

#WWDC19

# Streaming Audio on watchOS 6

Hernan Eguiluz, watchOS Frameworks Engineer

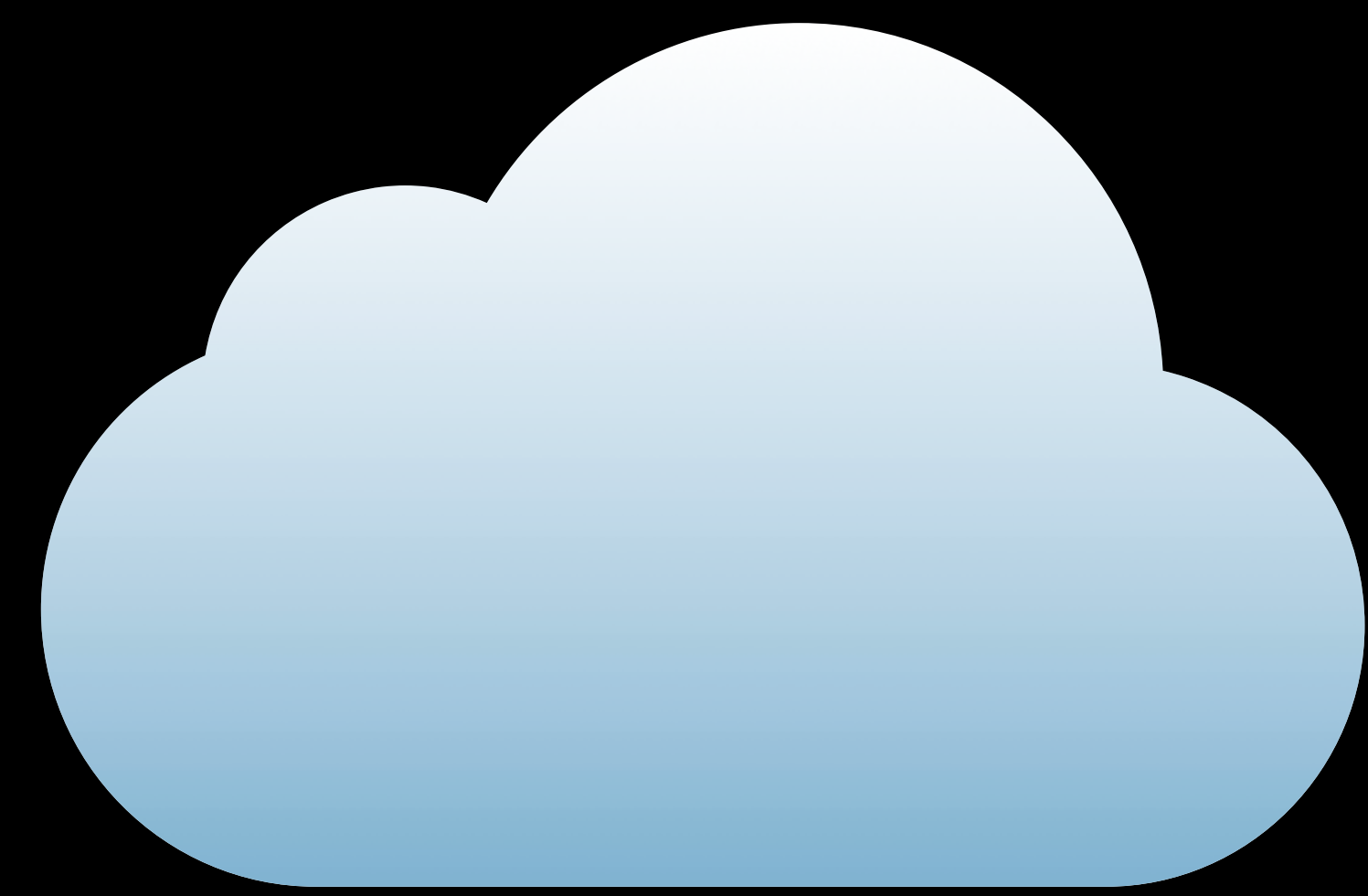




MON  
3

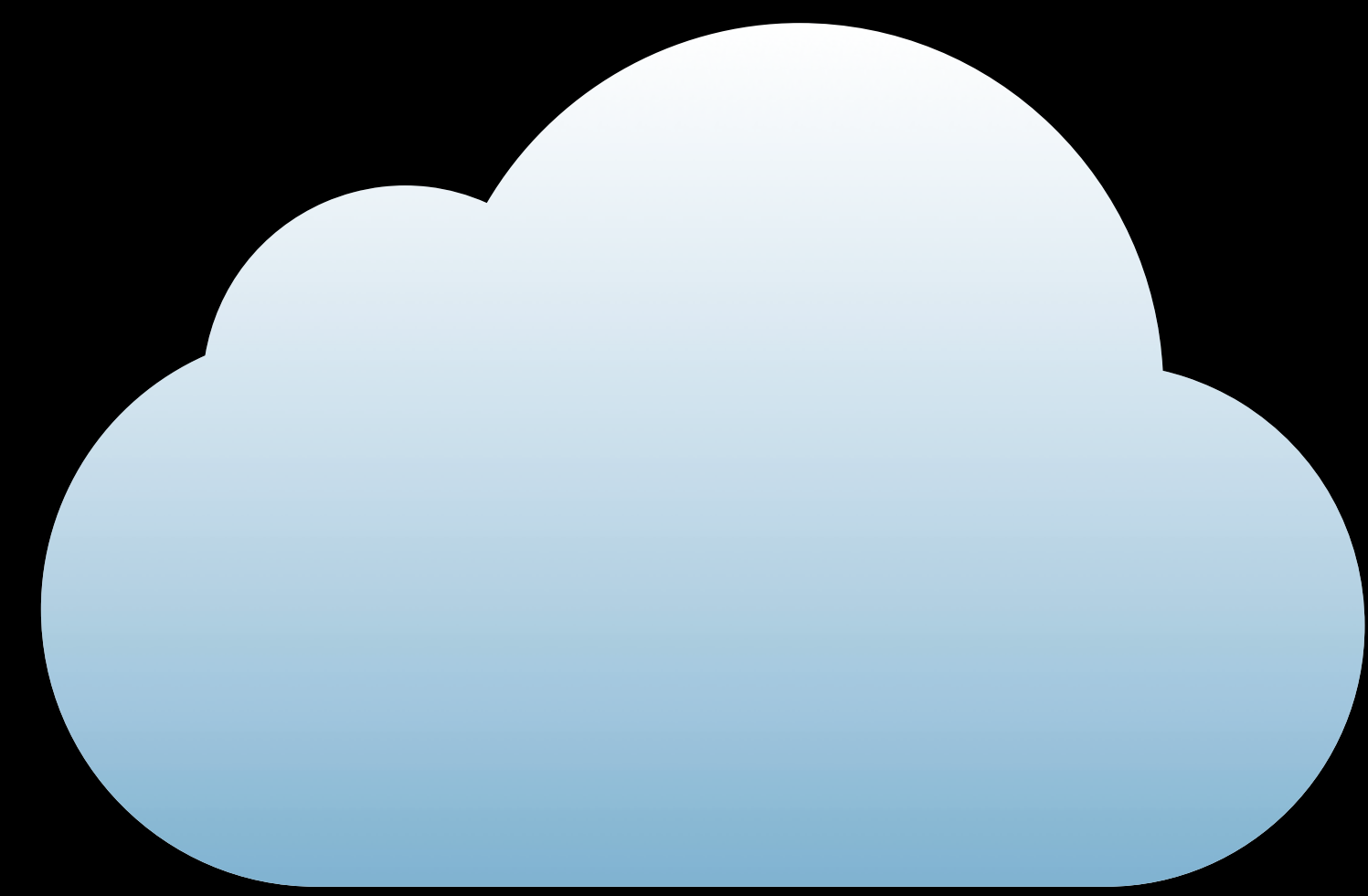


||| **when the part...**  
Billie Eilish - WHEN...  
Music



HLS  
↔





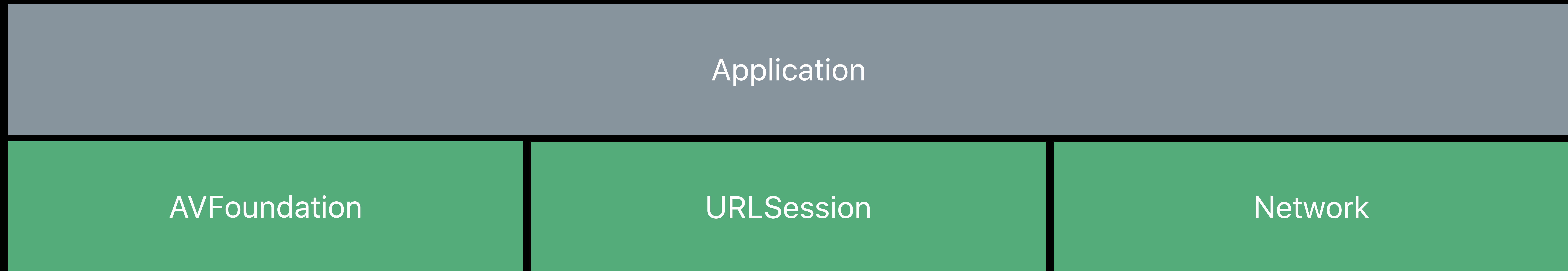
HLS  
↔



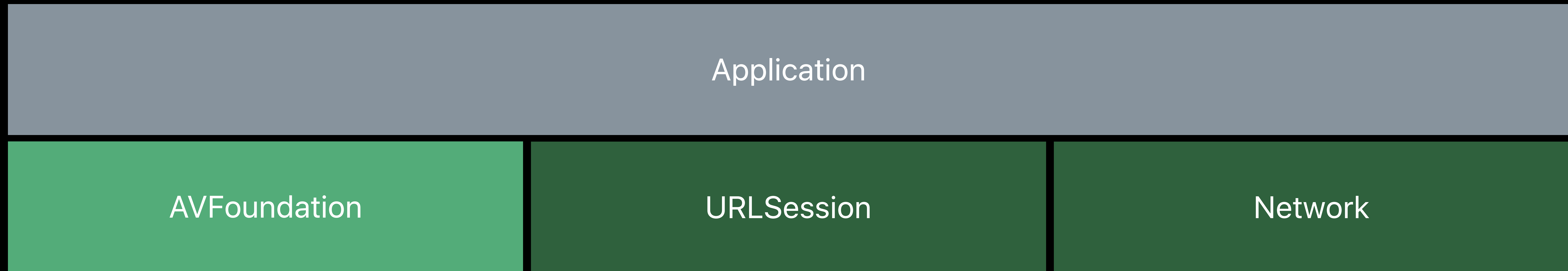
Custom Protocol  
↔



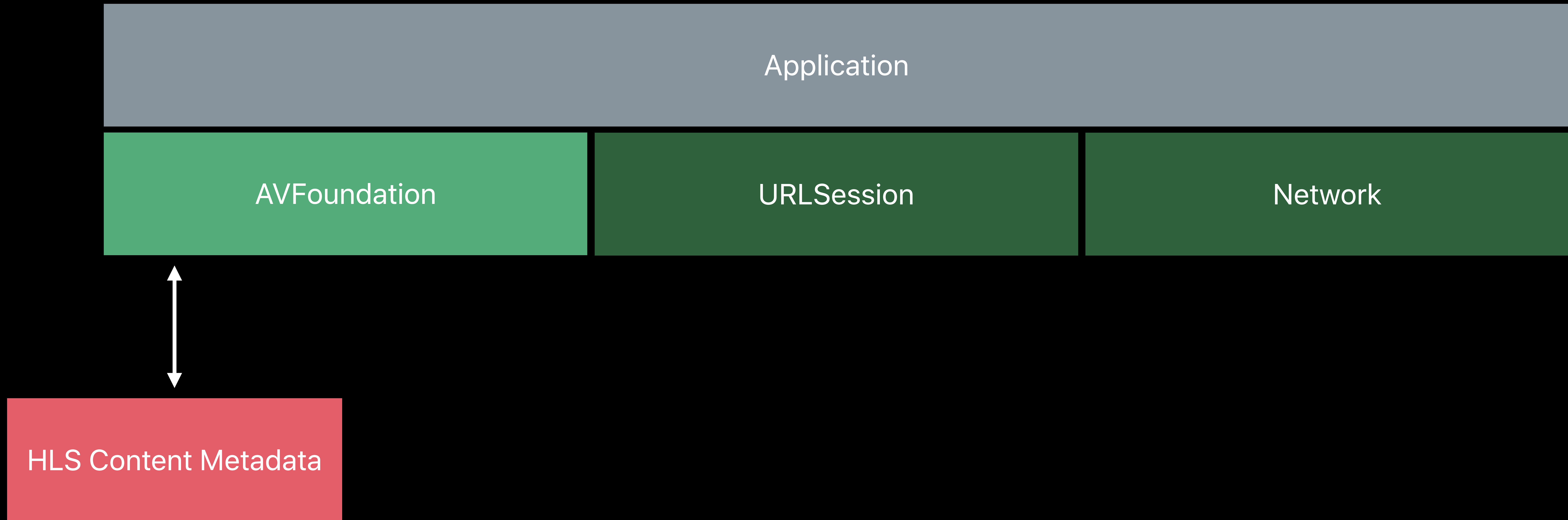
# Supported Technologies



# Supported Technologies

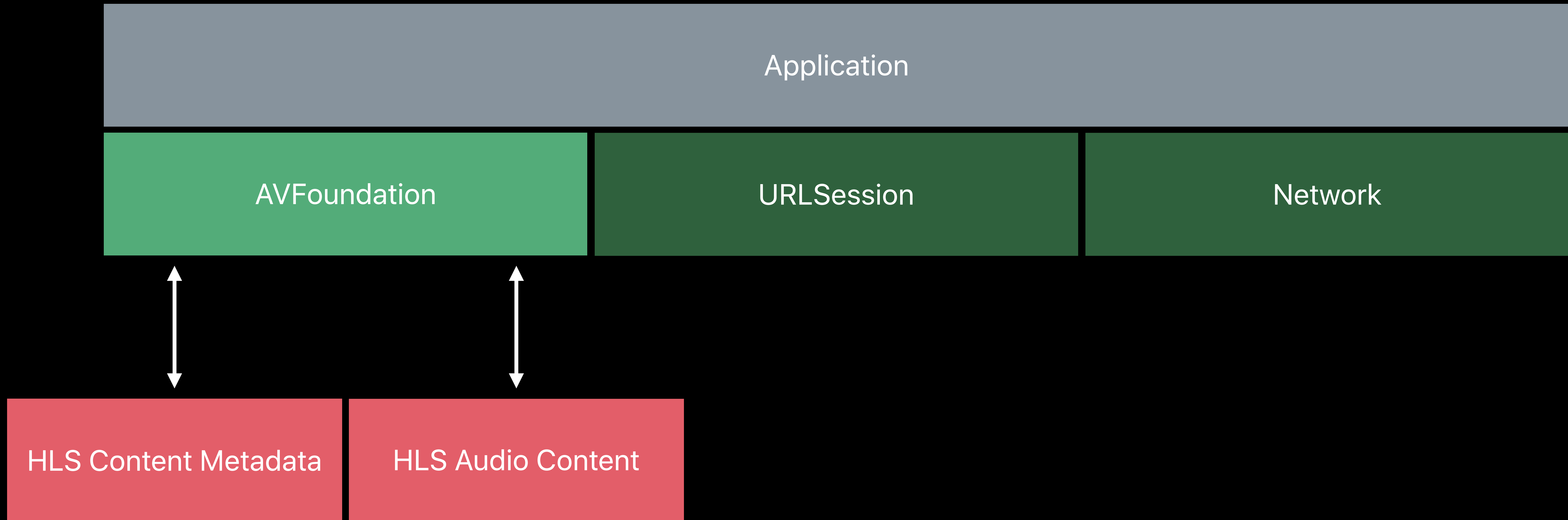


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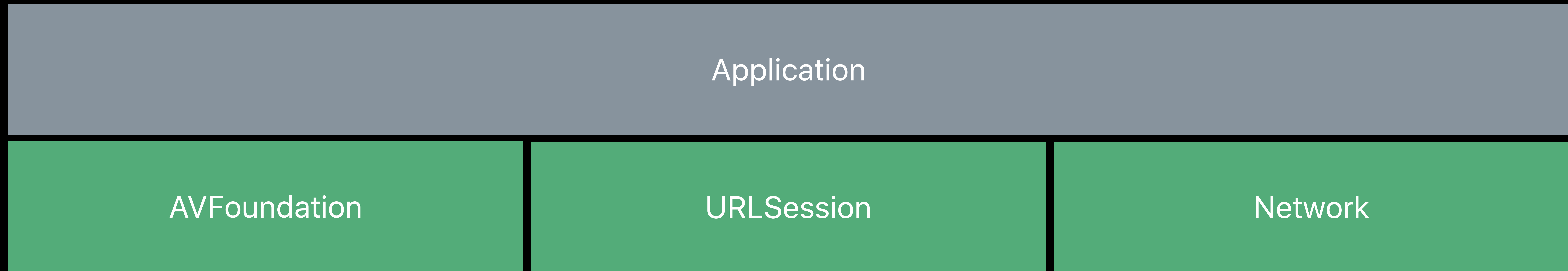




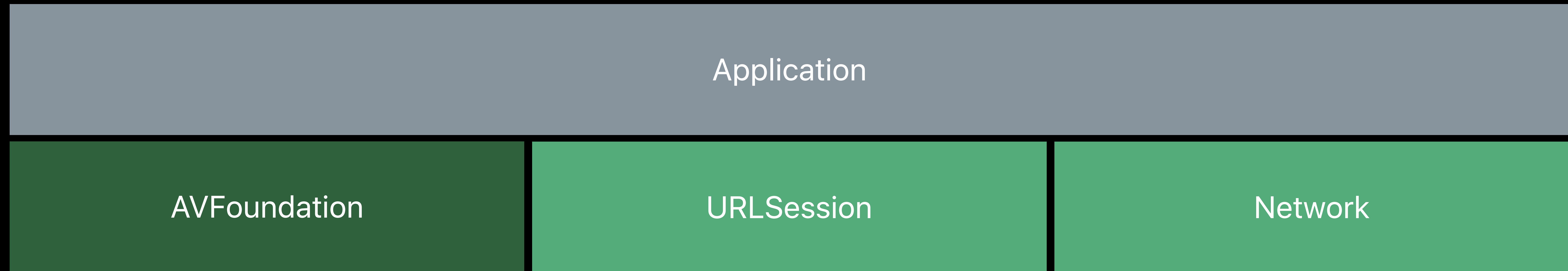
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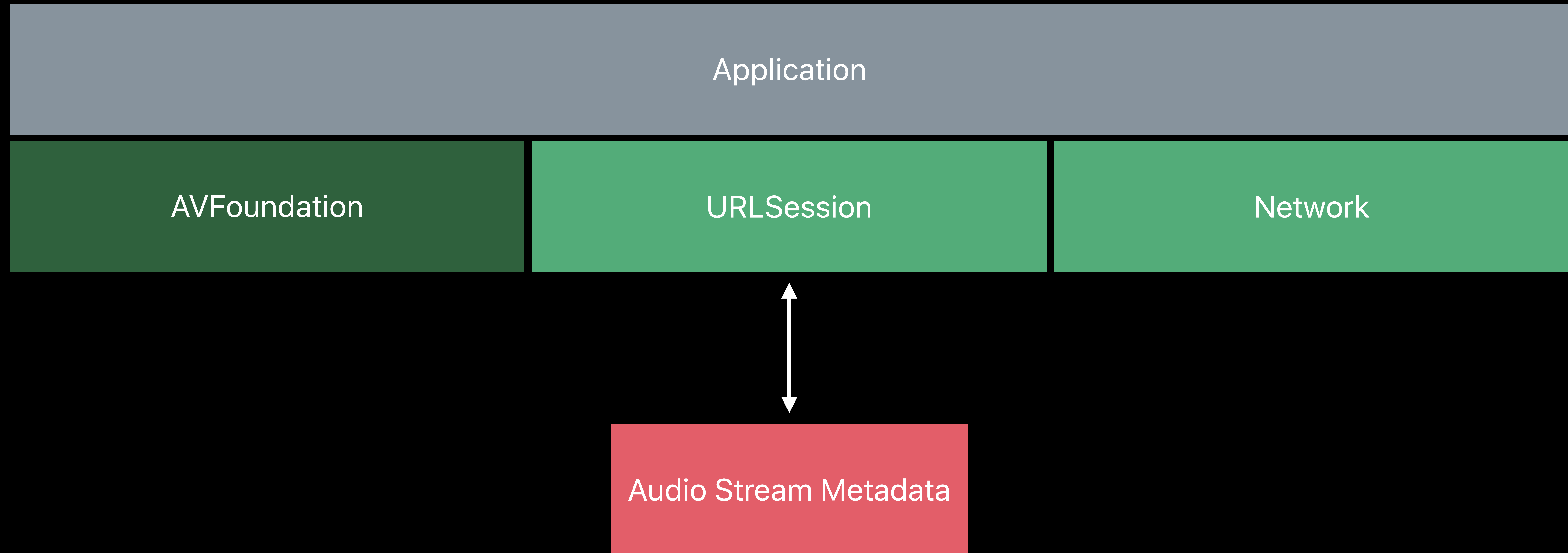
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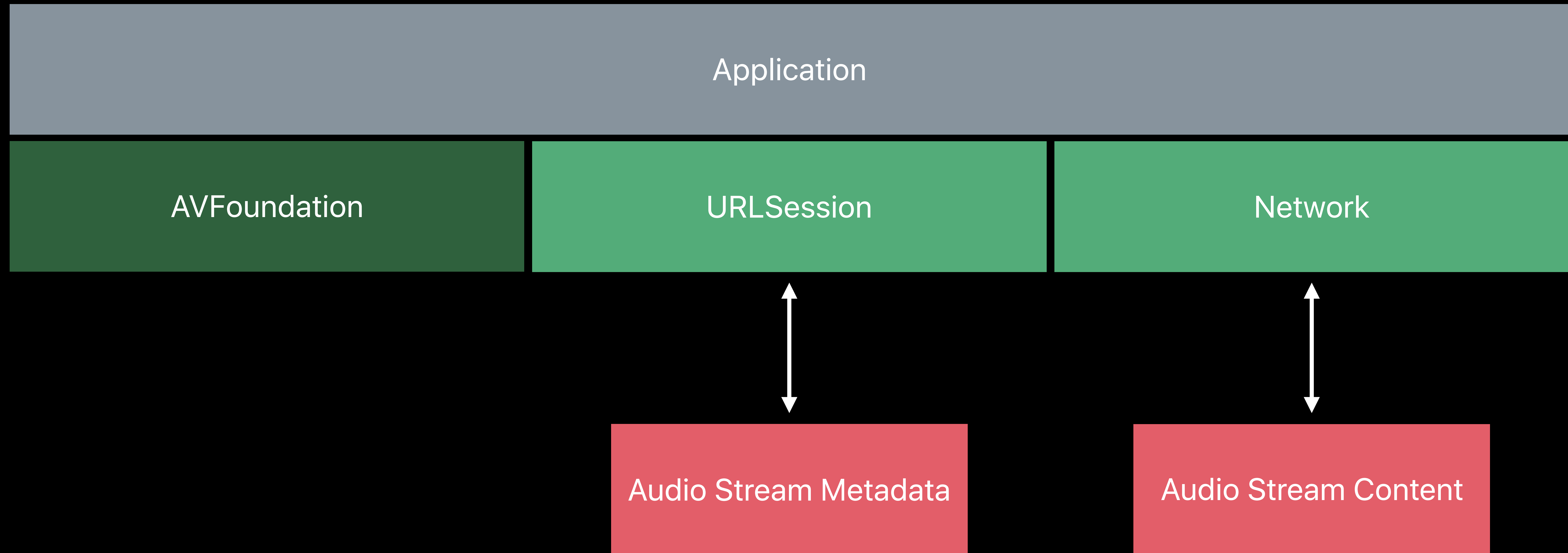
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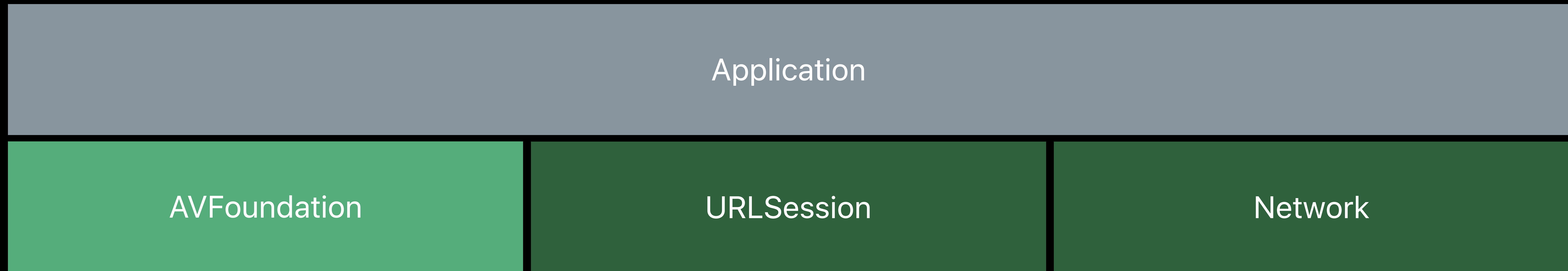
# Supported Technologies



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# Supported Technologies



# API Additions

# API Additions

NEW

Network



# API Additions

NEW

Network

URLSession

URLSessionStreamingTask

URLSessionWebSocketTask

NetworkServiceType.AVStreaming

# API Additions

NEW

Network

URLSession

AVFoundation

URLSessionStreamingTask

AVPlayer

URLSessionWebSocketTask

AVQueuePlayer

NetworkServiceType.AVStreaming

# API Additions

NEW

Network

URLSession

AVFoundation

CoreMedia

URLSessionStreamingTask

AVPlayer

URLSessionWebSocketTask

AVQueuePlayer

NetworkServiceType.AVStreaming

My Great App WatchKit App > Apple Watch Series 4 - 44mm My Great App: Ready

My Great App

- My Great App WatchKit App
  - Interface.storyboard
  - Assets.xcassets
  - Info.plist
- My Great App WatchKit Extension
  - InterfaceController.swift
  - ExtensionDelegate.swift
  - NotificationController.swift
  - ComplicationController.swift
  - Assets.xcassets
  - Info.plist
  - PushNotificationPayload.apns
- Products

PROJECT

- My Great App
- My Great App WatchKit App
- My Great App WatchKit Extension**

TARGETS

- My Great App
- My Great App WatchKit App
- My Great App WatchKit Extension**

General Signing & Capabilities Resource Tags Info Build Settings Build Phases Build Rules

+ Capability All Debug Release

▼ Signing

- Automatically manage signing  
Xcode will create and update profiles, app IDs, and certificates.
- Bundle Identifier: com.Apple.SampleCode.My-Great-App.watchkitap
- Team: Apple Inc.
- Provisioning Profile: Xcode Managed Profile ⓘ
- Signing Certificate: iPhone Developer

Add capabilities by clicking the "+" button above.

+ - Filter

+ Filter

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General Signing & Capabilities Resource Tags Info Build Settings Build Phases Build Rules

PROJECT: My Great App

TARGETS: My Great App, My Great App WatchKit App, My Great App WatchKit Extension

Capabilities: All, Debug, Release

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### Background Modes

Capabilities Media

Background Modes



## Background Modes

Background Modes specifies that the app provides specific background services and must be allowed to continue running while in the background. These keys should be used sparingly and only by apps providing the indicated services. Where alternatives for running in the background exist, those alternatives should be used instead.

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- My Great App
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▼ Background Modes

Modes

- Audio
- Location updates
- Remote notification
- Workout processing

Session Type: None

Add capabilities by clicking the "+" button above.

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+ Filter

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PROJECT: My Great App

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Signing & Capabilities

Capabilities: All, Debug, Release

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Background Modes

Background Modes

Modes

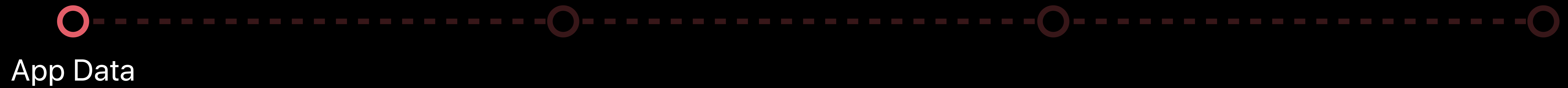
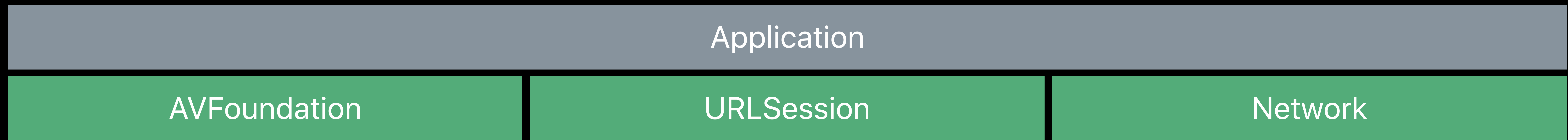
- Audio
- Location updates
- Remote notification
- Workout processing

Session Type: None

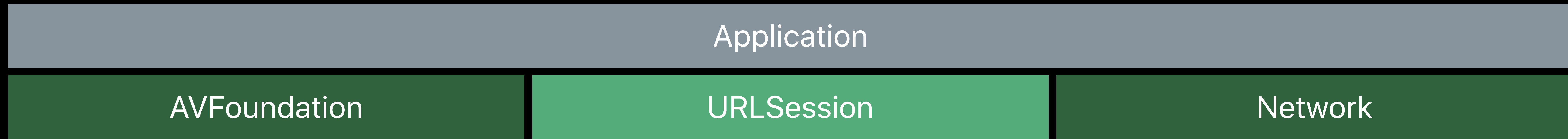
# API Usage



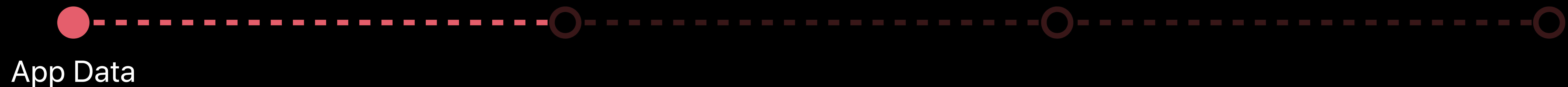
# API Usage



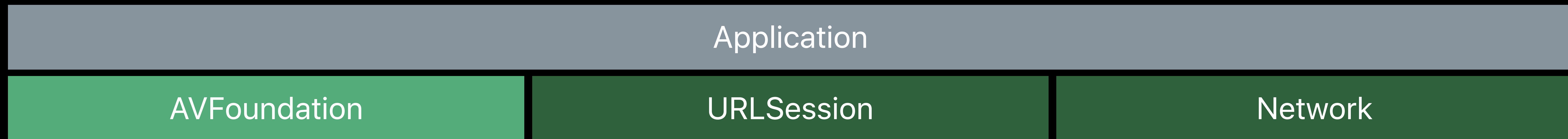
# API Usage



```
let session: URLSession = URLSession(configuration: .default, delegate: nil,  
    delegateQueue: .main)  
  
var request = URLRequest(url: serverURL,  
    cachePolicy: .useProtocolCachePolicy,  
    timeoutInterval: timeout)  
  
session.downloadTask(with: request, completionHandler: { ... } )
```

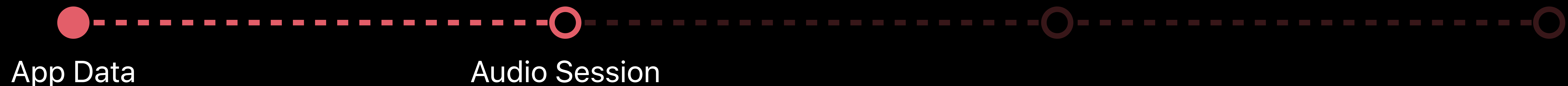


# API Usage



```
do {  
    try AVAudioSession.sharedInstance().setCategory(.playback, mode: .default,  
        policy: .longForm, options: [])  
} catch { ... }
```

```
AVAudioSession.sharedInstance().activate(options: [], completionHandler: {  
    // The audio route picker may be displayed before the completionHandler  
    // is called  
})
```





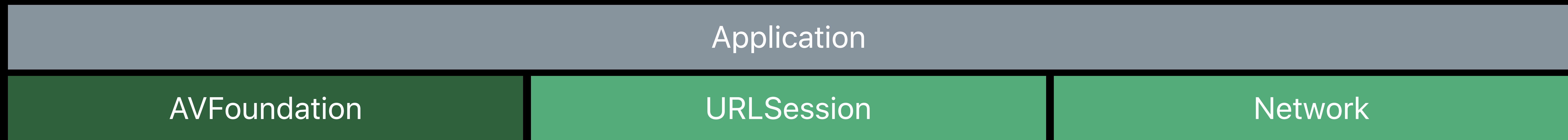
Cancel



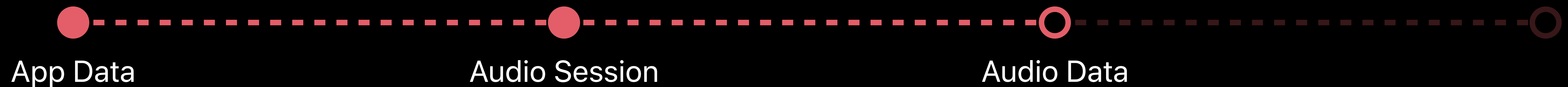
To play audio, connect  
Bluetooth headphones  
to your Apple Watch.

Connect a Device

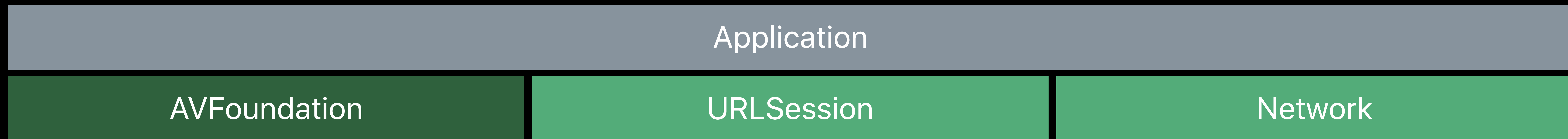
# API Usage



```
var streamTask: URLSessionStreamTask?  
if let streamTask = URLSession.shared.streamTask(withHostName: host,  
    port: port) {  
    streamTask.resume()  
}
```



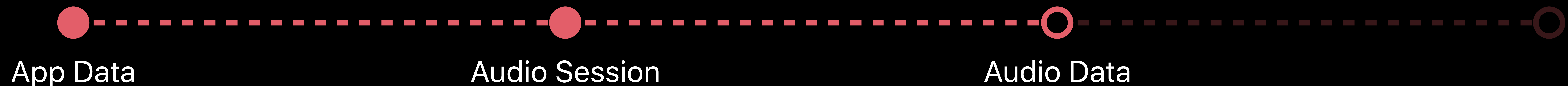
# API Usage



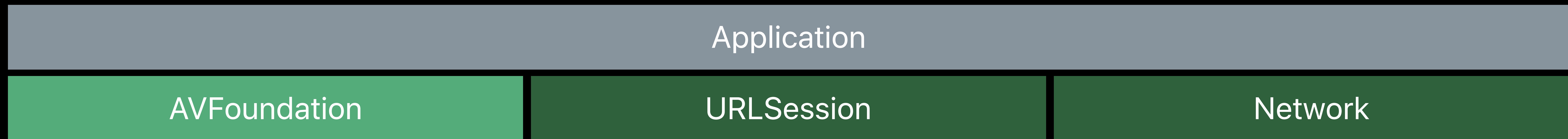
```
var streamTask: URLSessionStreamTask?
if let streamTask = URLSession.shared.streamTask(withHostName: host,
    port: port) {
    streamTask.resume()
}

var connection: NWConnection? = NWConnection()
var connectionQueue: DispatchQueue = ...

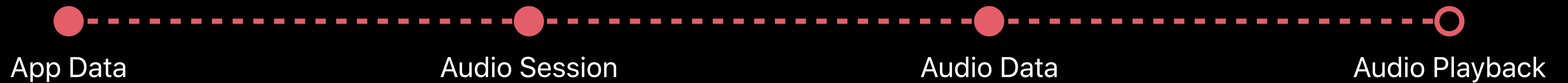
if let connection = connection {
    connection.stateUpdateHandler( ... )
    connection.start( ... )
}
```



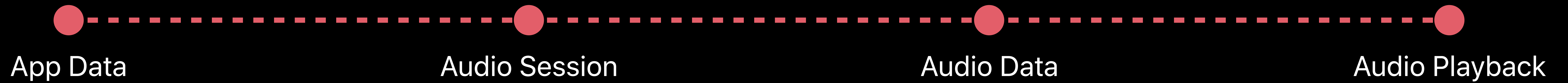
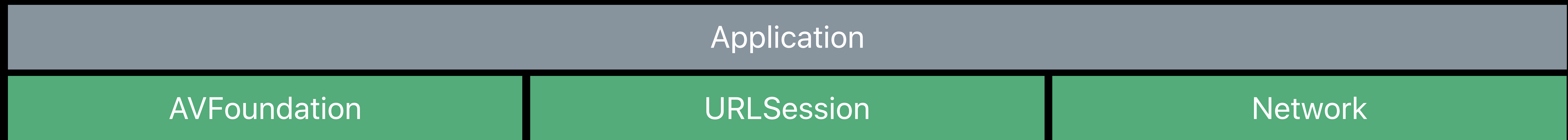
# API Usage



```
let player: AVQueuePlayer = AVQueuePlayer( ... )  
player.preroll(atRate: 1.0, completionHandler: { ... })  
player.play()
```



# API Usage





# Best Practices

WatchKit

NEW

# Best Practices

## WatchKit

NEW

### Check hardware support

```
if WKInterfaceDevice.current().supportsAudioStreaming {  
    // Your application can use audio streaming  
} else {  
    // Your application can only use local audio playback  
}
```

# Best Practices

## WatchKit

NEW

### Check hardware support

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if WKInterfaceDevice.current().supportsAudioStreaming {  
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watchOS 6 deprecates WKAudioFile\* classes

# Best Practices

Networking

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Caching

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Caching

Network requests

# Best Practices

Networking

Caching

Network requests

Audio quality

# Best Practices

Networking

Caching

Network requests

Audio quality

Reachability



# Best Practices

Networking

Caching

Network requests

Audio quality

Reachability

Network transitions

# More Information

[developer.apple.com/wwdc19/716](https://developer.apple.com/wwdc19/716)

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Creating Audio Apps for watchOS

WWDC 2018

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Introducing Network.framework: A modern alternative to Sockets

WWDC 2018

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Optimizing Your App for Today's Internet

WWDC 2018

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Advances in HTTP Live Streaming

WWDC 2017

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# More Information

[developer.apple.com/wwdc19/716](https://developer.apple.com/wwdc19/716)