

Physics-Based Interfaces with UIKit Dynamics

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< Livefront >



**SMART
FACTORY**

Agenda

Introduction

Introduction

Examples

Introduction

Examples

Deconstruction

Introduction

Examples

Deconstruction

Collection Views

Introduction

Examples

Deconstruction

Collection Views

Limitations & Gotchas

Introduction

Introduced with iOS 7

Not a separate framework – built into UIKit

Can be anywhere you're using UIKit

Another tool
in your tool belt

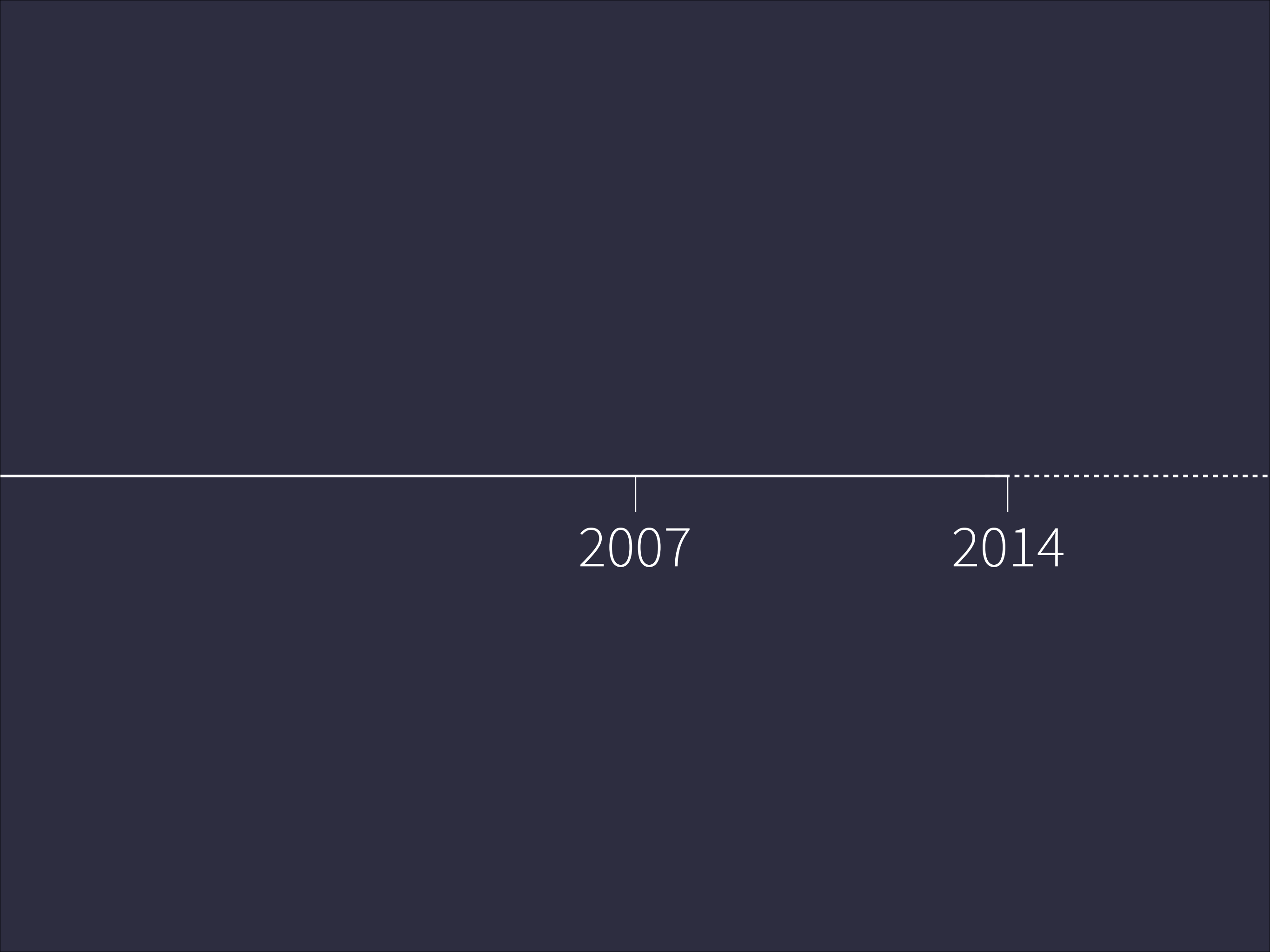
Physics-Based Interfaces

Classical Mechanics

Classical mechanics
is concerned with the
set of physical laws
describing the motion of
bodies under the action
of a system of forces.



2014







Verizon

9:40 PM



Settings



Airplane Mode



Wi-Fi

Livefront West >



Bluetooth

On >



Cellular



Personal Hotspot

Off >



Notification Center



Control Center



Do Not Disturb



General



Verizon

9:40 PM



Settings



Airplane Mode



Wi-Fi

Livefront West >



Bluetooth

On >



Cellular



Personal Hotspot

Off >



Notification Center



Control Center



Do Not Disturb



General



2007

2014

1972

2007

2014

PONG



Pong: the original
physics-based interface.

More Recent Examples

Select an Account



Sam Kirchmeier
@skirchmeier



Select an Account



Sam Kirchmeier
@skirchmeier





Timeline



pork roll I'm going to inhale
while I'm home because duh.



Abby Dubisar @ADubisar 19h

Nothing says Spring Break
2014 like: NEW TOFU PRESS!
(Highly recommended & made
in the USA.) [pic.twitter.com/
712CSvqp2b](http://pic.twitter.com/712CSvqp2b)



Phil Crissman @philcrissman 19h

```
> rake test:units  
> rake test:functionals  
> rake test:integrations  
rake aborted!
```





Timeline



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> rake test:units  
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```



Verizon LTE



9:55

Thursday, March 20

> slide to unlock



Verizon LTE



9:55

Thursday, March 20

> slide to unlock



Verizon

1:40 PM



TAP ON THE GENRES YOU LIKE

Tap twice on the genres you love,
press and hold on the ones you hate.



YOU

Verizon

1:40 PM



TAP ON THE GENRES YOU LIKE

Tap twice on the genres you love,
press and hold on the ones you hate.



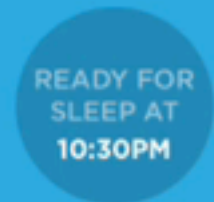
YOU







UP Coffee



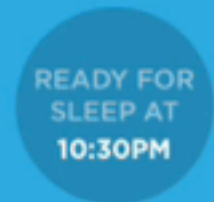
WIRED

SLEEP READY





UP Coffee



WIRED

SLEEP READY



UIKit Dynamics

Natural, real-world interactions

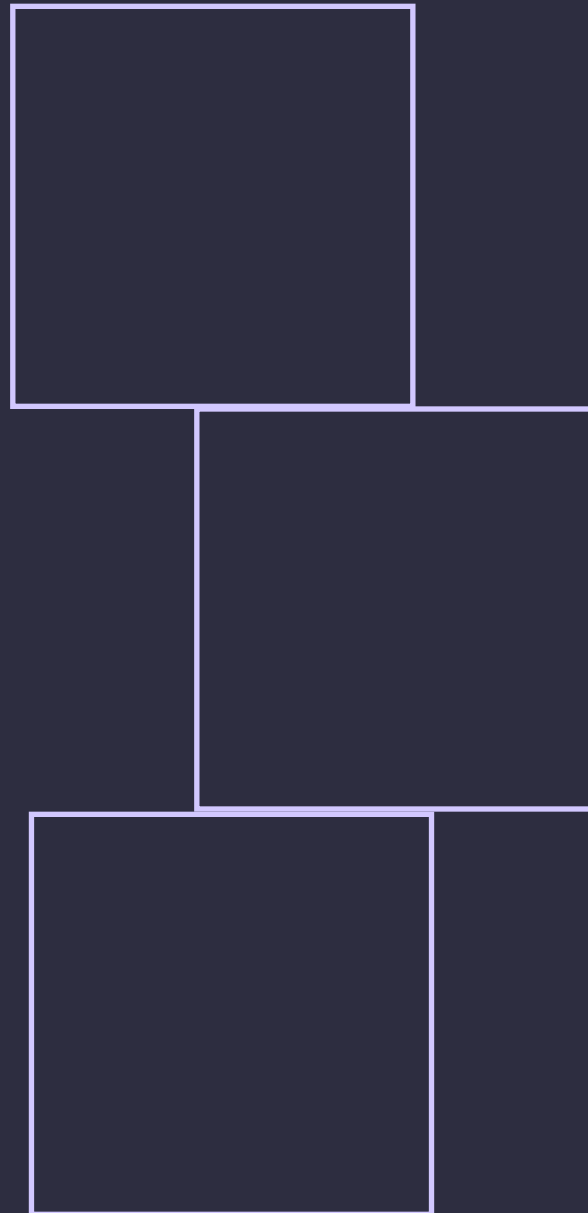
Without very much code

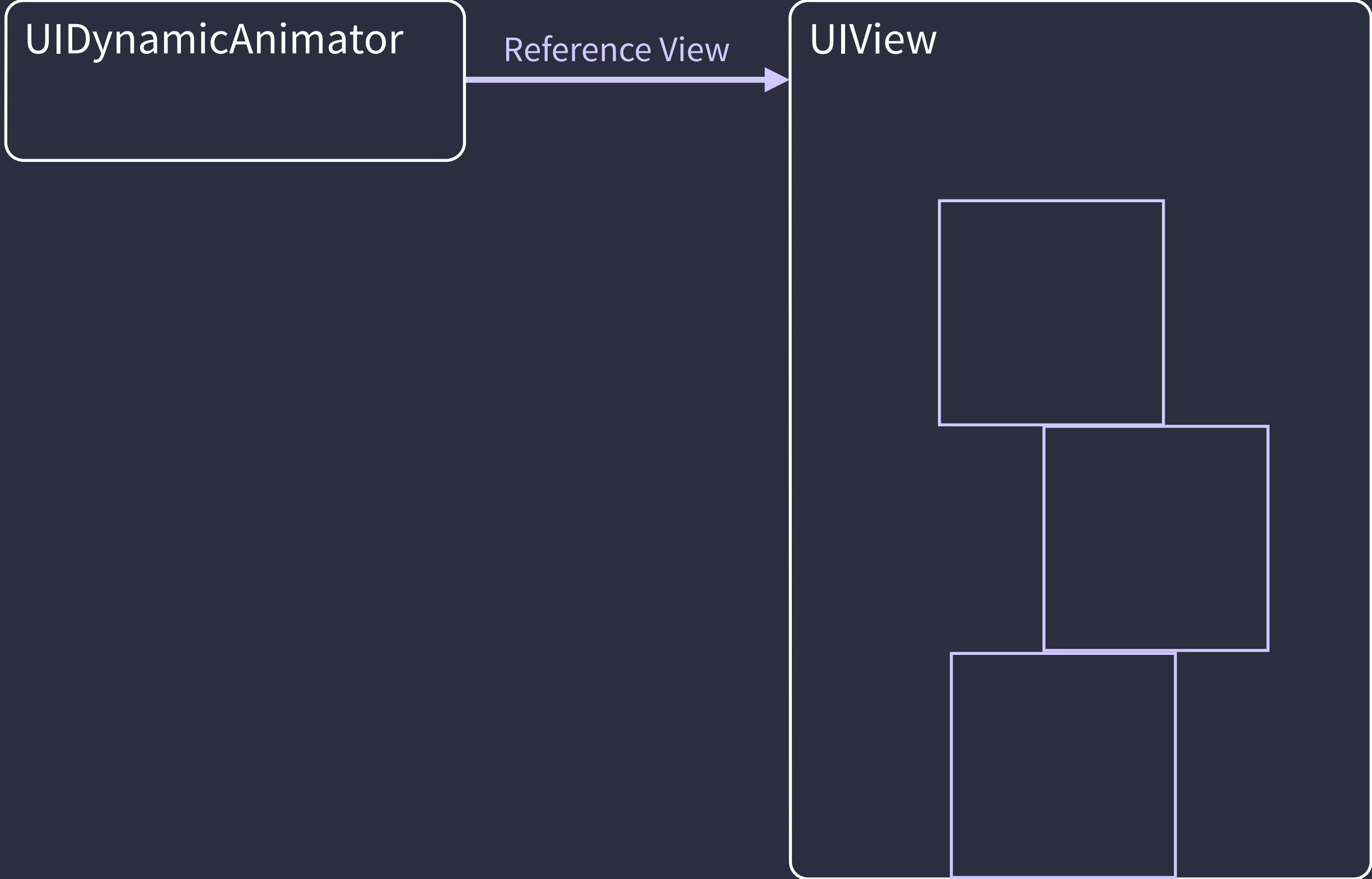
Beautiful API

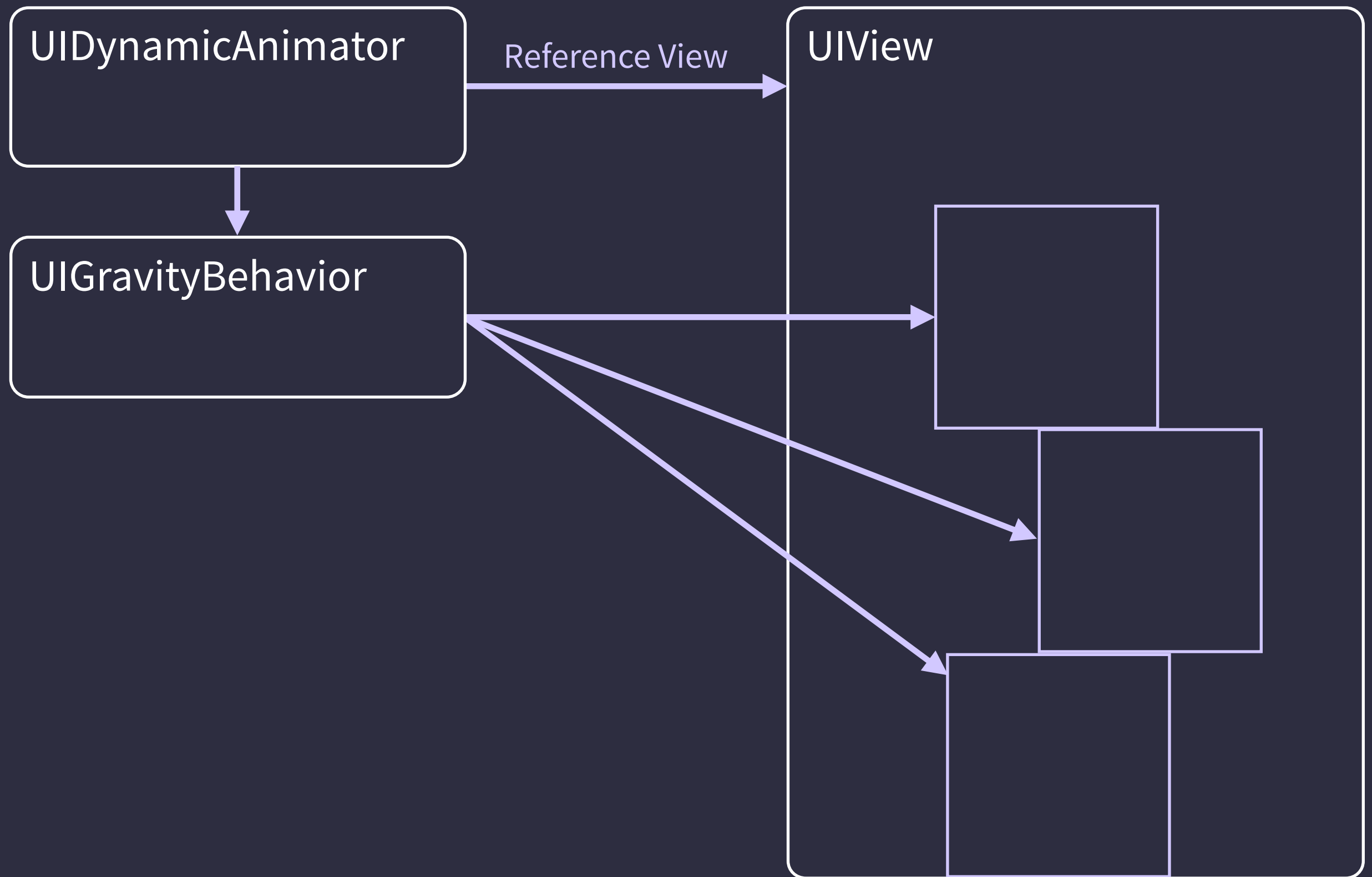
Fun

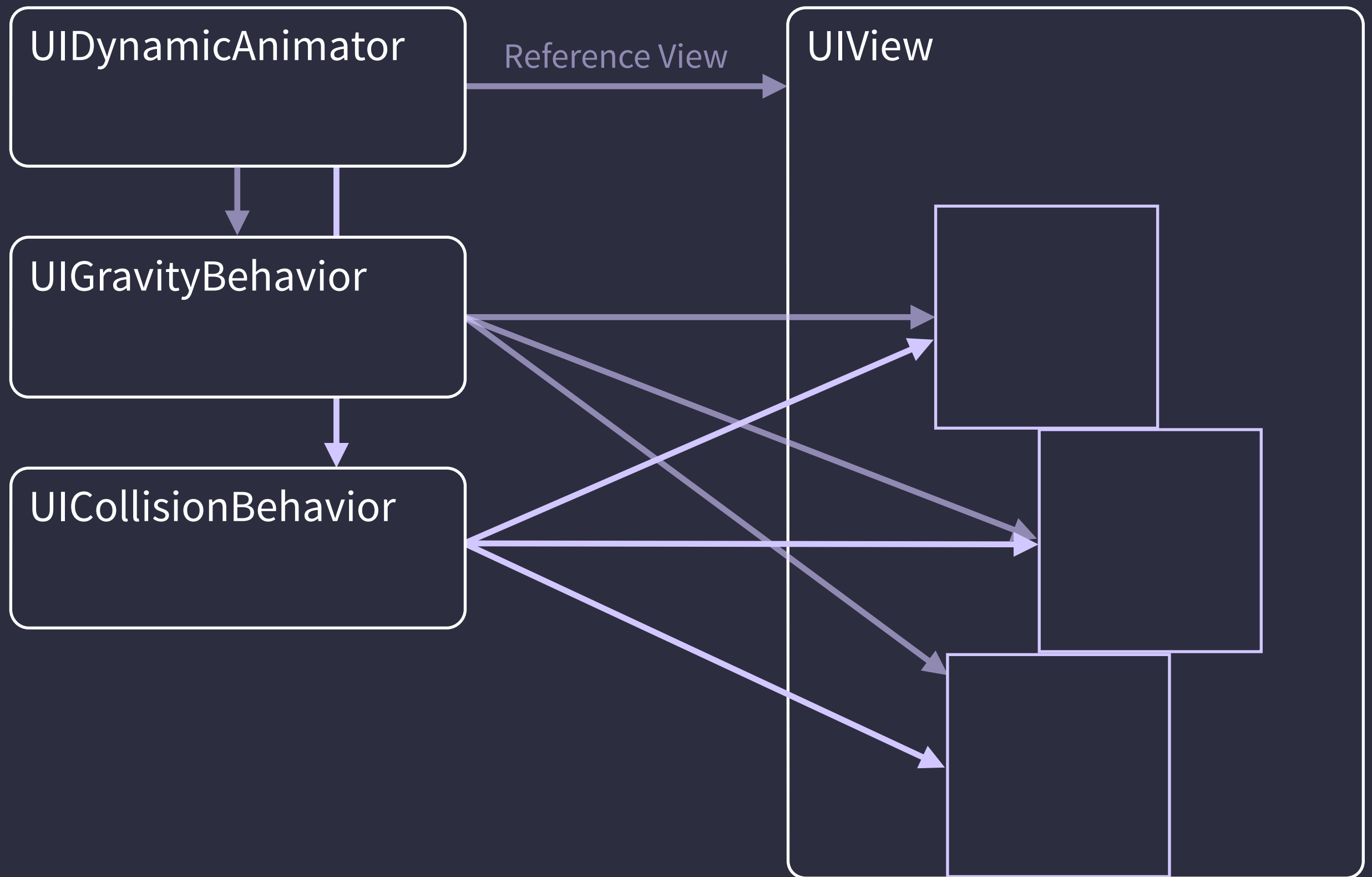
Knowledge of physics not required

UIView



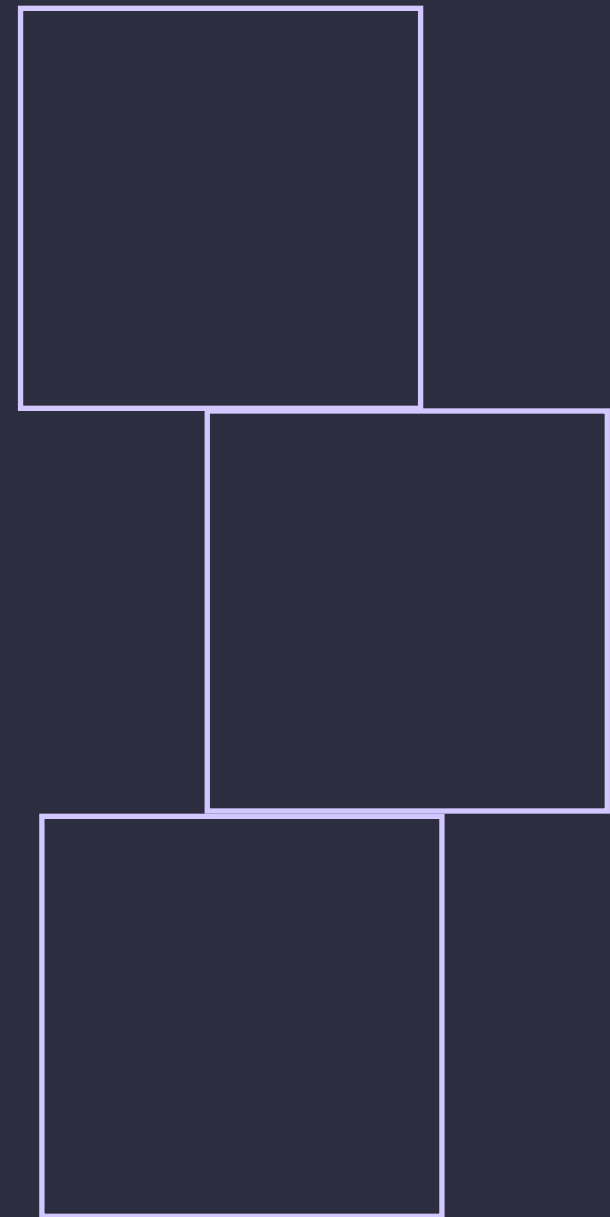








UIDynamicItem Protocol



UIDynamicItem Protocol

UIView

UICollectionViewLayoutAttributes

UIDynamicBehaviors

UIDynamicBehavior Base Class

UICollisionBehavior

UIGravityBehavior

UICollisionBehavior

UIGravityBehavior

UIAttachmentBehavior

UIDynamicItemBehavior

UIPushBehavior

UISnapBehavior

Demo

Deconstruction



Timeline



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> rake test:integrations  
rake aborted!
```



UICollisionBehavior

UIGravityBehavior

UIAttachmentBehavior

UIDynamicItemBehavior

UIPushBehavior

UISnapBehavior

1. Create a `UIDynamicAnimator`.
2. Recognize a touch, and add an attachment behavior.
3. Update the attachment's anchor point during the gesture.
4. When the gesture ends, add a snap behavior or a push behavior.

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Demo

Collection Views

Gotchas

Only 2D

Hard to visualize

Weird units

Everything's a square

Not perfect for games

Recap

Introduced UIKit Dynamics

PhotoFling Demo

TweetBattle Demo

Limitations & Gotchas

Thanks!

Discussion

<https://github.com/livefront/dynamics>

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