Macoun

Pimp my App: Core Animation

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Ich

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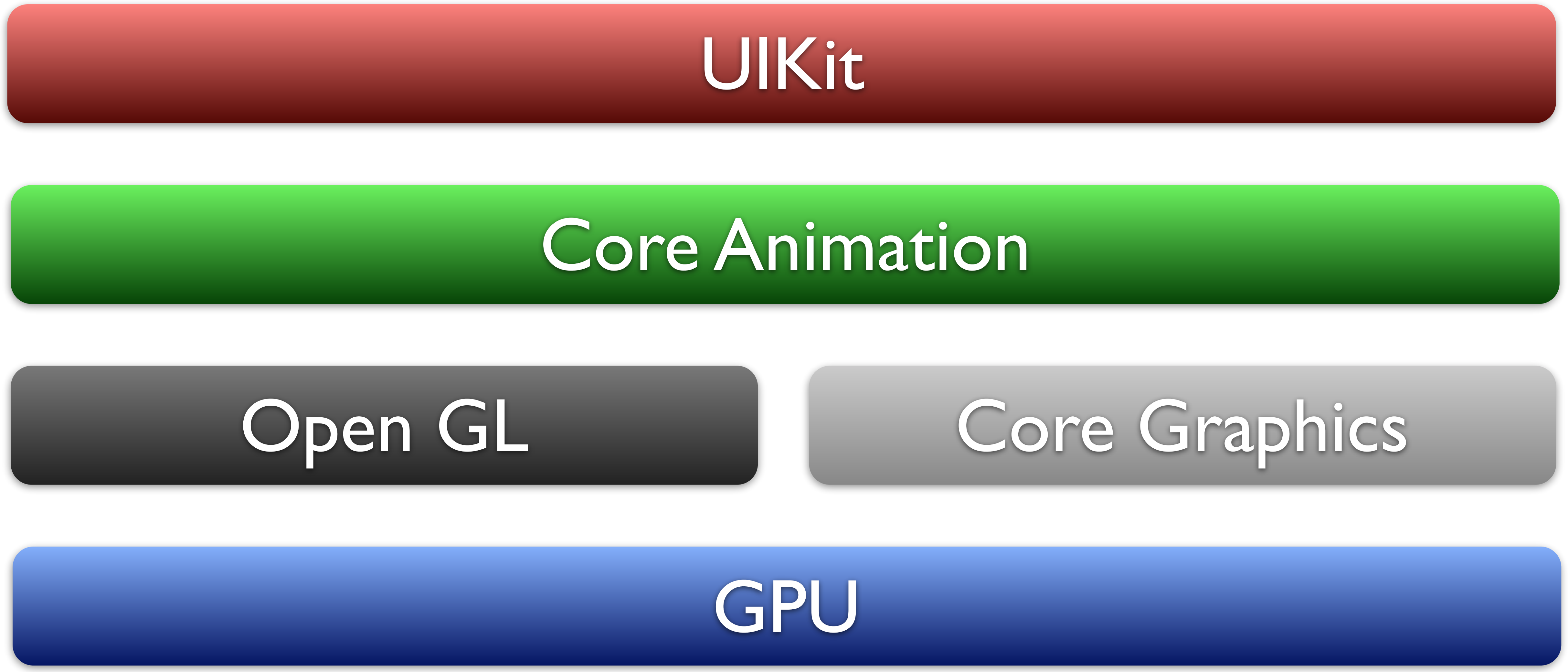
Ziel des Vortrags

Core Animation

Architektur



UIKit

Core Animation

Open GL

Core Graphics

GPU

Animateable Properties

UIView
alpha
backgroundColor
bounds
center
contentStretch
frame
transform

Animateable Properties

UIView
alpha
backgroundColor
bounds
center
contentStretch
frame
transform

+

CALayer	
anchorPoint	hidden
backgroundFilters	mask
borderColor	masksToBounds
borderWidth	shadowColor
compositingFilter	shadowOffset
contents	shadowOpacity
contentsRect	shadowPath
cornerRadius	shadowRadius
doubleSided	sublayers
filters	zPosition

: CALayer
CAEmitterLayer
CAGradientLayer
CAReplicatorLayer
CAScrollLayer
CAShapeLayer
CATextLayer
CATiledLayer
CATransformLayer

init Layer

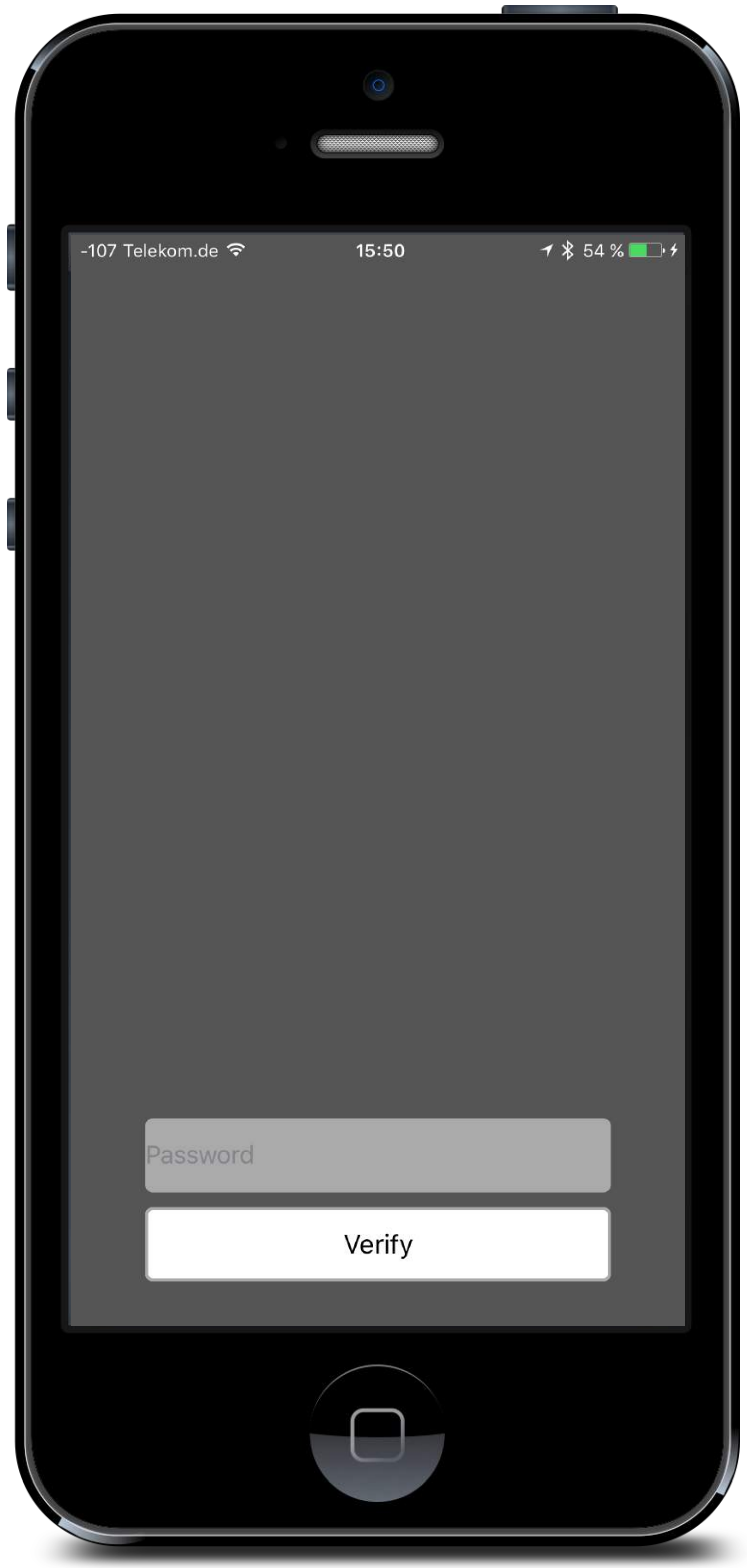
```
@property (nonatomic, strong) CALayer layerRed;

- (void)initWithFrame:(CGRect)frame{
/* init object */

 _layerRed = [CALayer new];
 self.layerRed.backgroundColor = [UIColor redColor].CGColor;
 [self.layer addSublayer:self.redLayer];
 return self;
}
```

layout Layer

```
- (void)layoutSubviews{
     [super layoutSubviews];
     self.layerRed.frame = self.bounds;
 }
```

Demo 0
Layer animateable Properties

Escalating Textview


-107 Telekom.de
15:50
54 %
Password
Verify

BasicAnimation: position.x

```
CABasicAnimation* animation = [CABasicAnimation animationWithKeyPath:@"position.x"];
animation.duration = 0.5f;
animation.toValue = @10;
animation.fromValue = @5; //default is oldValue
[self.layer addAnimation:animation forKey:nil];
```

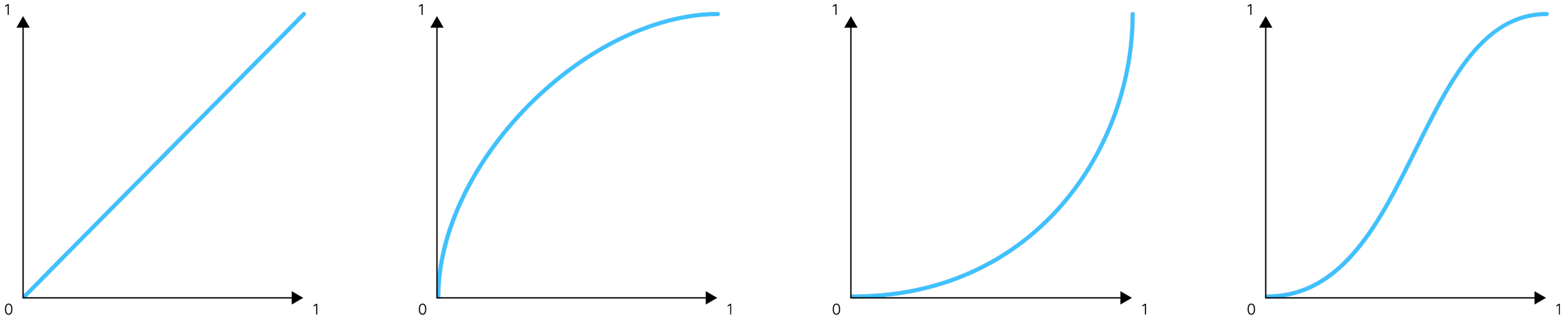
BasicAnimation: position

```
CABasicAnimation* animation = [CABasicAnimation animationWithKeyPath:@“position”];
animation.duration = 0.5f;
animation.toValue = [NSValue valueWithCGSize:(CGSize){20,10}];
[self.layer addAnimation:animation forKey:nil];
```

BasicAnimation: color

```
CABasicAnimation* animation = [CABasicAnimation
animationWithKeyPath:@“backgroundColor"];
animation.duration = 0.5f;
animation.toValue = (id)[UIColor redColor].CGColor;
[self.layer addAnimation:animation forKey:nil];
```

Animation Easing - No Kill Bots!



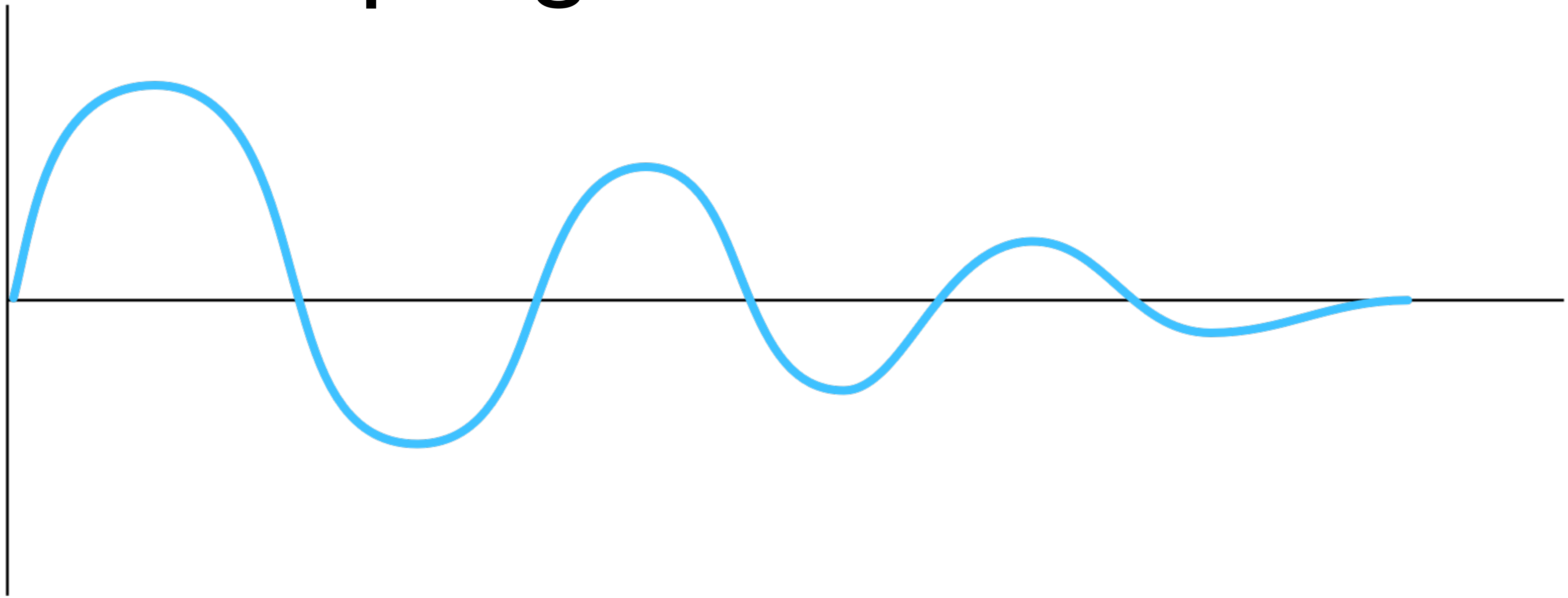
Viele weitere Timingfunctions: https://github.com/bfolder/UIView-Visuals

easeIn easeOut animation

```
animation.timingFunction = [CAMediaTimingFunction functionWithName:
                                    kCAMediaTimingFunctionEaseInEaseOut];
```

Demo 1
ease In/Out/InOut

Spring Animation



Sprint Parameter

- Damping
- Mass
- Stiffness
- initial Velocity

Spring animation CALayer

```
self.layer.position.y = self.layer.position.y+1;

CASpringAnimation* animation = [CASpringAnimation
animationWithKeyPath:@“position.y”];

animation.initialVelocity = 10000;
animation.mass = 10;
animation.damping = 0.5f
animation.stiffness = 10;
animation.duration = animation.settlingDuration;
animation.toValue = self.layer.position.y-1;

[self.layer addAnimation:animation forKey:nil];
```

Demo 2

Particle Emitter

Create Particle Emitter

```
CAEmitterLayer* emitter = [CAEmitterLayer layer];

CGPoint position = ...;
CGSize size = ...;
emitter.emitterPosition = position;
emitter.emitterSize   = size;
emitter.emitterShape = kCAEmitterLayerLine; //options: point, rect
emitter.renderMode    = kCAEmitterLayerAdditive;
```

Cell “Highway to Hell” - 1

```
CAEmitterCell* fire = [CAEmitterCell emitterCell];
fire.birthRate       = 100;
fire.emissionLongitude  = M_PI;
fire.velocity        = -80;
fire.yAcceleration   = -200;
```

Cell “Highway to Hell” - 2

```
//continue CAEmitterCell* fire

fire.lifetime        = 50;
fire.color = [[UIColor redColor] CGColor];
fire.contents = (id) [[UIImage imageNamed:@"fire"] CGImage];
[fire setName:@"fire"];
```

Demo 3
Highway to Hell

Emitter Update

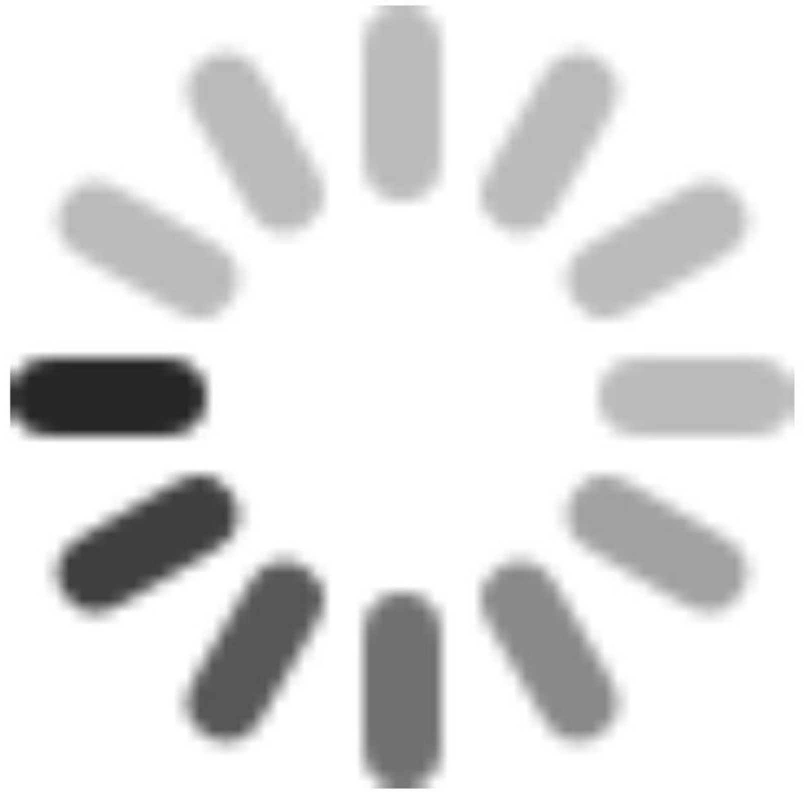
```
emitter.renderMode   = kCAEmitterLayerAdditive;
```

Cell Update “Fire”

```
//continue CAEmitterCell* fire

fire.velocityRange   = 30;
fire.emissionRange   = 1.1;
fire.lifetimeRange   = (50.0 * 0.35);
fire.scaleSpeed      = 0.3;
```

Demo 4
Smoke & Fire

Activity Indicator like a flower



Layer Replicator

Layer Replicator

```
CAReplicatorLayer* layerReplicator = [CAReplicatorLayer new];
layerReplicator.instanceCount = self.instanceCount;
layerReplicator.instanceDelay = self.instanceDelay;
[self.layer addSublayer:self.layerReplicator];
```

Layer

```
//continue CAReplicatorLayer* layerReplicator

CALayer* layer = [CALayer new];
layer.backgroundColor = [UIColor blackColor].CGColor;
layer.borderColor = [UIColor whiteColor].CGColor;
layer.borderWidth = 1;
layer.cornerRadius = 2;
[layerReplicator addSublayer:layer];
```

Animation

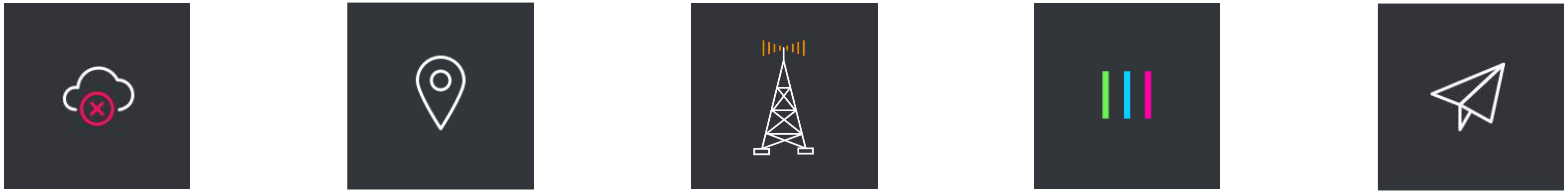
```
// UIColor* targetColor; float dration;

CABasicAnimation* animation = [CABasicAnimation new];
animation.keyPath = @"backgroundColor";
animation.toValue = (id)targetColor.CGColor;
animation.duration = duration;
animation.removedOnCompletion = NO;
animation.fillMode = kCAFillModeForwards;
[self.layerSeed addAnimation:animation forKey:nil];
```

Demo 5
Line, Circle and Flower

Flower

```
//int iteration
CABasicAnimation* animation = [[CABasicAnimation alloc] init];
animation.keyPath = @“transform";

animation.toValue = [NSValue
valueWithCATransform3D:CATransform3DMakeTranslation(iteration, 0, 0)];

animation.duration = DURATION*2;
animation.removedOnCompletion = NO;
animation.fillMode = kCAFillModeForwards;
```

. . . BezierPath?



SVG Format

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<svg width="74px" height="129px" viewBox="0 0 74 129" version="1.1" xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink" xmlns:
sketch="http://www.bohemiancoding.com/sketch/ns">
    <!-- Generator: Sketch 3.3.3 (12072) - http://www.bohemiancoding.com/sketch -->
    <title>Stroke 1216 + Stroke 1217</title>
    <desc>Created with Sketch.</desc>
    <defs></defs>
    <g id="Layouts" stroke="none" stroke-width="1" fill="none" fill-rule="evenodd" sketch:type="MSPage">
        <g id="easter-egg---4" sketch:type="MSArtboardGroup" transform="translate(-151.000000, -214.000000)" stroke-linecap="round" stroke-linejoin="round
        ">
            <g id="Stroke-1216-+-Stroke-1217" sketch:type="MSLayerGroup" transform="translate(151.000000, 214.000000)">
                <path d="M28.6428571,47.875 C28.6428571,44.8215417 26.1468571,42.3333333 23.0714286,42.3333333 C19.9904286,42.3333333 17.5,44.8215417 17.
                5,47.875 C17.5,52.4690417 13.756,56.1875 9.14285714,56.1875 C4.52971429,56.1875 0.785714286,52.4690417 0.785714286,47.875 L0.785714286,36.
                7916667 C0.785714286,16.8970833 16.9985714,0.770833333 37,0.770833333 C57.0014286,0.770833333 73.2142857,16.8970833 73.2142857,36.7916667
                L73.2142857,47.875 C73.2142857,52.4690417 69.4702857,56.1875 64.8571429,56.1875 C60.244,56.1875 56.5,52.4690417 56.5,47.875 C56.5,44.
                8215417 54.004,42.3333333 50.9285714,42.3333333 C47.8475714,42.3333333 45.3571429,44.8215417 45.3571429,47.875 L45.3571429,53.4166667 C45.
                3571429,58.0107083 41.6131429,61.7291667 37,61.7291667 C32.3812857,61.7291667 28.6428571,58.0107083 28.6428571,53.4166667 L28.6428571,47.
                875 L28.6428571,47.875 Z" id="Stroke-1216" stroke="#6DF354" sketch:type="MSShapeGroup"></path>
                <path d="M62.2452571,55.7546958 L37.0011143,128.228612 L11.7514,55.6660292" id="Stroke-1217" stroke="#E0C4AC" sketch:type="MSShapeGroup"><
                /path>
            </g>
        </g>
    </g>
</svg>
```

REMOVED: Video PaintCode

FMSVGKit

- nativer support für SVG unter iOS
- 50% der SVG möglichkeiten enthalten
- Animationsupport

Demo 6 - FMSVGKit

Transitions

presentViewController:

```
UIViewController* viewController = [UIViewController new];

[self presentViewController:viewController animated:YES completion:nil];
```

presentViewController:

```
UIViewController* viewController = [UIViewController new];

viewControllerPlayer.transitioningDelegate = self;

[self presentViewController:viewController animated:YES completion:nil];
```

UIViewControllerTransitioningD

```
@protocol UIViewControllerTransitioningDelegate <NSObject>

@optional
-(<UIViewControllerAnimatedTransitioning>)
animationControllerForPresentedController:(UIViewController *)presented
presentingController:(UIViewController *)presenting
sourceController:(UIViewController *)source;


...
@end
```

UIViewController Transitioning

```
// id <UIViewControllerAnimatedTransitioning> transitionAnimator;

-(<UIViewControllerAnimatedTransitioning>)
animationControllerForPresentedController:(UIViewController *)presented
presentingController:(UIViewController *)presenting
sourceController:(UIViewController *)source{

 return self.transitionAnimator;

}
```

UIViewControllerAnimated…

```
@protocol UIViewControllerAnimatedTransitioning <NSObject>

- (NSTimeInterval)transitionDuration:(nullable id
<UIViewControllerContextTransitioning>)transitionContext;

- (void)animateTransition:(id
<UIViewControllerContextTransitioning>)transitionContext;


...
@end
```

transitionDuration

```
- (NSTimeInterval)transitionDuration:(nullable id
<UIViewControllerContextTransitioning>)transitionContext{
   return DURATION;
}
```

id<UIViewControllerTransiti…

```
- (void)animateTransition:transitionContext{

UIView* containerView = transitionContext.containerView;

UIView* toView = [transitionContext viewForKey:UITransitionContextToViewKey];

toView.frame = containerView.frame;

[containerView addSubview:toView];
```

id<UIViewControllerTransiti…

```
UIView* fromView = [transitionContext
viewForKey:UITransitionContextFromViewKey];

[containerView bringSubviewToFront:fromView];

BurningView* viewBurning = [BurningView new];
viewBurning.frame = containerView.frame;

[containerView addSubview:viewBurningBottom];
```

custom Animator

```
[UIView animateWithDuration:DURATION delay:0
options:UIViewAnimationOptionCurveEaseInOut animations:^{
   CGRect targetFrame = …//FrameTop;
   viewBurning.frame = targetFrame;
   fromView.frame = targetFrame;
} completion:^(BOOL completition){
   [viewBurning  removeFromSuperview];
   [self.transitionContext completeTransition:YES];
}];
```

Demo 7
burning carpet

Recap

- CALayer/CAShapeLayer
- CABasic Animation
- CAEmitterLayer
- CAReplicatorLayer
- UIViewControllerTransitioningDelegate

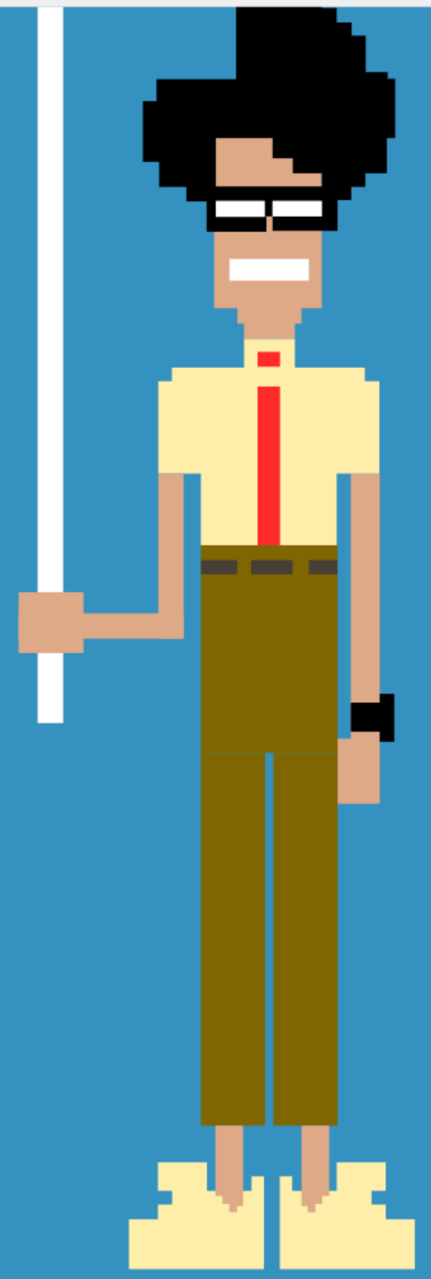
Layer, what else?

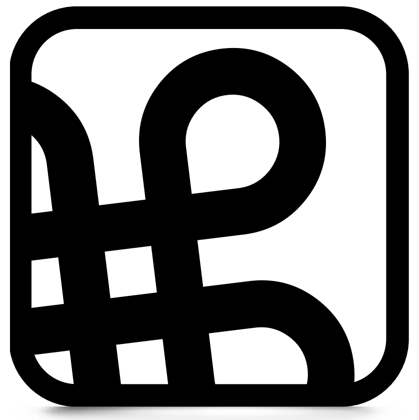
- CAGroupAnimation
- CAKeyframeAnimation
- Custom animateable Properties
- shouldRasterize
- …

Source / Kontakt

- https://bitbucket.org/fluidmobile/macoun2015
- tw@fluidmobile.de

Danke!
Fragen?





Macoun