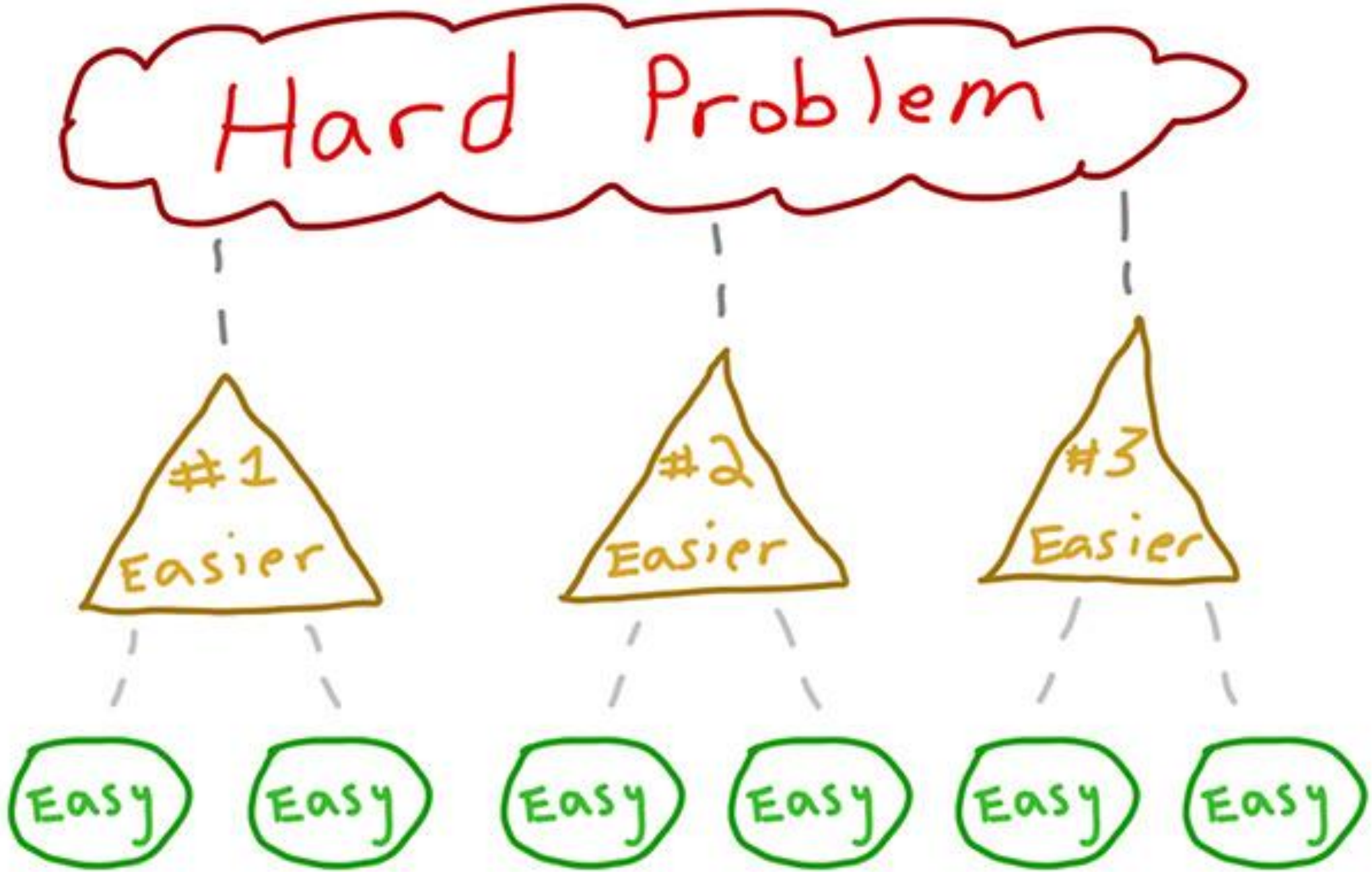
Xamarin.Forms UI's

Build **Amazing Things**
from **Simple Things**


Hard Problem
#1
Easier
#2
Easier
#3
Easier
Easy
Easy
Easy
Easy
Easy
Easy

KymPhillpotts

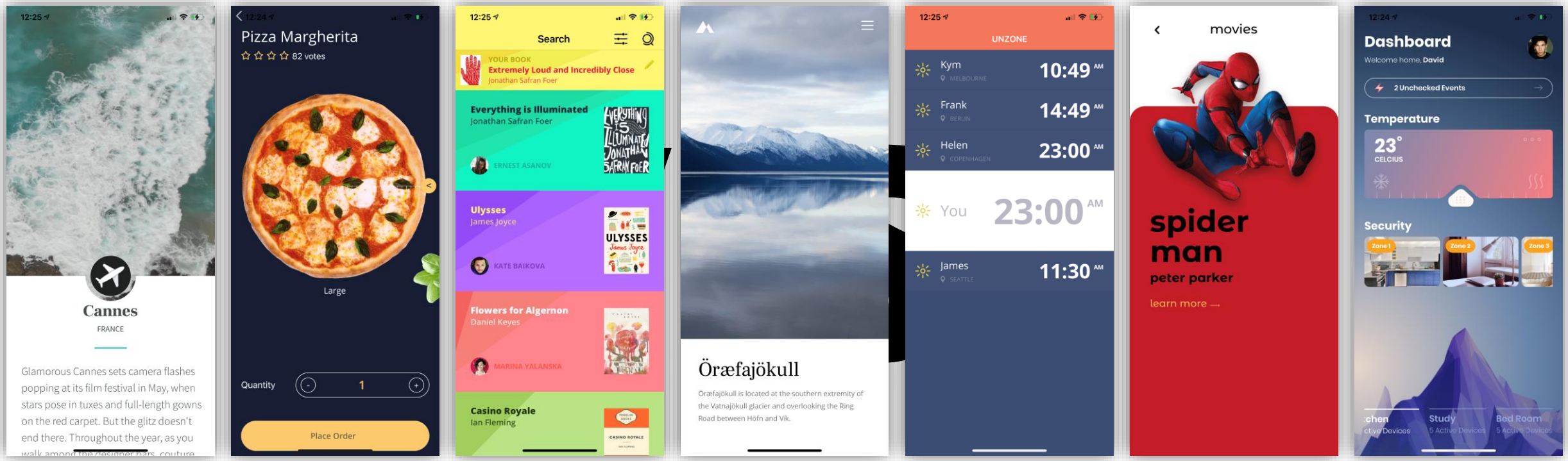
kymphillpotts.com

twitter.com/kphillpotts

twitch.tv/kymphillpotts

youtube.com/kphillpotts

Can you create amazing looking apps with Xamarin.Forms?



https://kymphillpotts.com/uichallenges

I’m not a designer.

Finding **Inspiration**

dribbble

Bēhance

Download on the App Store

Get it on Google play

Download on the Windows Store

Javier Suárez

Leomaris Reyes

Oludayo Alli (DevCrux)

Altvir Cardoso

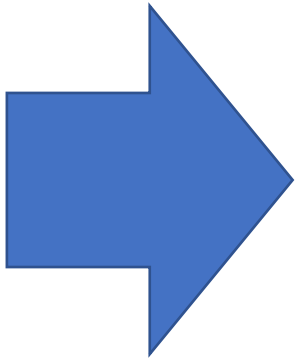
Charlin Agremonte

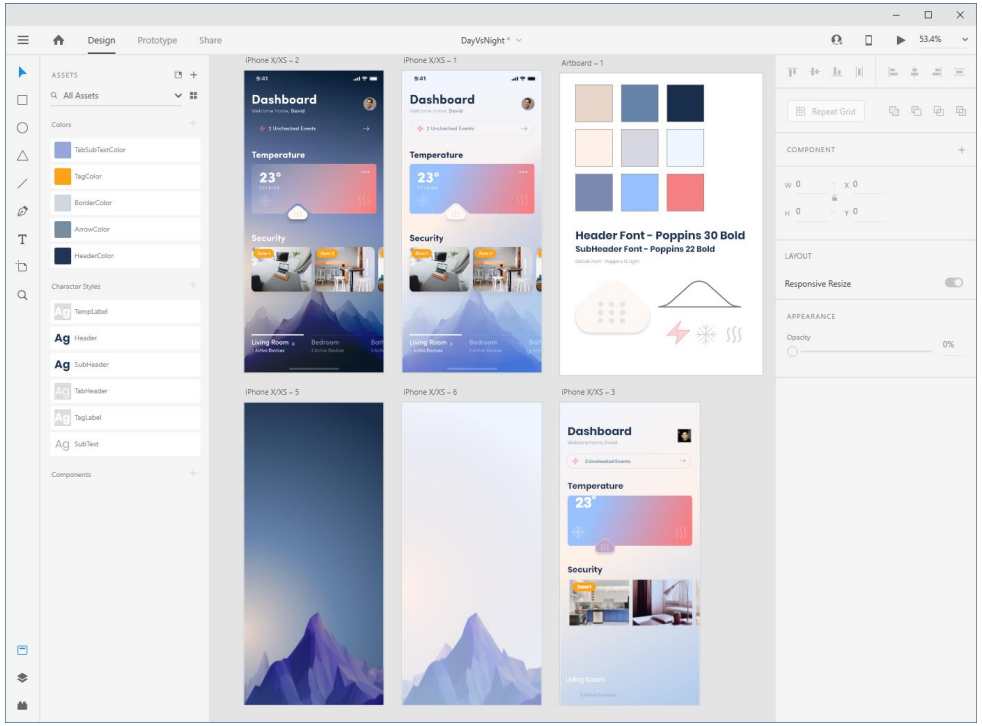
Luis Pujols

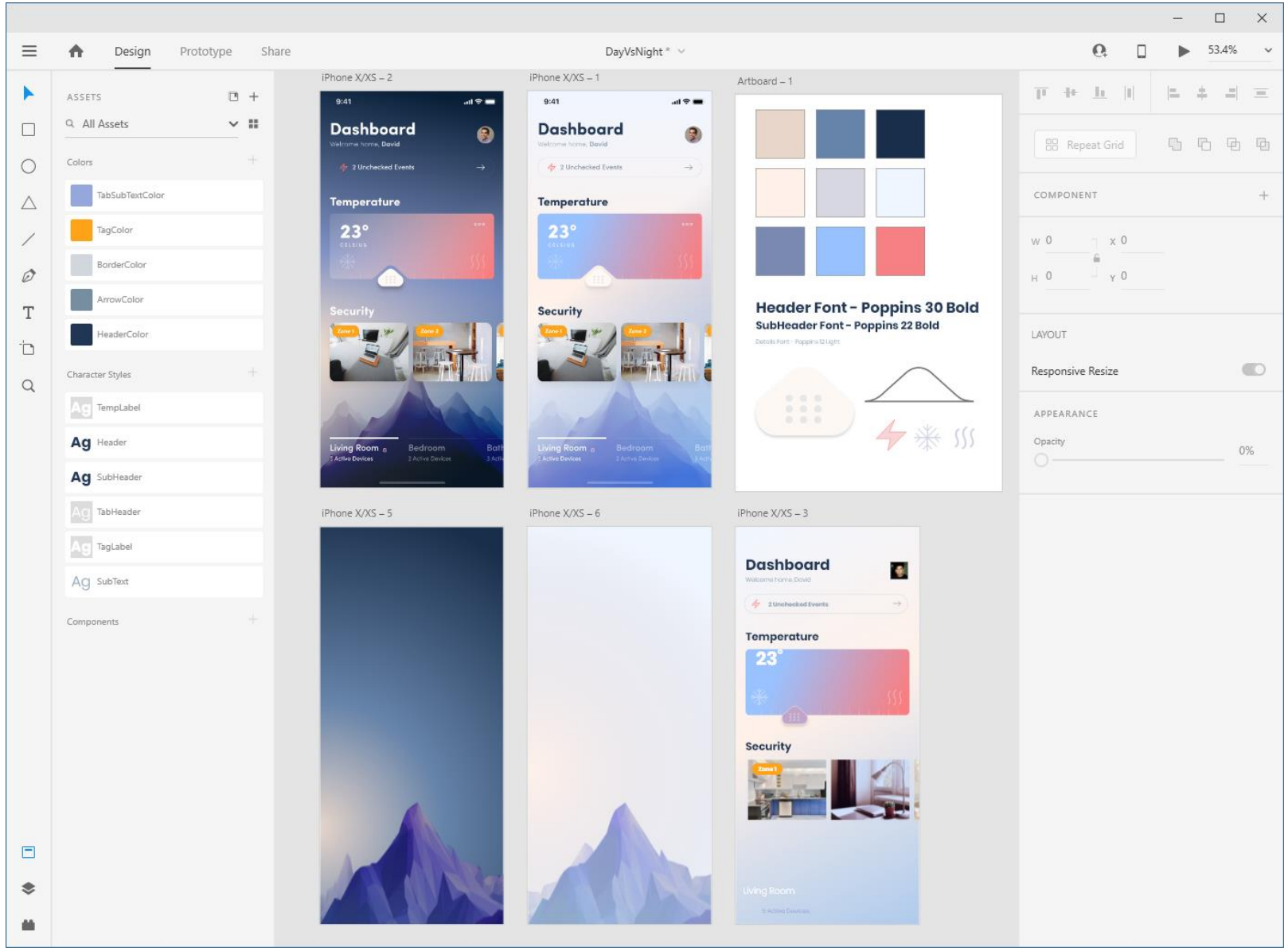
https://github.com/jsuarezruiz/xamarin-forms-goodlooking-UI

Breaking down **design**


9:41
Dashboard
Welcome home, David
2 Unchecked Events
Temperature
23°
CELSIUS
Security
Zone 1
Zone 2




Design
Prototype
Share
Dashboard
Temperature
23°
Security
Header Font - Poppins 30 Bold
SubHeader Font - Poppins 22 Bold



- Fonts Family & Sizes
- Colors
- Margins & Spacing
- Graphical assets

Use **Resources** and **Styles**

```
<!--  Colors  -->
<Color x:Key="BorderColor">#d2d7dd</Color>
<Color x:Key="HeaderColor">#213654</Color>
<Color x:Key="SubTextColor">#95a8b6</Color>

<!-- Sizes -->
<x:Double x:Key="HeaderFontSize">32</x:Double>

<!-- Styles -->
<Style x:Key="Header" TargetType="Label">
    <Setter Property="TextColor" Value="{StaticResource HeaderColor}" />
    <Setter Property="FontFamily" Value="HeaderFont" />
    <Setter Property="FontSize" Value="{StaticResource HeaderFontSize}" />
</Style>

<!--  Implicit Styles  -->
<Style TargetType="Grid">
    <Setter Property="RowSpacing" Value="0" />
    <Setter Property="ColumnSpacing" Value="0" />
</Style>

<Style TargetType="Frame">
    <Setter Property="Padding" Value="0" />
    <Setter Property="HasShadow" Value="False" />
</Style>
```

Consistency

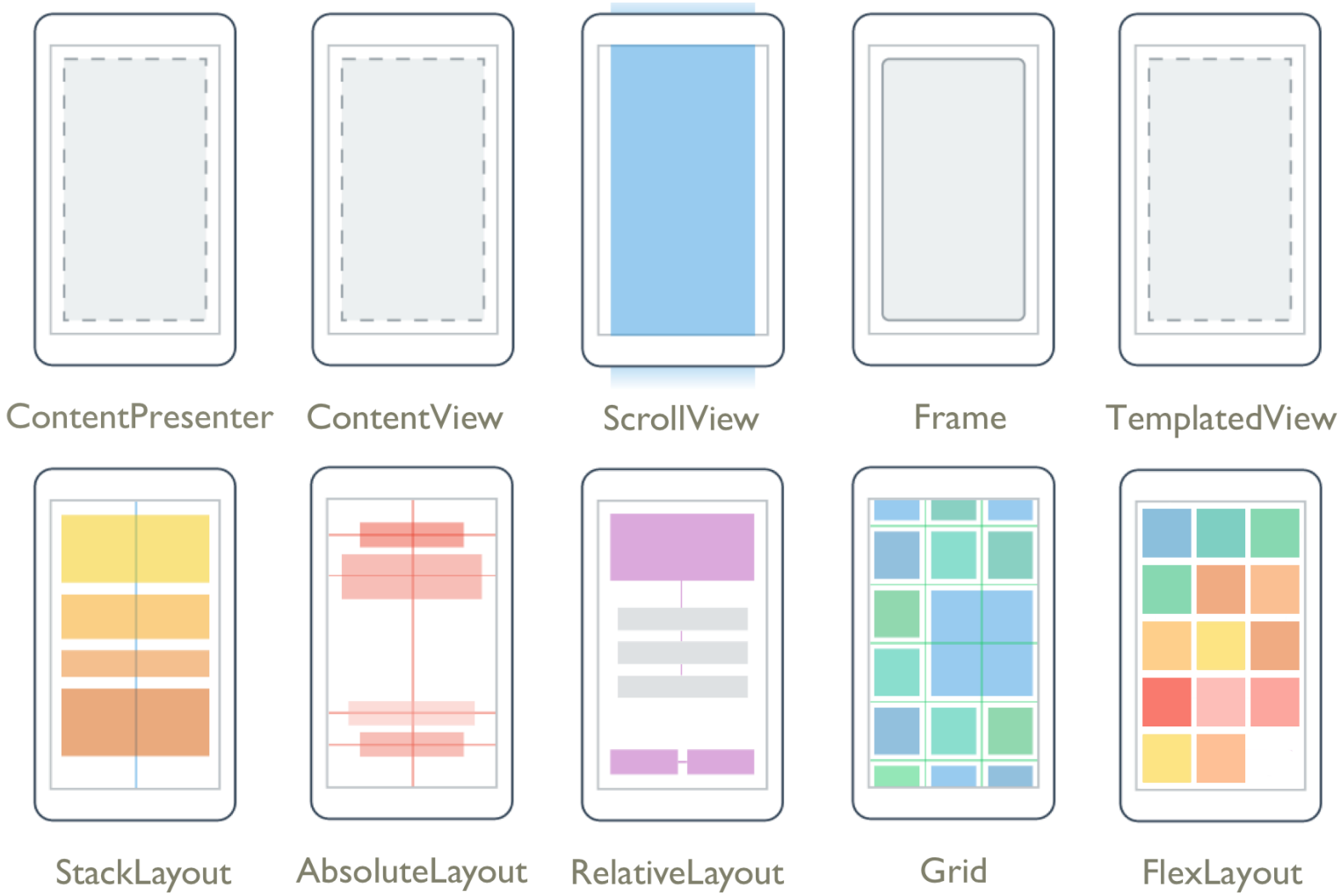
Faster feedback whilst building

Easier tweaking

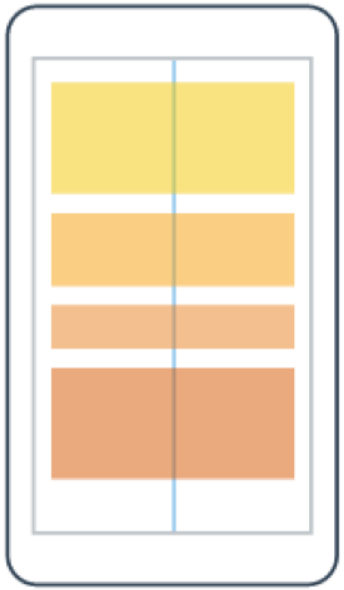
Learn the **Simple Things**

Layout Containers

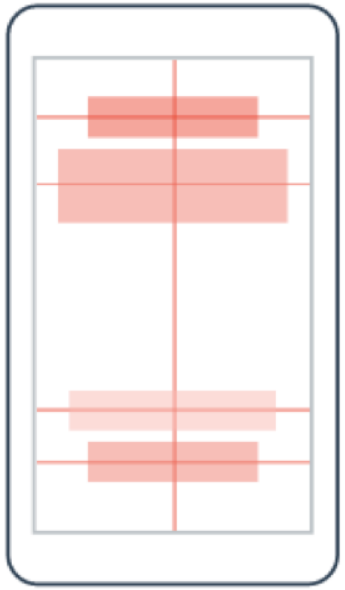
Layout Containers



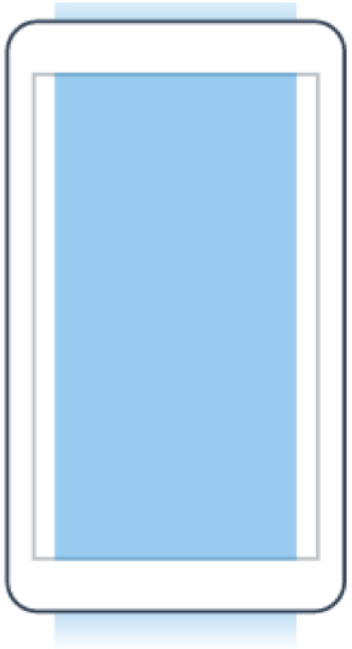
(Almost) all layouts can be created with a combination of these



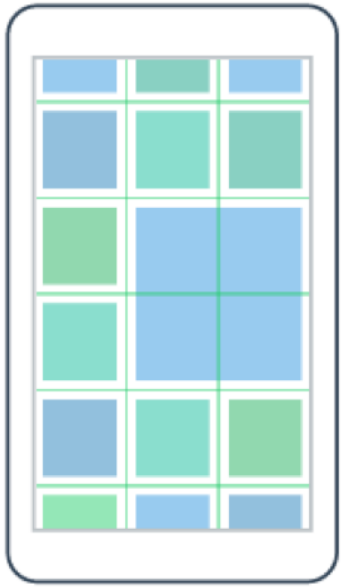
StackLayout



AbsoluteLayout



ScrollView



Grid

Grid (3 Rows)

Vertical StackLayout

Grid (3 cols, 2 rows)

Overlapping Elements

Positioning Views

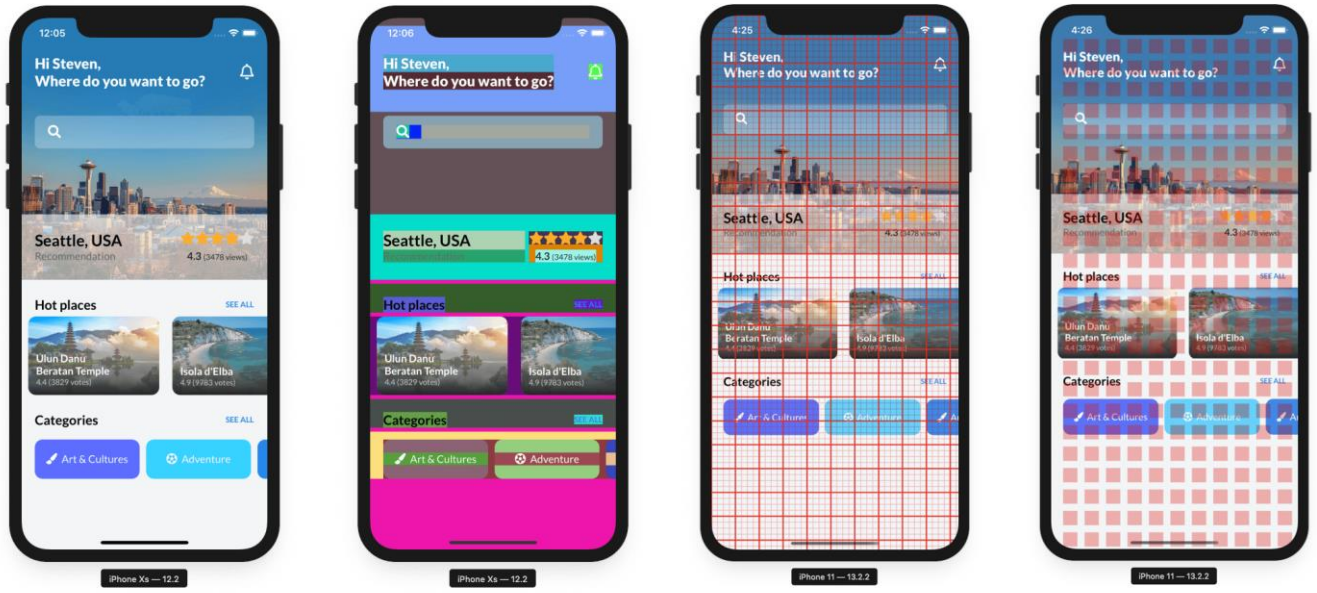
- HorizontalOptions / VerticalOptions
- WidthRequest / HeigthRequest
- Margin
- Padding
- Spacing (StackLayouts)
- RowSpacing / ColumnSpacing (Grids)
- RowSpan / ColumnSpan

Transform Properties

- Translation X/Y
- Opacity
- Scale
- Rotation X/Y/Z

Debugging Layouts

Use Xamarin.Forms.DebugRainbows by Steven Thewissen



Build
Amazing Things

Art Auction

Designer: Alex Pesenka

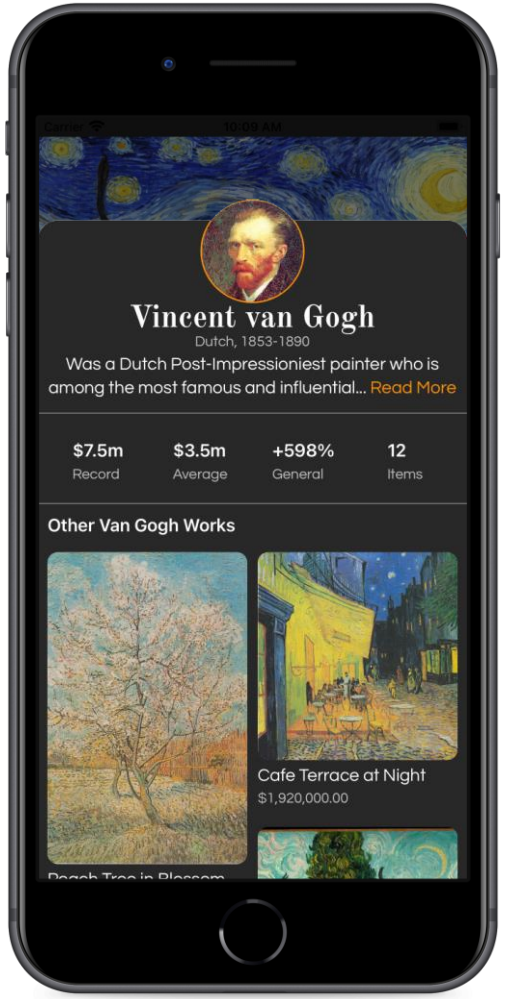
Components:

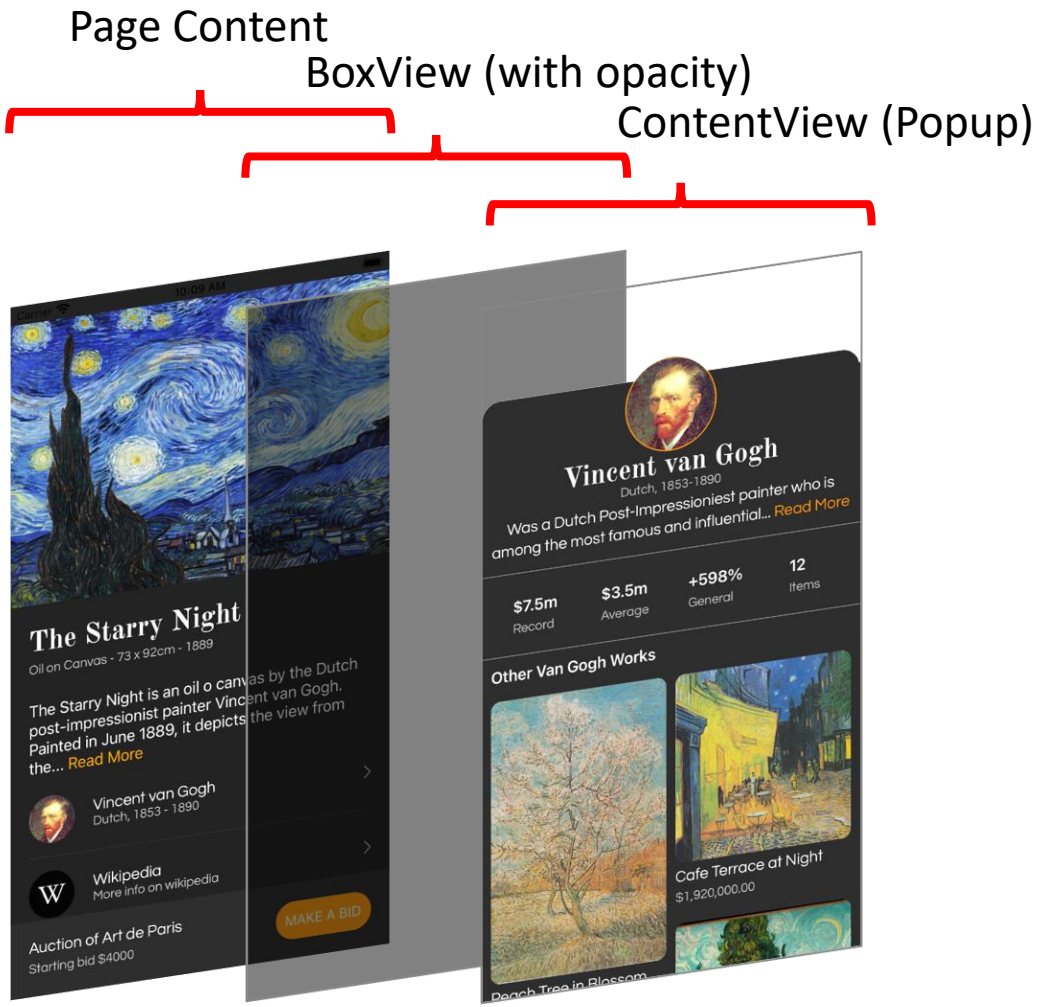
- Xamarin.Forms
- PancakeView
- ImageCircle

Github: https://github.com/kphillpotts/artauction

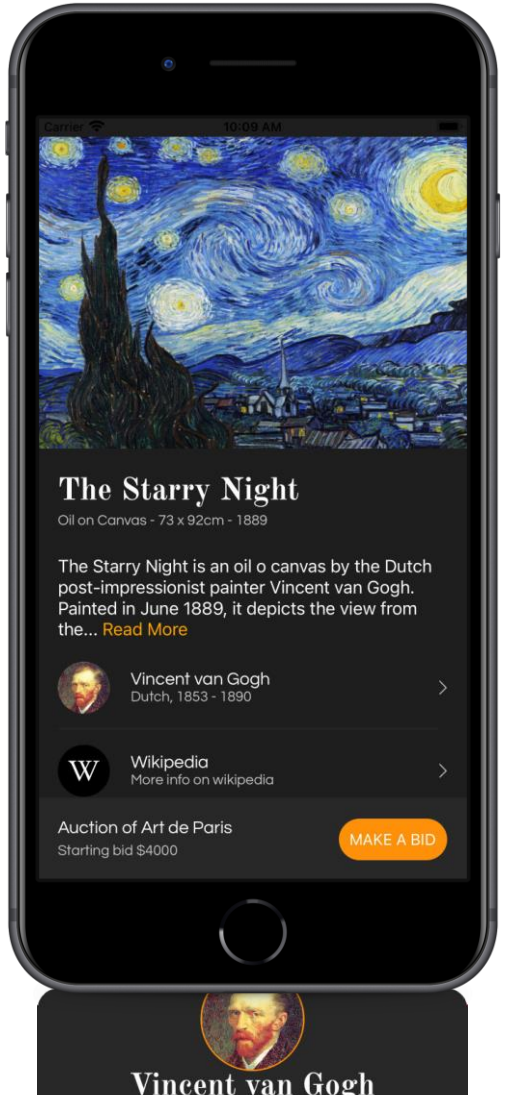
Dribbble: https://dribbble.com/shots/6177235-Valuable-Auction-Product-Page

How to Popup and Fade Background

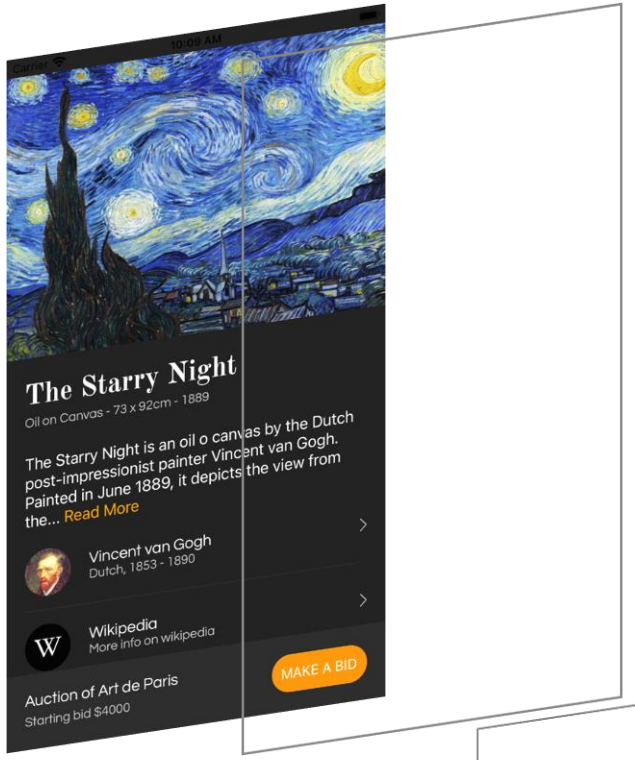




How to Popup and Fade Background



BoxView (Opacity 0, Visible=False)

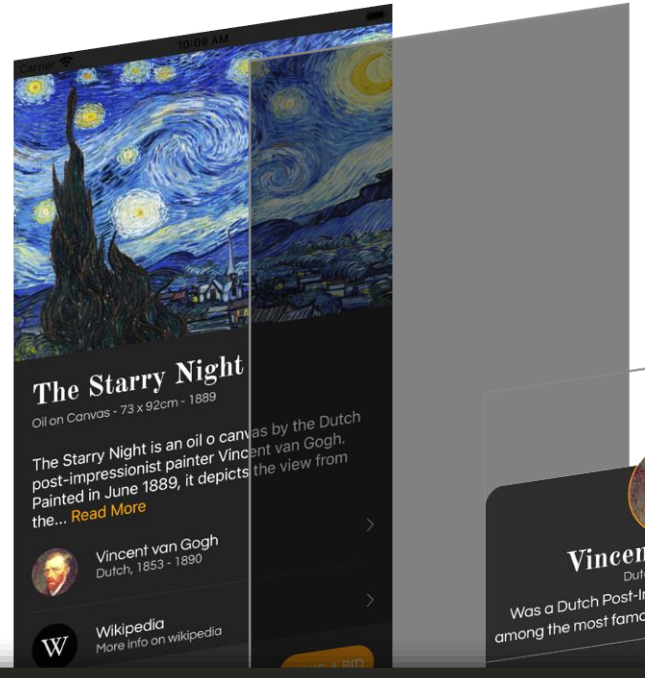


TranslationY = Page.Height

How to Popup and Fade Background

IsVisble=True, FadeTo(1)

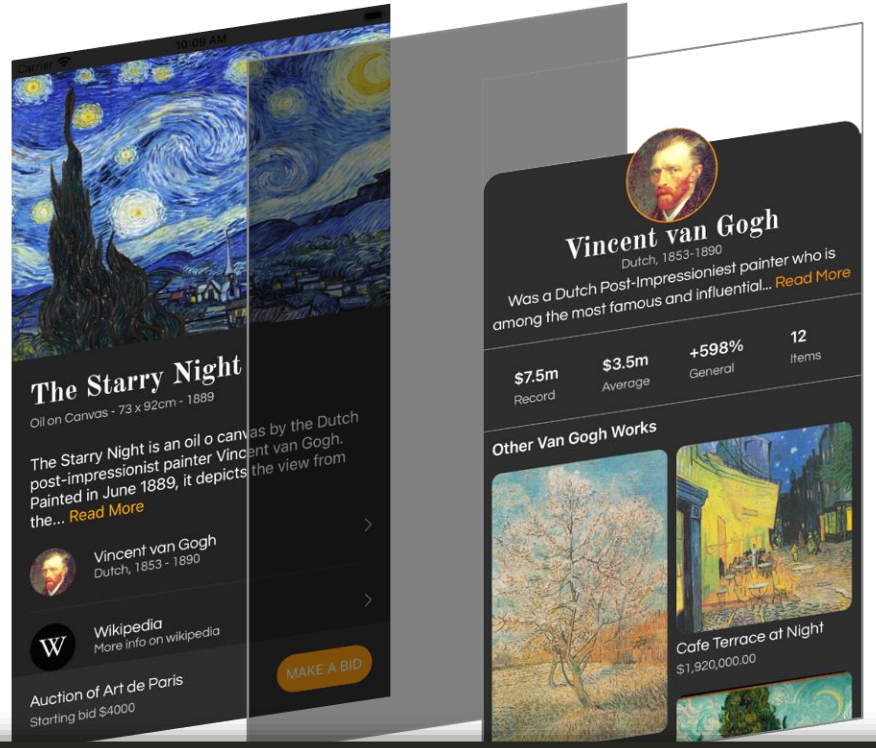
TranslationY = Page.Height – FirstSectionHeight




```
private void Artist_Tapped(object sender, EventArgs e)
{
    var firstSection = ArtistDetailsPopup.FirstSectionHeight;
    PageFader.IsVisible = true;
    PageFader.FadeTo(1, AnimationSpeed, Easing.SinInOut);
    ArtistDetailsPopup.TranslateTo(0, Height - firstSection, AnimationSpeed, Easing.SinInOut);
}
```

How to Popup and Fade Background

TranslationY = 80




```
private void ExpandArtistDetails()
{
    ArtistDetailsPopup.TranslateTo(0, 80, AnimationSpeed, Easing.SinInOut);
}
```

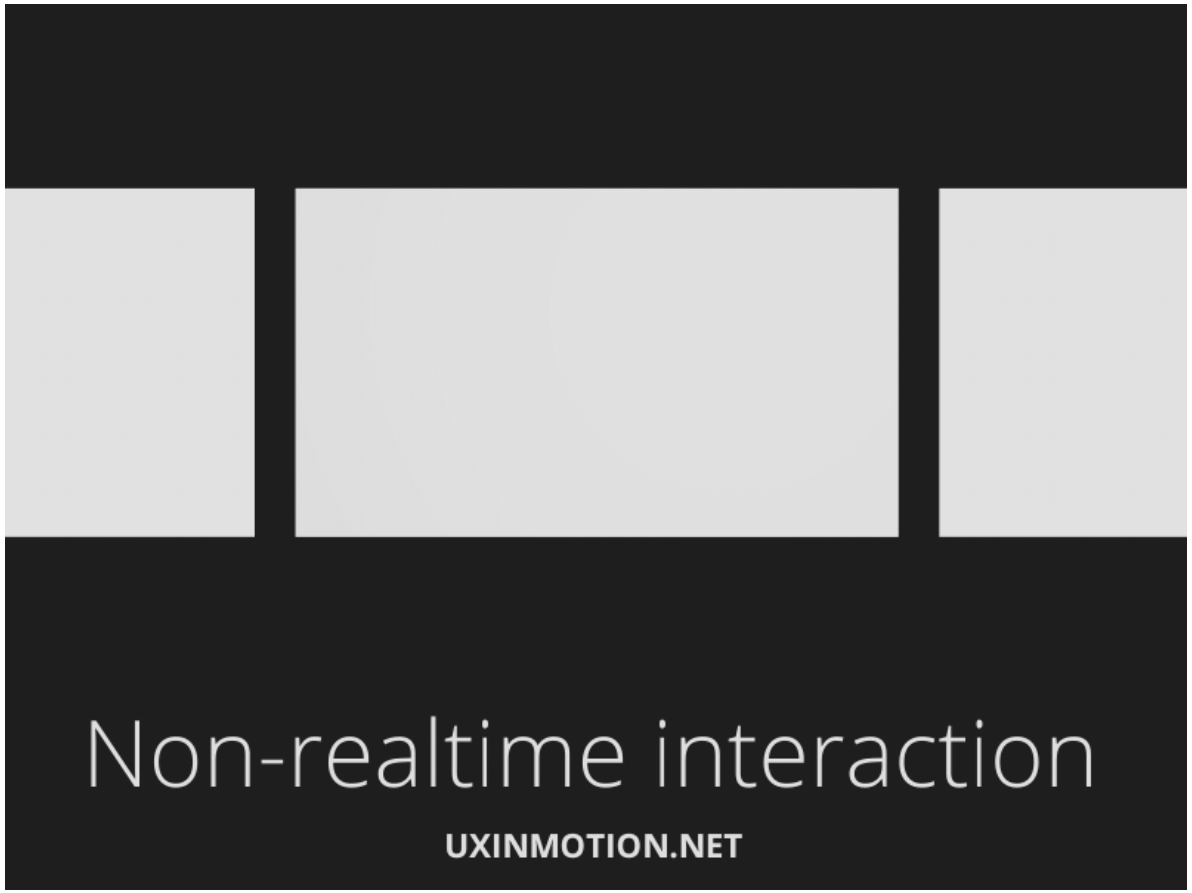
How to Popup and Fade Background

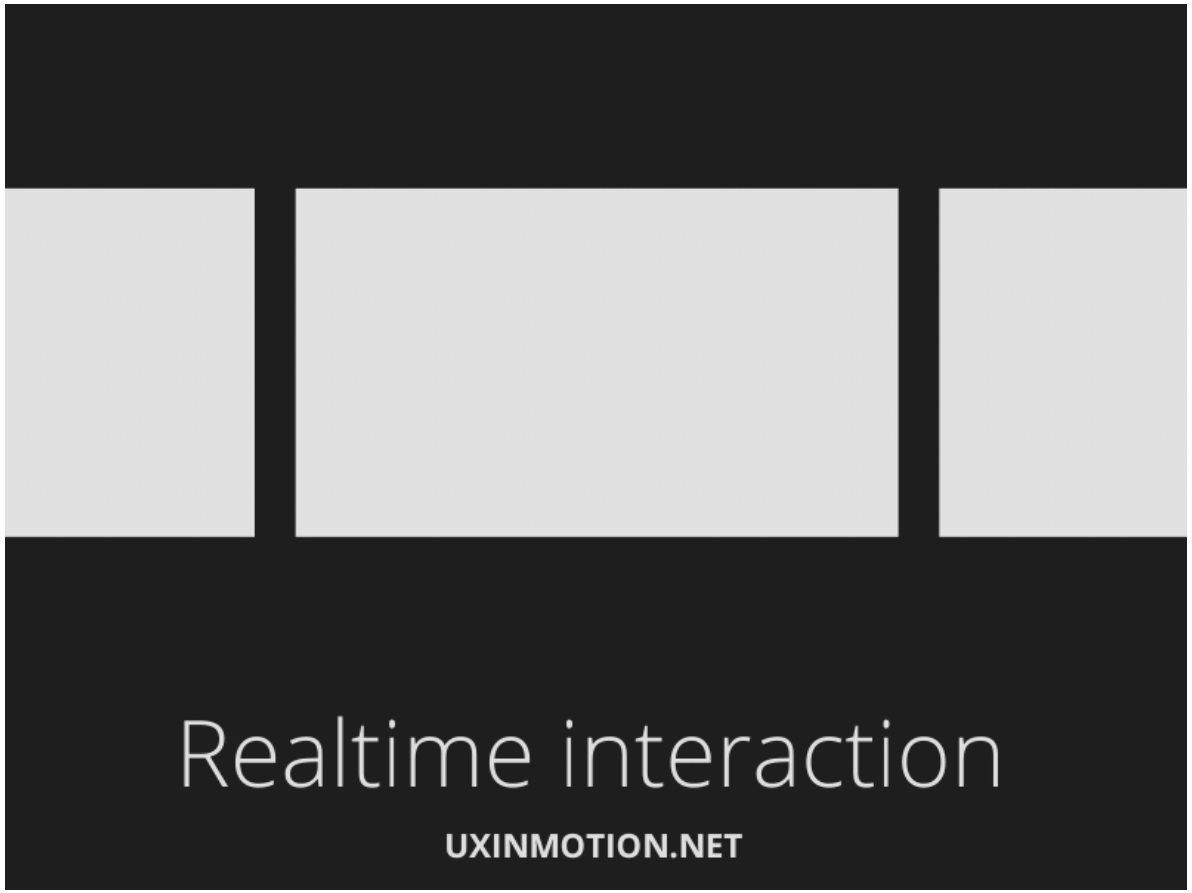
BoxView (Opacity 0, Visible=False)

TranslationY = Page.Height

```
private async void PageFader_Tapped(object sender, EventArgs e)
{
    _ = ArtistDetailsPopup.TranslateTo(0, Height, AnimationSpeed, Easing.SinInOut);
    await PageFader.FadeTo(0, AnimationSpeed, Easing.SinInOut);
    PageFader.IsVisible = false;
}
```

Different Types of Interactions





UnZone

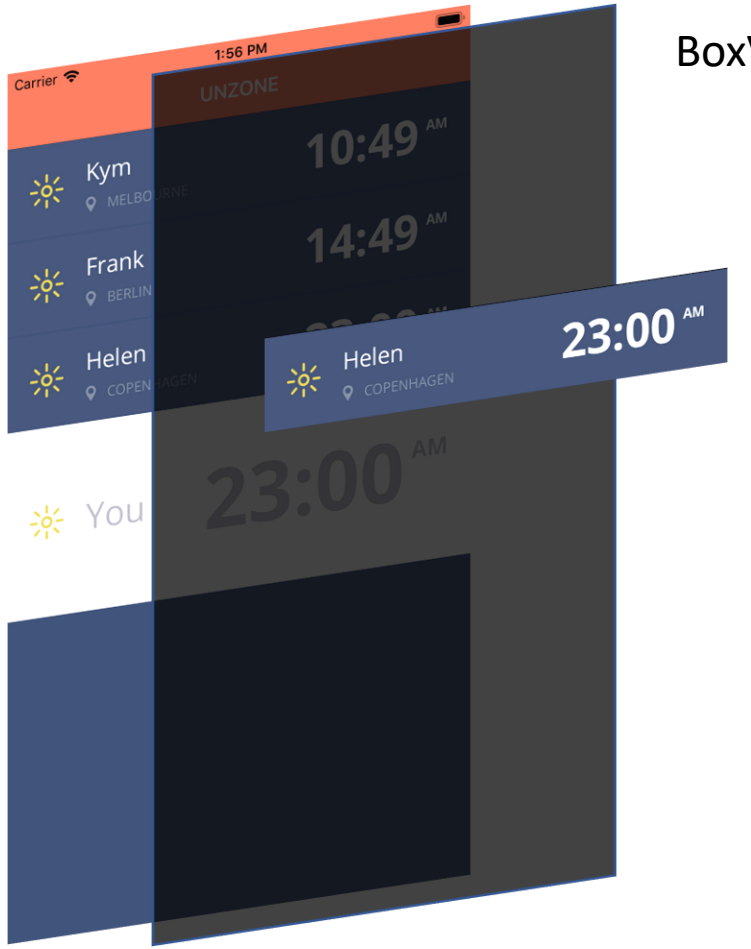
Designer: Rick Waalders

Components:

- Xamarin.Forms

Github: https://github.com/kphillpotts/unzone
Dribbble: https://dribbble.com/shots/1551934-Unzone-Details-popup-animation

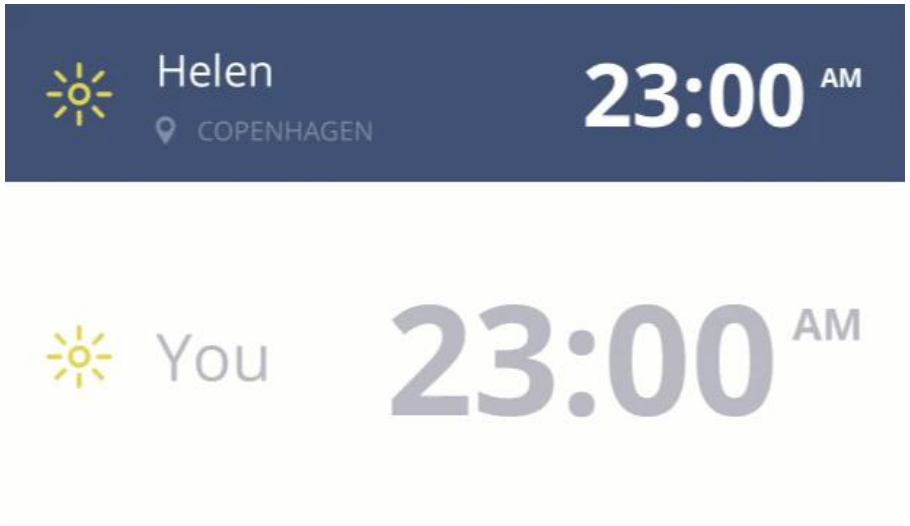
A more advanced Popup



BoxView (Opacity .5)

Copy of the Cell
Placed at the same position
As the tapped cell
(using AbsoluteLayout and Bounds)

How to Fold




```
await OpenDropDown(DeleteDropDown);
await OpenDropDown(EditDropDown);
await OpenDropDown(InfoDropDown);
```

```
private async Task OpenDropDown(View view)
{
    view.IsVisible = true;
    view.RotationX = -90;
    view.Opacity = 0;
    _ = view.FadeTo(1, animationSpeed);
    await view.RotateXTo(0, animationSpeed);
}
```

The key is setting the **AnchorX** and **AnchorY** properties to determine where the rotation is based

How to Flip


```
private async Task Flip (VisualElement from, VisualElement to)
    {
        await from.RotateYTo(-90, animationSpeed, Easing.SpringIn);
        to.RotationY = 90;
        to.IsVisible = true;
        from.IsVisible = false;
        await to.RotateYTo(0, animationSpeed, Easing.SpringOut);
    }
```

How to Flip

```
private async Task Flip (VisualElement from, VisualElement to)
    {
        await from.RotateYTo(-90, animationSpeed, Easing.SpringIn);
        to.RotationY = 90;
        to.IsVisible = true;
        from.IsVisible = false;
        await to.RotateYTo(0, animationSpeed, Easing.SpringOut);
    }
```

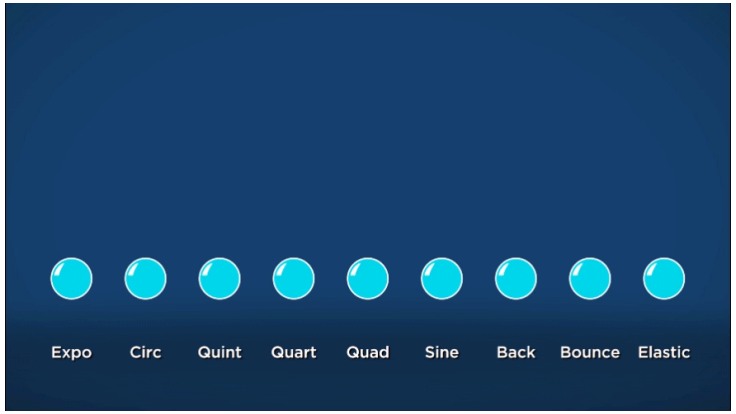
How to Flip

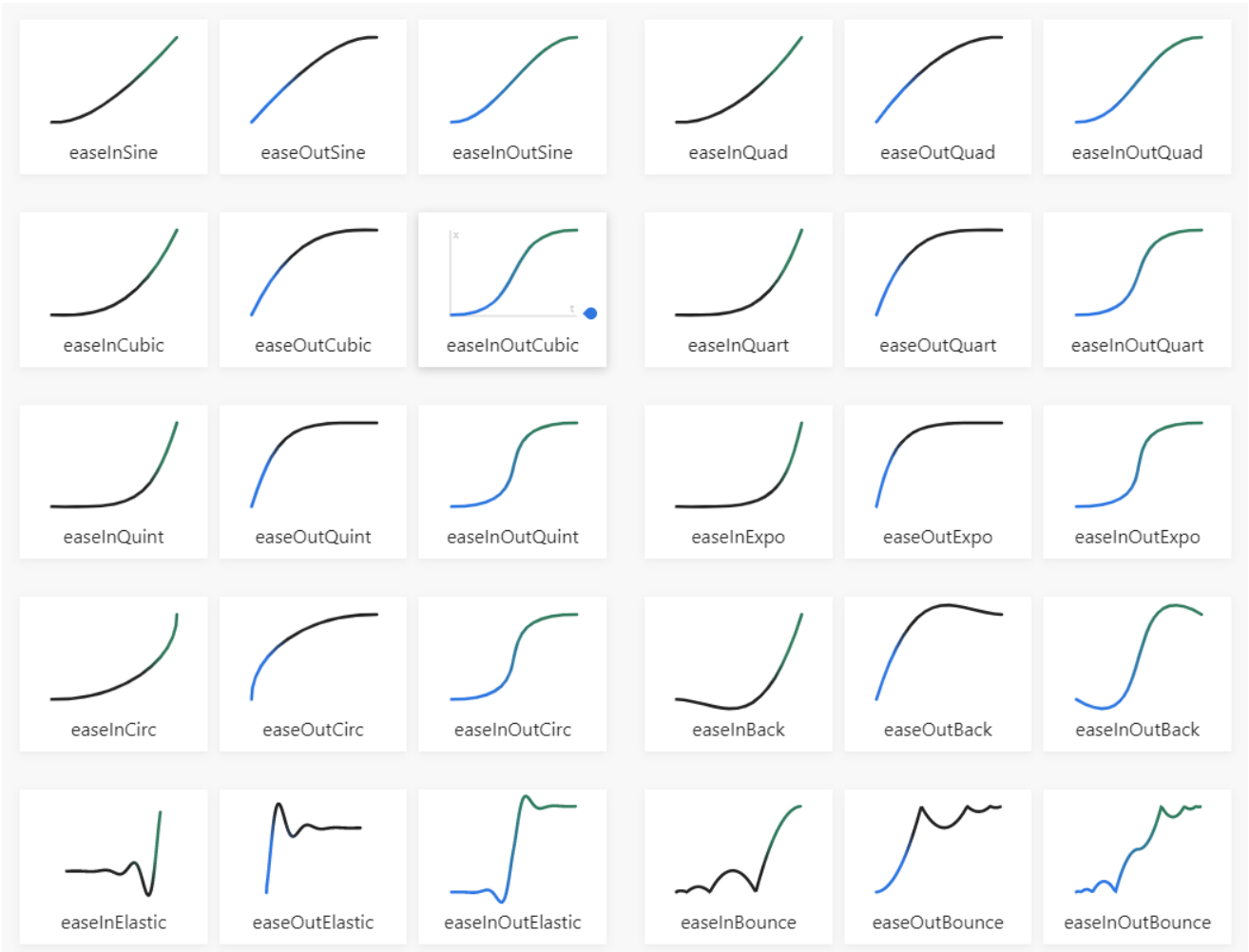
```
private async Task Flip (VisualElement from, VisualElement to)
    {
        await from.RotateYTo(-90, animationSpeed, Easing.SpringIn);
        to.RotationY = 90;
        to.IsVisible = true;
        from.IsVisible = false;
        await to.RotateYTo(0, animationSpeed, Easing.SpringOut);
    }
```

How to Flip


```
private async Task Flip (VisualElement from, VisualElement to)
    {
        await from.RotateYTo(-90, animationSpeed, Easing.SpringIn);
        to.RotationY = 90;
        to.IsVisible = true;
        from.IsVisible = false;
        await to.RotateYTo(0, animationSpeed, Easing.SpringOut);
    }
```

Easing Function





https://easings.net

How to float

```
private void AnimateCloseButton(VisualElement elementToTransform, bool entering)
    {
      …

       elementToTransform.FadeTo(endingOpacity, 500);
       elementToTransform.RotateTo(endingRotation, 700, Easing.SinInOut);
       elementToTransform.TranslateTo(0, endingTranslation, 600, translationEasing);
    }
```

Marvel Movies Interaction

Designer: Vijay Verma

Components:

- Xamarin.Forms
- PancakeView
- SkiaSharp
- CardsView
  https://github.com/AndreiMisiukevich/CardView

Github: https://github.com/kphillpotts/marvelcards
Dribbble: https://dribbble.com/shots/5935613-Marvel-Movies-Interaction

Page Layout

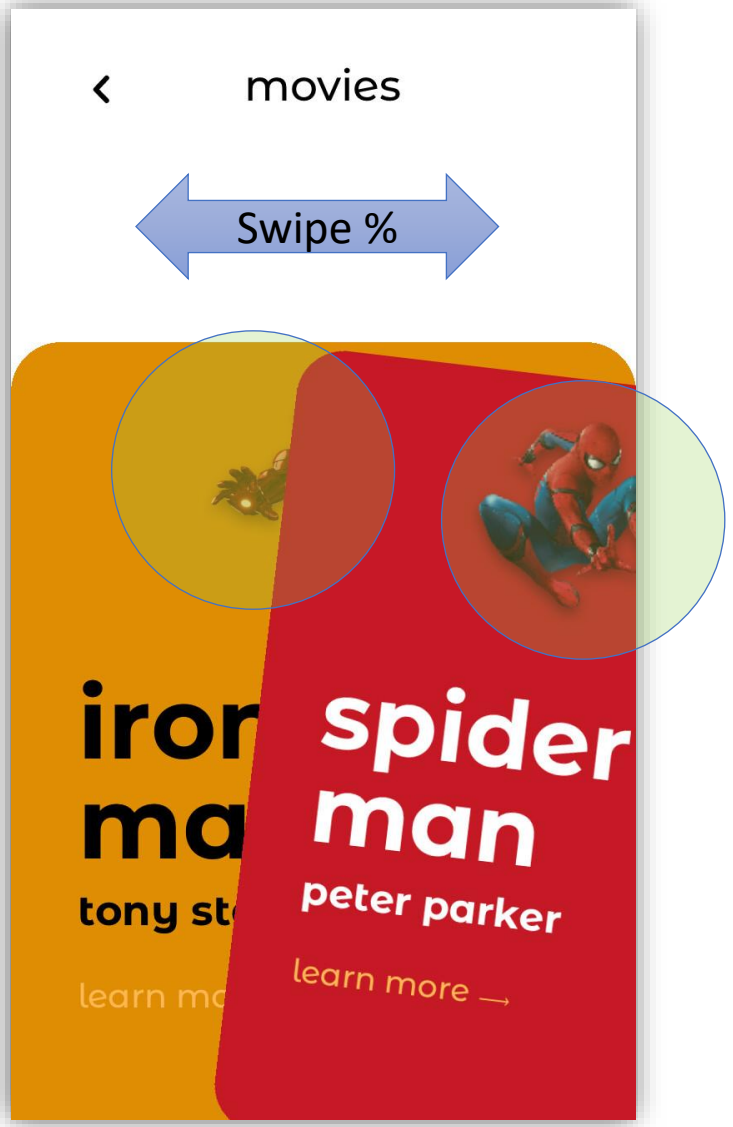
Page Container (Grid)

CardView

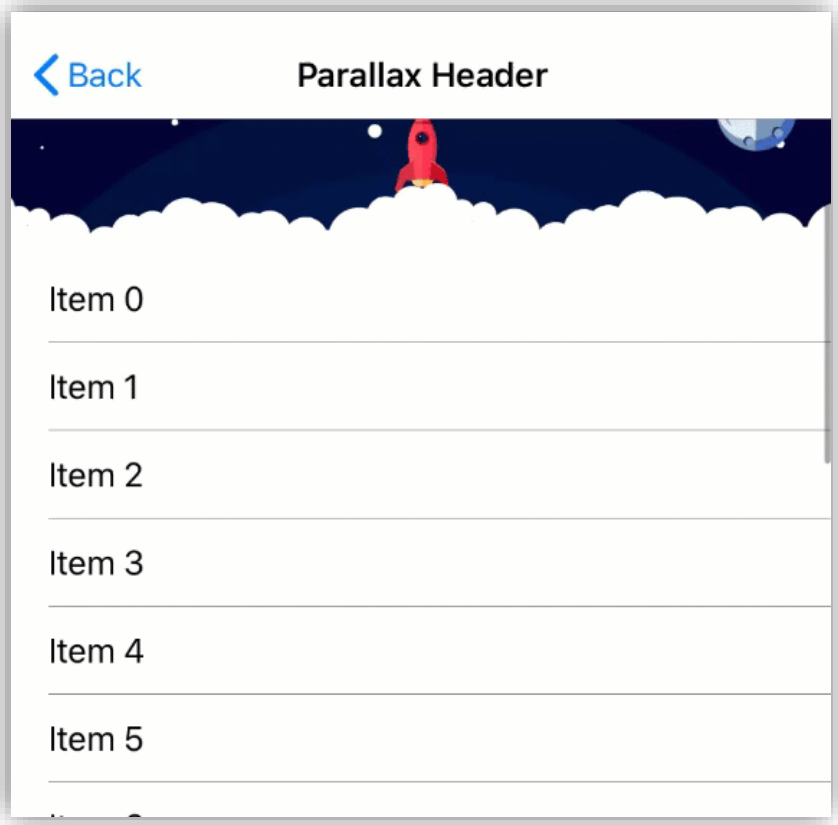
Overlays

Realtime interaction on cards

```
2 references | 0 changes | 0 authors, 0 changes
private void AnimateFrontCardDuringSwipe(HeroCard card, double percentFromCenter)
{
    // opacity of the maincard during swipe
    MainCardView.CurrentView.Opacity = LimitToRange((1 - (percentFromCenter)) * 2, 0, 1);

    // scaling on the main card during swipe
    card.MainImage.Scale = LimitToRange((1 - (percentFromCenter) * 1.5), 0, 1);

    // y offset of image during swipe
    card.MainImage.TranslationY = _heroImageTranslationY + (_movementFactor * percentFromCenter);

    // adjust opacity of image
    card.MainImage.Opacity = LimitToRange((1 - (percentFromCenter)) * 1.5, 0, 1); ;
}

1 reference | 0 changes | 0 authors, 0 changes
private void AnimateIncomingCardDuringSwipe(HeroCard nextCard, double percentFromCenter)
{
    // opacity fading in
    nextCard.MainImage.Opacity = LimitToRange(percentFromCenter * 1.5, 0, 1);

    // scaling in
    nextCard.MainImage.Scale = LimitToRange(percentFromCenter * 1.1, 0, 1);

    var offset = _heroImageTranslationY + (_movementFactor * (1-(percentFromCenter*1.1)));
    nextCard.MainImage.TranslationY = LimitToRange(offset, _heroImageTranslationY,
        _heroImageTranslationY + _movementFactor);
}
```



Parallax




```
var scrollValue = e.ScrollY;
Rocket.TranslationY = scrollValue / 2.5;
Moon.TranslationY = scrollValue / 1.5;
Clouds2.TranslationY = scrollValue / 2.2;
Background.TranslationY = scrollValue;
```

Parallax is just translations based on a multiplier

Card Transition

User selects card element

Background expands up

Gradient slides up

Other elements animate in

Pizza Shop

Designer: Bidyut Kumar Bera

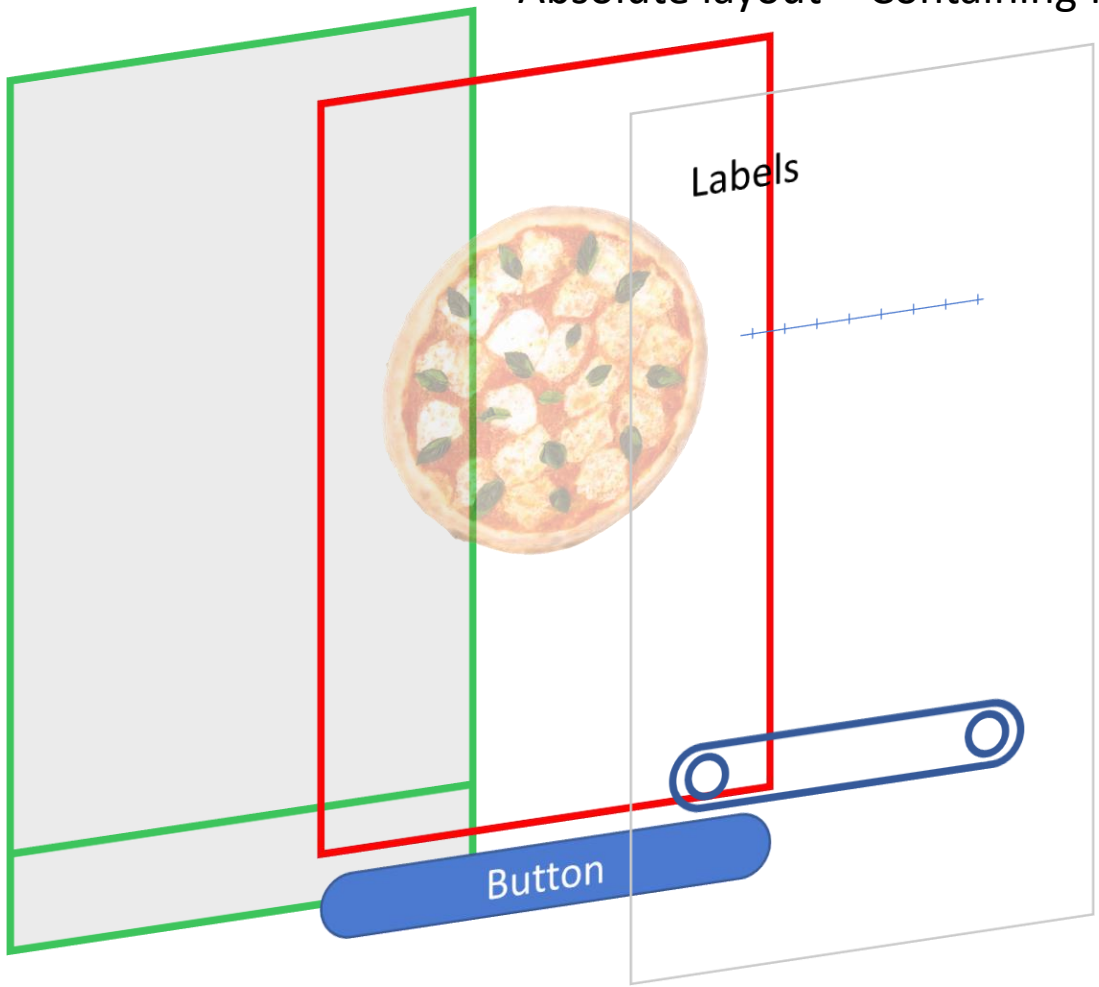
Components:

- Xamarin.Forms
- PancakeView
- SkiaSharp

Github: https://github.com/kphillpotts/pizza
Dribbble: https://dribbble.com/shots/10921038-Pizza-Shop-app-Interaction

Page Layout

Absolute layout – Containing flying pizza



Other UI Elements in the Row 0
of the Grid main container grid

Main Container - Grid

State based animations

```
enum State
{
    Small,
    Medium,
    Large
}
```

```
var animState = new AnimationStateMachine();

animState.Add(State.Small, new ViewTransition[]
{
    new ViewTransition(Pizza, AnimationType.Layout, smallRect),
    new ViewTransition(Pizza, AnimationType.Rotation, 45),
    // ... etc.
});
animState.Add(State.Medium, new ViewTransition[]
{
    new ViewTransition(Pizza, AnimationType.Layout, mediumRect),
    new ViewTransition(Pizza, AnimationType.Rotation, 90),
    // ... etc.
});
animState.Add(State.Large, new ViewTransition[]
{
    new ViewTransition(Pizza, AnimationType.Layout, largeRect),
    new ViewTransition(Pizza, AnimationType.Rotation, 135),
    // ... etc.
});
```

```
private void PizzaRulerThumb_Tapped(object sender, EventArgs e)
{
    // navigate to the next state
    switch (animState.CurrentState)
    {
        case State.Small:
            animState.Go(State.Medium);
            break;
        case State.Medium:
            animState.Go(State.Large);
            break;
        case State.Large:
            animState.Go(State.Small);
            break;
    }
}
```

Trigger State Transitions

Create Transforms for different states

AnimationStateMachine

Magic Happens

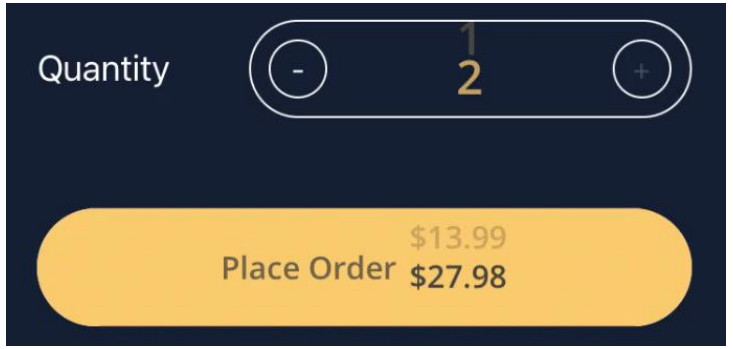
https://devblogs.microsoft.com/xamarin/complex-animations-xamarin-forms-using-finite-state-machine/

How to eat a pizza

```
private async Task PizzaFly()
{
    // check if the pizza is already flying
    if (FlyingPizza.IsVisible) return;

    // position flying pizza exactly over the display pizza
    FlyingPizza.IsVisible = true;
    AbsoluteLayout.SetLayoutBounds(FlyingPizza, Pizza.Bounds);

    // work out where it needs to fly to?
    var buttonBounds = PlaceOrderButton.Bounds;
    var size = new Size(buttonBounds.Height, buttonBounds.Height);
    var location = new Point(buttonBounds.Right - size.Width, buttonBounds.Top);
    var chompBounds = new Rectangle(location, size);

    // animate the pizza down
    _ = FlyingPizza.LayoutTo(chompBounds, 500, Easing.SinInOut);
    _ = FlyingPizza.RelRotateTo(90, 500, Easing.SinInOut);

    // do the button chomp
    var buttonChompBounds = new Rectangle(PlaceOrderButton.Bounds.Location,
        new Size(PlaceOrderButton.Width - buttonBounds.Height, buttonBounds.Height));
    await PlaceOrderButton.LayoutTo(buttonChompBounds, 500, Easing.SinInOut);

    // rotate the pizza as it's being eaten
    _ = FlyingPizza.RelRotateTo(-90, 500, Easing.SinInOut);

    // close the button chomp
    await PlaceOrderButton.LayoutTo(buttonBounds, 500, Easing.SinInOut);

    // hide the pizza
    FlyingPizza.IsVisible = false;
}
```

How to create a spinning counter

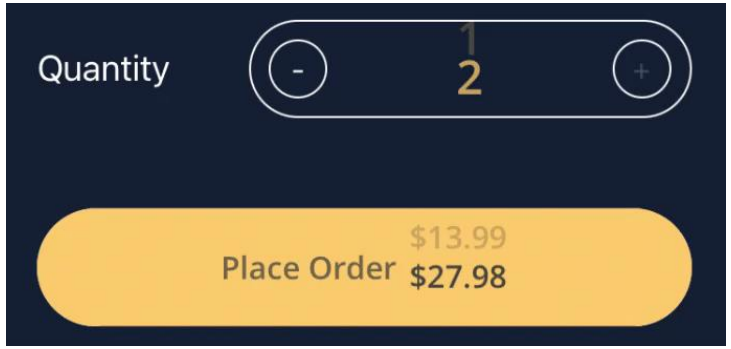
```
<Grid
    x:Class="Pizza.Controls.FerrisLabel"
    xmlns="http://xamarin.com/schemas/2014/forms"
    xmlns:x="http://schemas.microsoft.com/winfx/2009/xaml"
    xmlns:controls="clr-namespace:Pizza.Controls"
    xmlns:mc="http://schemas.openxmlformats.org/markup-compatibility/2006">
    <Label
        x:Name="CurrentLabel"
        HorizontalOptions="Center"
        VerticalOptions="Center" />
    <Label
        x:Name="NextLabel"
        HorizontalOptions="Center"
        Opacity="0"
        VerticalOptions="Center" />

</Grid>
```



How to create a spinning counter

```
public static readonly BindableProperty TextProperty
```

```
async void ApplyText(string oldValue, string newValue)
{
    // update the current to be the old value
    Current.Text = oldValue;
    Current.TranslationY = Current.TranslationX = 0;
    Current.Opacity = 1;

    // animate out the current label
    _ = Current.TranslateTo(-AnimationOffset.X, -AnimationOffset.Y);
    _ = Current.FadeTo(0);

    // animate in the next label
    Next.Text = newValue;
    Next.TranslationY = AnimationOffset.Y;
    Next.TranslationX = AnimationOffset.X;
    Next.Opacity = 0;
    _ = Next.TranslateTo(0, 0);
    await Next.FadeTo(1);

    // recycle the views
    Current = NextLabel;
    Next = CurrentLabel;
}
```



Day vs Night

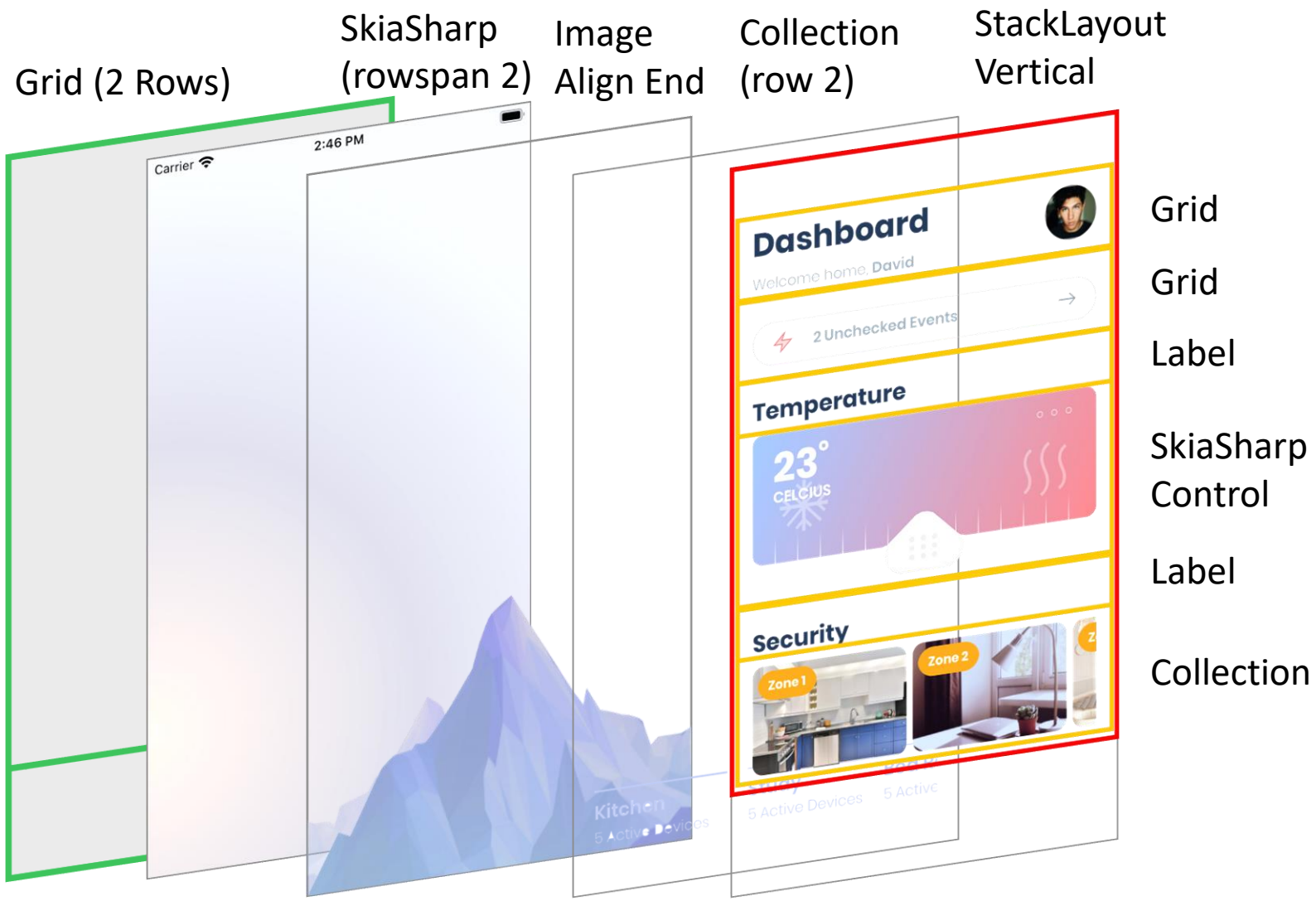
Designer: Ionut Zamfir

Components:

- Xamarin.Forms
- PancakeView
- SkiaSharp
- ImageCircle

Github: https://github.com/kphillpotts/dayvsnight
Dribbble: https://dribbble.com/shots/4840427-Dashboard-Day-vs-Night

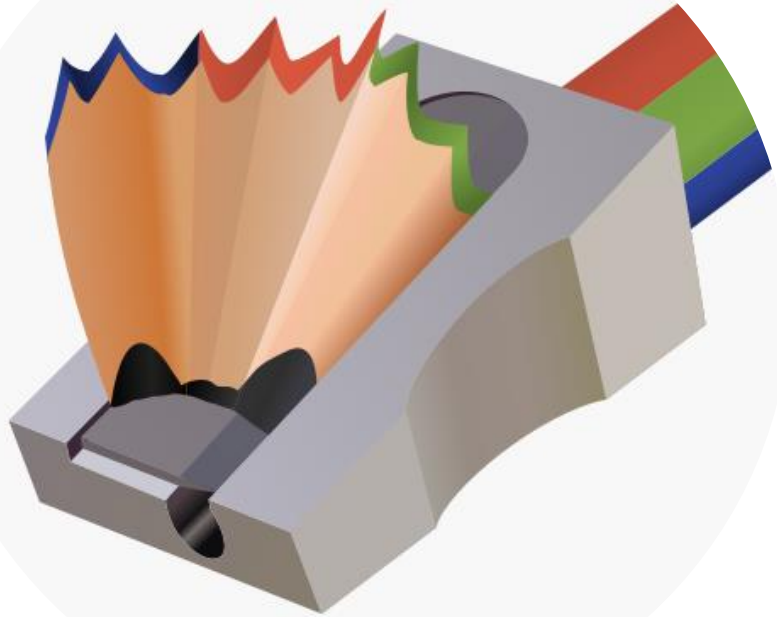
Page Layout


Grid (2 Rows)
SkiaSharp (rowspan 2)
Image Align End
Collection (row 2)
StackLayout Vertical
Carrier
2:46 PM
Dashboard
Welcome home, David
2 Unchecked Events
Temperature
23°
CELCIUS
Security
Zone 1
Zone 2
Kitchen
5 Active Devices
Grid
Grid
Label
SkiaSharp Control
Label
Collection


Carrier
3:09 PM
Dashboard
Welcome home, David
2 Unchecked Events
Temperature
23°
CELCIUS
Security
Zone 1
Zone 2
Kitchen
5 Active Devices

SkiaSharp

- Cross Platform 2D Graphics
- Amazing for creating custom drawing
- Super Fast and Feature Rich
- Pretty complex
- Docs and Samples are a great start

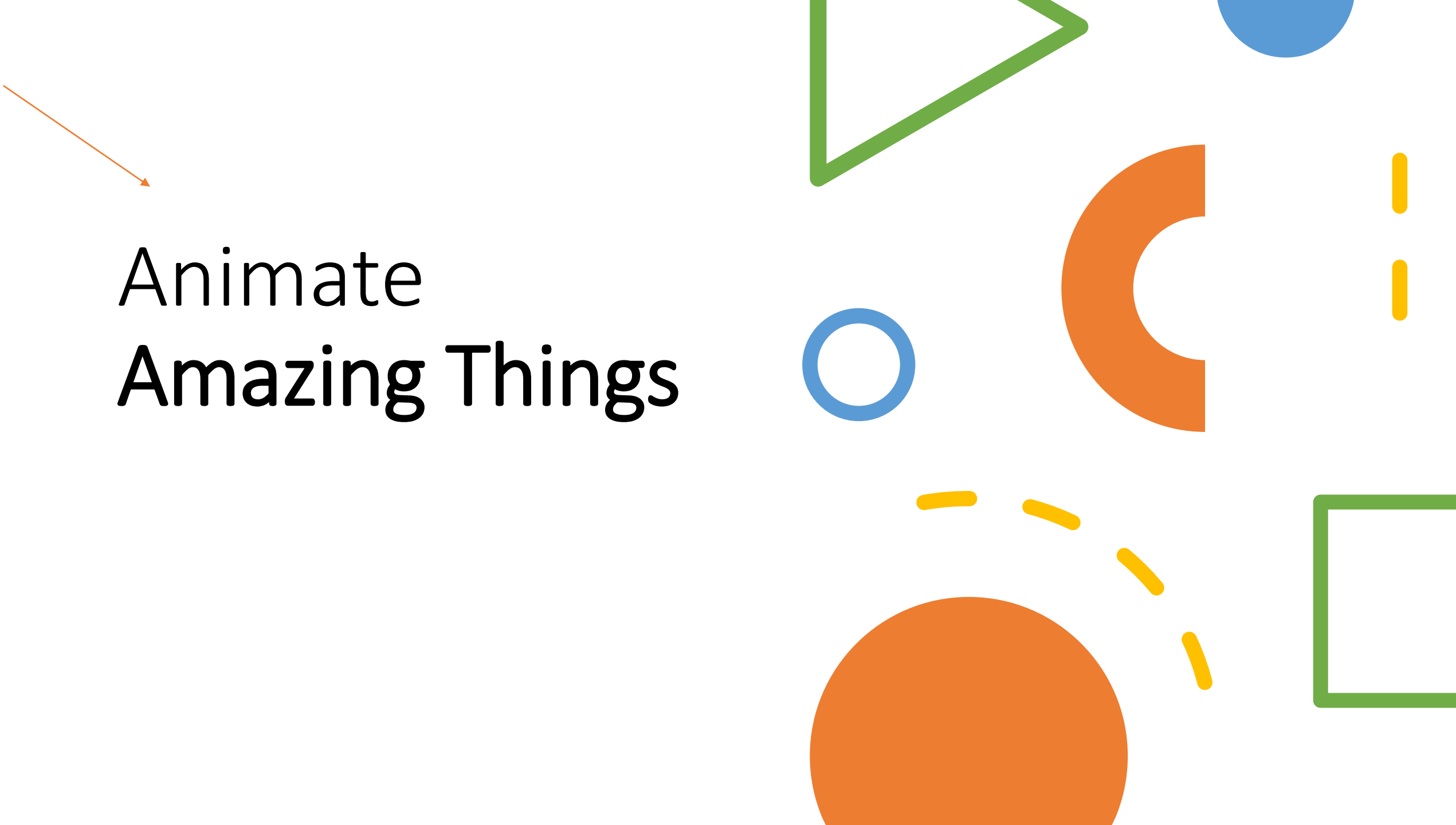


SkiaSharp Controls

```
private void TouchEffect_TouchAction(object sender, TouchEffect.TouchActionEventArgs args)
{
    Percent = (args.Location.X / TempGaugeCanvas.Width) * 100;
}

public double Percent
{
    get => percent;
    set
    {
        percent = value;
        TempGaugeCanvas.InvalidateSurface();
    }
}
```

```
// do some drawing stuff here - it won't be clipped
...
using (new SKAutoCanvasRestore(canvas))
{
    ...
    canvas.ClipPath(scaledClipPath, SKClipOperation.Difference, true);
    ...
    // everything here will have the clipping applied
    ...
}
// after the USING the canvas is restored to it's previous state so no clipping will happen
...
```

Animate
Amazing Things

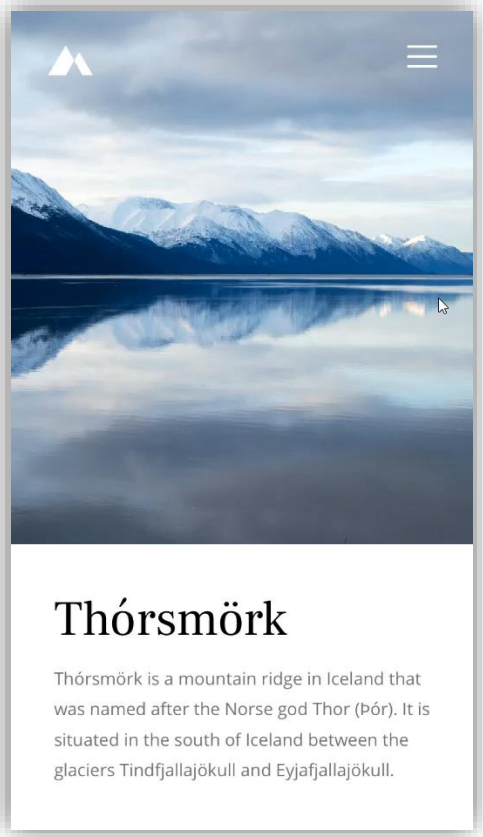


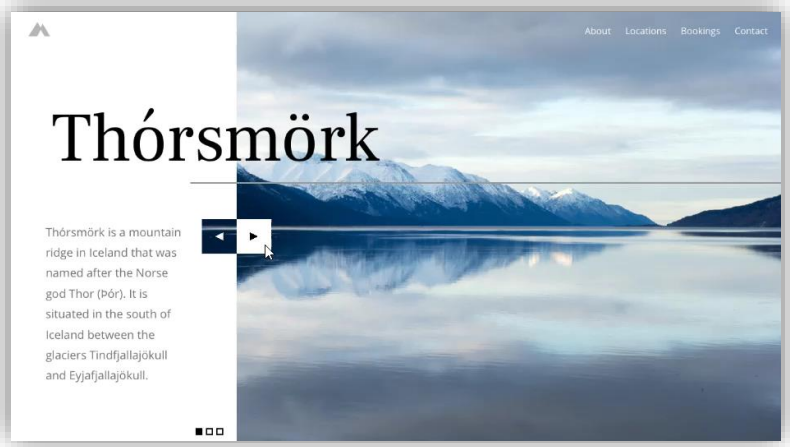
Mountain Design

Designer: Henry Price

Components:

- Xamarin.Forms
- SkiaSharp

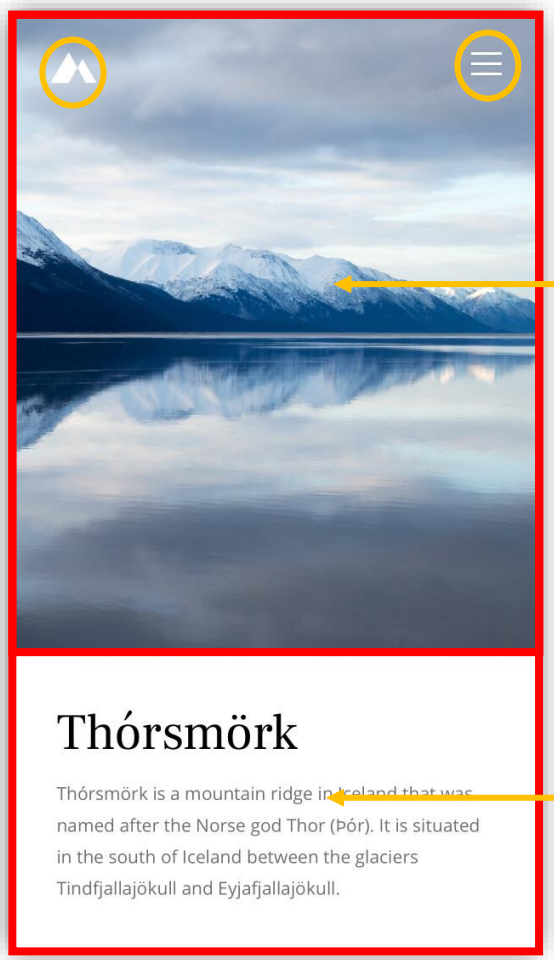




Github: https://github.com/kphillpotts/mountainmobile
Dribbble: https://dribbble.com/shots/6727910-Mountain-Mobile-Animation

Portrait Orientation Layout

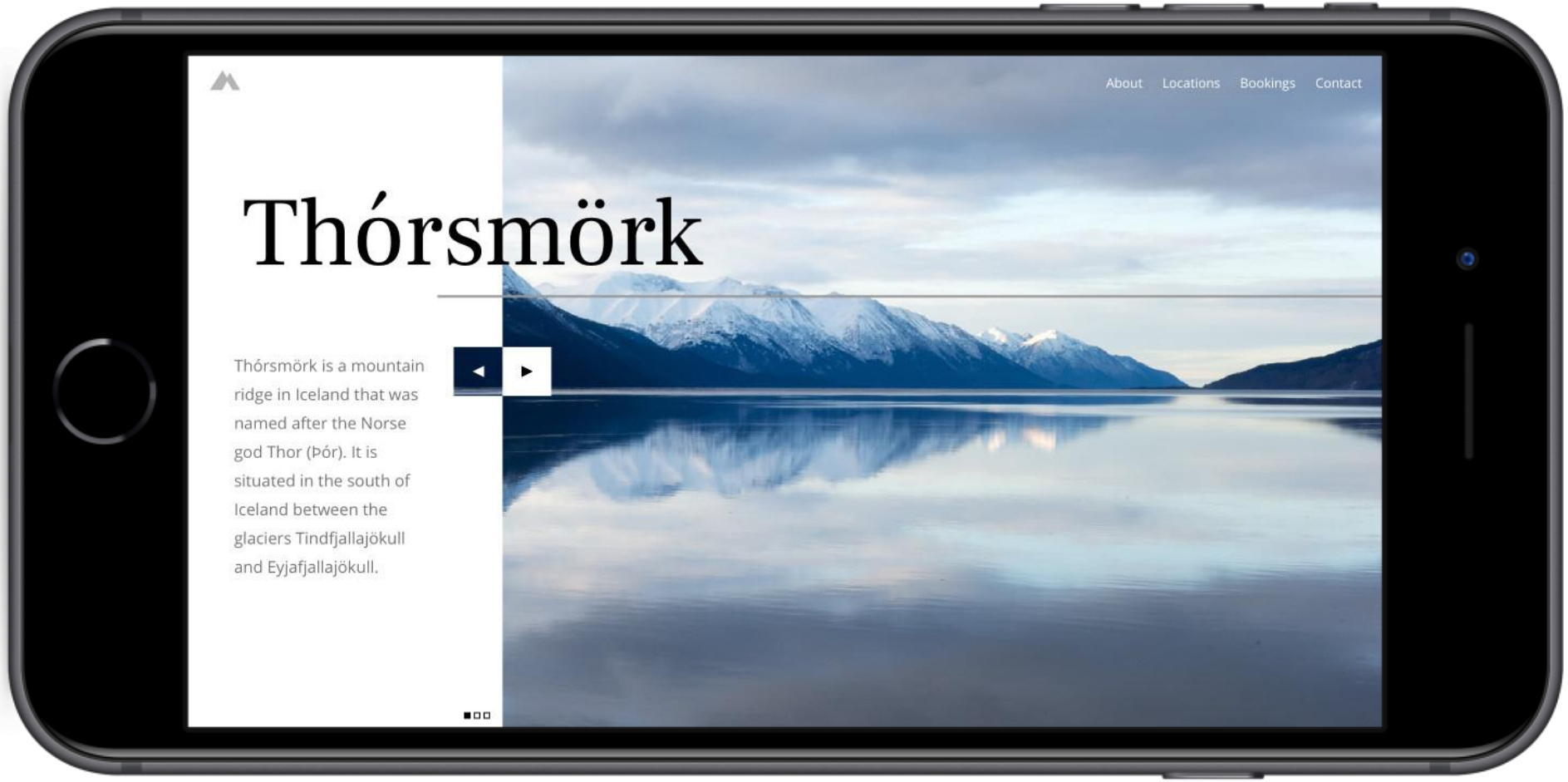
Grid (2 rows)



Xamarin.Forms Images

SkiaSharp Surface

Xamarin.Forms Labels


About
Locations
Bookings
Contact
Thórsmörk
Thórsmörk is a mountain ridge in Iceland that was named after the Norse god Thor (Þór). It is situated in the south of Iceland between the glaciers Tindfjallajökull and Eyjafjallajökull.

Animating SkiaSharp

- Create a custom animation

```
private void AnimateTransition()
{
    var startValue = 0;
    var endValue = ImageSkiaCanvas.CanvasSize.Width;

    var parentAnimation = new Animation();

    // animate values
    parentAnimation.Add(0.20, 0.70, new Animation(v ⇒ bandTranslationValues[0] = v, startValue, endValue, Easing.SinInOut));
    parentAnimation.Add(0.15, 0.65, new Animation(v ⇒ bandTranslationValues[1] = v, startValue, endValue, Easing.SinInOut));
    parentAnimation.Add(0.10, 0.60, new Animation(v ⇒ bandTranslationValues[2] = v, startValue, endValue, Easing.SinInOut));
    parentAnimation.Add(0.05, 0.55, new Animation(v ⇒ bandTranslationValues[3] = v, startValue, endValue, Easing.SinInOut));
    parentAnimation.Add(0.00, 0.50, new Animation(v ⇒ bandTranslationValues[4] = v, startValue, endValue, Easing.SinInOut));

    // perform refresh cycle
    parentAnimation.Add(0.00, 1.00, new Animation(v ⇒ ImageSkiaCanvas.InvalidateSurface(), 0, 1, Easing.Linear));

    // launch the animation
    parentAnimation.Commit(this, "TransitionAnimation", 16, 2000);
}
```

Animating SkiaSharp

- Handle the PaintSurface Event

```
private void SKCanvasView_PaintSurface(object sender, SkiaSharp.Views.Forms.SKPaintSurfaceEventArgs args)
{
    SKImageInfo info = args.Info;
    SKSurface surface = args.Surface;
    SKCanvas canvas = surface.Canvas;

    canvas.Clear();

    SKRect imageRect = new SKRect(0, 0, info.Width, info.Height);

    if (!isAnimating)...
    else
    {
        // work out our hieghts and widths of our reactangles
        var bandHeight = currentBitmap.Height / bandTranslationValues.Length;
        var bandWidth = currentBitmap.Width;

        for (int i = 0; i < bandTranslationValues.Length; i++)
        {
            var bandyOffset = i * bandHeight;

            DrawBitmapSliceAtOffset(canvas, currentBitmap,
                bandyOffset, (float)bandTranslationValues[i], bandWidth, bandHeight);

            DrawBitmapSliceAtOffset(canvas, offscreenBitmap,
                bandyOffset, (float)incomingBandTranslationValues[i], bandWidth, bandHeight);
        }
    }
}
```

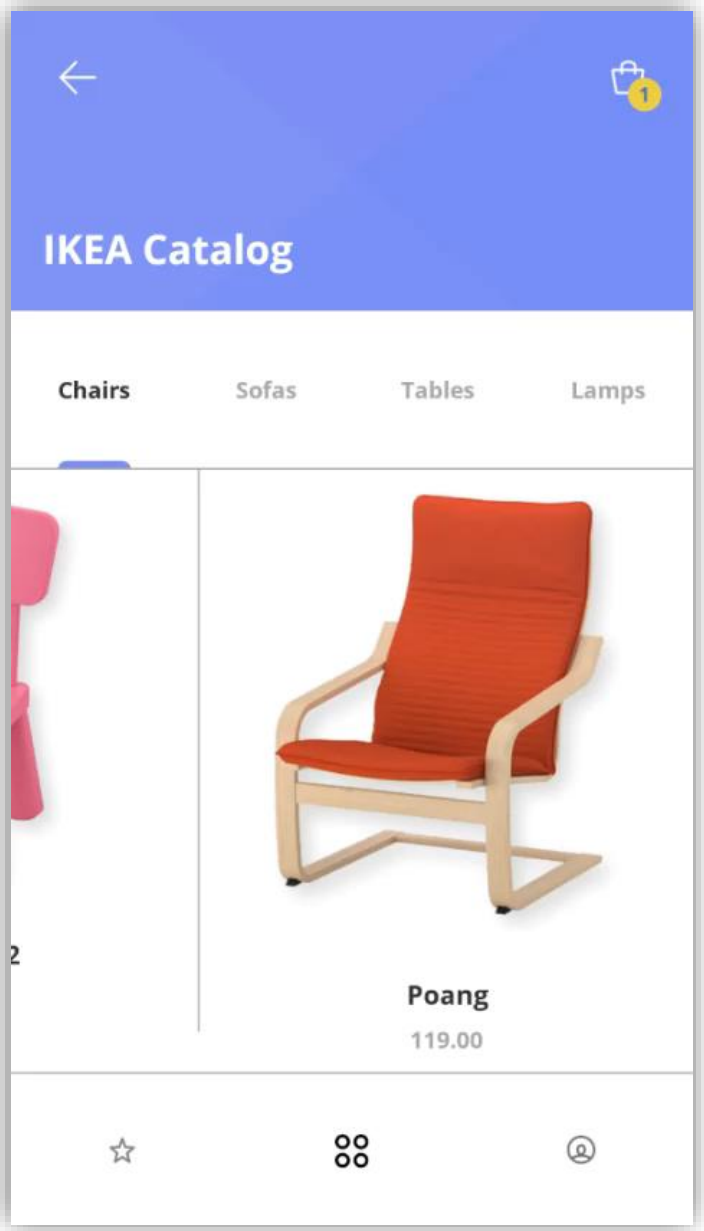
Multi Page Animations

Xamarin.Plugin.SharedTransitions

```
<Image
    sharedTransition:Transition.Group="{Binding Name}"
    sharedTransition:Transition.Name="SelectedItemImage"
    Source="{Binding Image}" />
```

```
SharedTransitionNavigationPage.SetTransitionSelectedGroup(this, selectedItem.Name);
Navigation.PushAsync(new ProductDetailsPage(selectedItem));
```

```
<Image
    sharedTransition:Transition.Name="SelectedItemImage"
    HorizontalOptions="End"
    Source="{Binding Image}"
    TranslationY="50"
    VerticalOptions="End" />
```

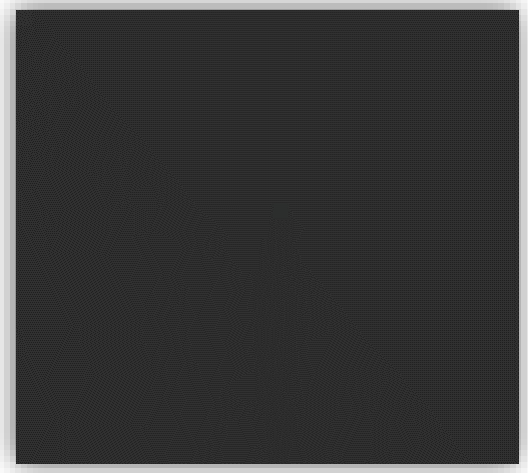


Advanced animation with **Lottie**

For complex animations provided by designers

```
<lottie:AnimationView
    x:Name="AnimationView"
    Animation="funky_chicken.json"
    AutoPlay="True"
    HeightRequest="200"
    HorizontalOptions="Center"
    Loop="True"
    Opacity="0"
    TranslationX="-300"
    VerticalOptions="Center"
    WidthRequest="200" />
```

```
1 reference | Kym Phillpotts, 341 days ago | 1 author, 1 change
private async Task ValidLoginAnimation()
{
    await LoginContainer.FadeTo(0, 250);
    AnimationView.Opacity = 1;
    await AnimationView.TranslateTo(0, 0, 2000, Easing.SinInOut);
    ConfettiView.Opacity = 1;
    ConfettiView.Play();
    ConfettiView.OnFinish += ConfettiView_OnFinish;
    await Task.Delay(1000);
    await AnimationView.TranslateTo(300, 0, 2000, Easing.SinInOut);
    AnimationView.Opacity = 0;
}
```



Com.Airbnb.Xamarin.Forms.Lottie

- https://useanimations.com/
- https://lottiefiles.com

Thank You

LINKS AND SLIDES FROM THIS SESSION

github.com/kphillpotts/MonkeyFest2020

kymphillpotts.com

twitter.com/kphillpotts

twitch.tv/kymphillpotts

youtube.com/kphillpotts