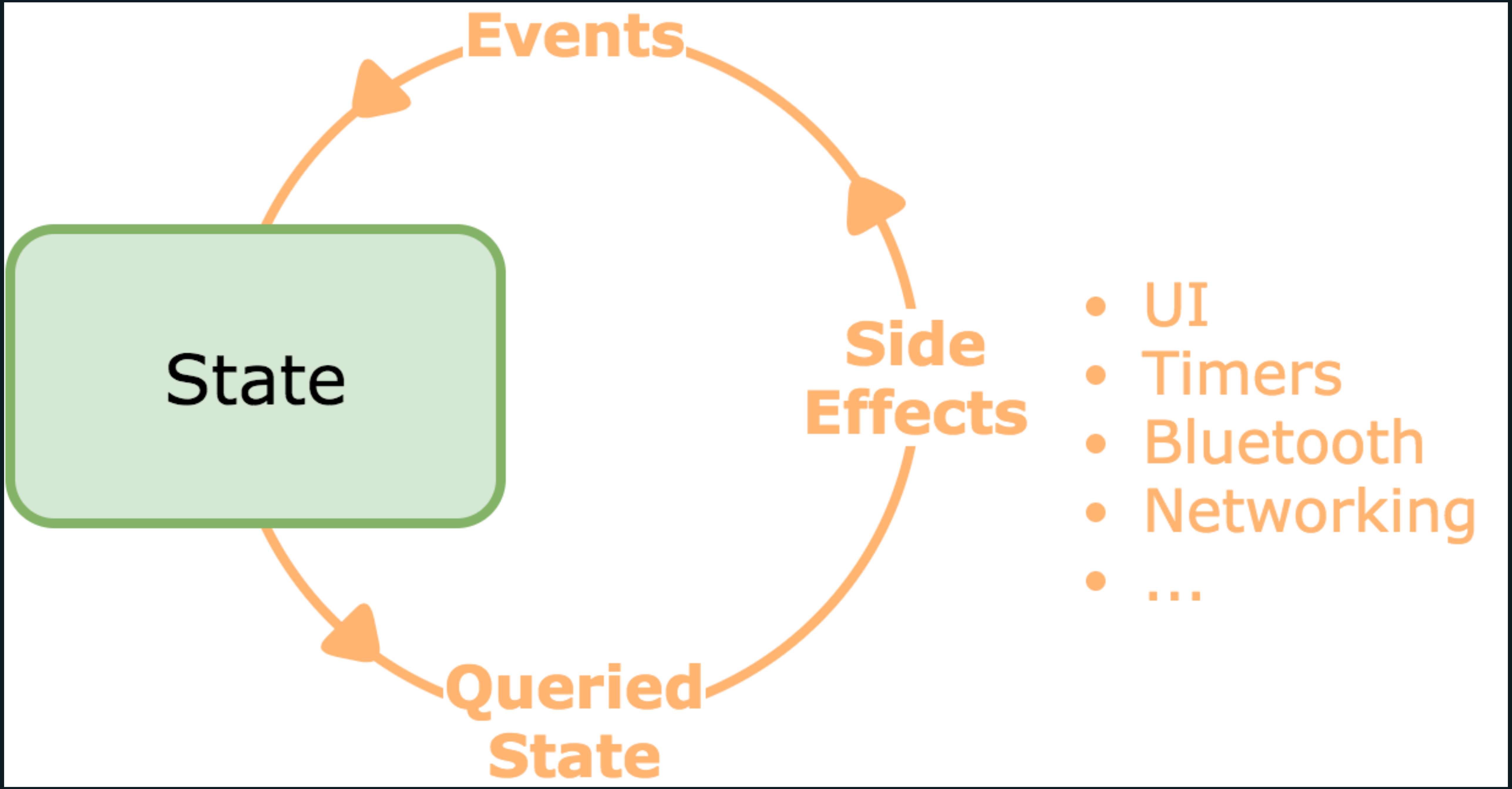
State machines

- Describe states of a system
- Transition description semantics
- How do you describe feedback?

Feedback?

- A new state triggers a set of inputs
- Inputs produce events, sooner of later
- Events can be turned into a new state

RxFeedback: all-in-one solution



RxFeedback: all-in-one solution

- Describes the entire system: reducer, inputs, events
- Flexible inputs adjusting for each state
- Model circular dependencies

Example project

— Simple media player to cycle between images

— A few states, easy to understand

👉 open `RxFeedbackDemo` project

👉 run app

States & events

— I named events 'commands', better suited to this project

👉 examine `PlaybackStates.swift`
👉 examine `PlaybackCommand.swift`

RxFeedback: a single operator (mostly)

- `Observable.system`
- Describes a complete system
- Event reducer
- Scheduler
- Feedback loops

Reducer

- Barbaric name for a simple concept
- Reduces a command to a new state
- Try resist performing side effects here

Reducer

- `reducePlaybackStateFromCommand` function
- simple switch-case clearly describes what happens

Scheduler

- Use an asynchronous scheduler
- Prevents issue when doing immediate transitions
- RxFeedback does it for you, mostly

Feedback loops

- One or more closures, called only once
- Observe a sequence of states
- Produce a sequence of comments

Feedback loops

- `generateCommandsFromPlaybackStates`
- Observe the sequence of states
- On change, produce either `empty()` (empty sequence)
- … or a timer that triggers to play the next image

Feedback loops

— `flatMapLatest` 💪

UI binding

- `bindUI`
- 😱
- Convoluted but not that complicated

UI binding

— "observers" update UI from state

— "emitters" produce commands from user input

— commands go feed the beast

Putting it all together

- Initial state goes into feedback loop
- Our example does nothing
- "Play" button triggers initial `playing` state
- `playing` initiates timer
- `playing` enables `pause` button
- It all goes on from

Final words

Discussion / Q&A

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Co-author, RxSwift book from Ray Wenderlich
https://store.raywenderlich.com/products/rxswift