TECH DAYS 2015

BREAKING NEW GROUND

Microsoft

Building adaptive Windows 10 XAML apps

from Raspberry Pi to Surface Hub

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Microsoft

Agenda

The Microsoft design language

How Windows makes design easier

What am I designing?

Techniques to adapt

Adaptive Tooling

- Visual States Triggers
- Relative Panel

Microsoft

Phone

Phablet

Small Tablet

Large Tablet

2-in-1s
(Tablet or Laptop)

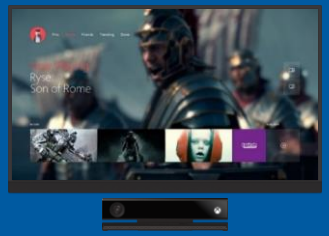
Classic
Laptop

Desktops
& All-in-Ones

Windows 10

Surface Hub

Xbox



Holographic

IoT

The Microsoft Design Language

Microsoft

Microsoft design language principles

Keep it Simple

Isn't it nice when **things just work**, when the next step is intuitive, and people are inspired?

Make it Personal

We **design for real people**, not requiring people can fit into our design. Personal means human.

Think Universal

Better technology for anyone is better technology for everyone. It's an attitude.

Create Delight

Attention of detail equals **moments of delight**. Sometimes delight is so perfect it is invisible.

Design as One

Work together and do amazing things.
Many teams, **one ecosystem**, happy customers.

Microsoft

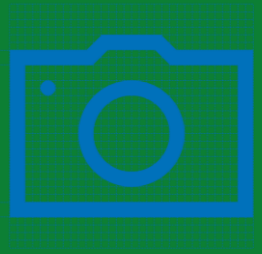
Typeography

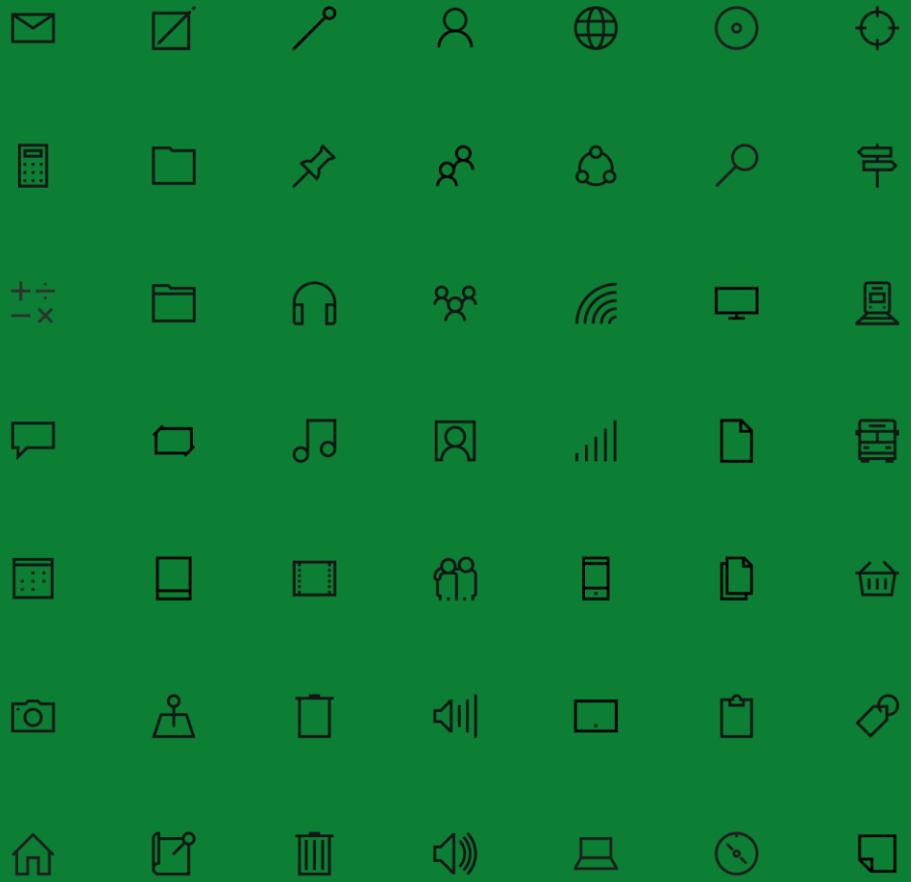
	Typeface	Weight	Size	Line spacing	Word spacing	Tracking
Display 3	Segoe UI	Light	62 pt	80 pt	100%	-10
Display 2	Segoe UI	Light	46 pt	56 pt	100%	-10
Display 1	Segoe UI	Light	34 pt	40 pt	100%	0
Title 1	Segoe UI	Light	24 pt	28 pt	100%	0
Body 1	Segoe UI	Regular	14.6 pt	20 pt	100%	0
Caption 1	Segoe UI	Regular	12 pt	16 pt	100%	0

Microsoft

Iconography

2px

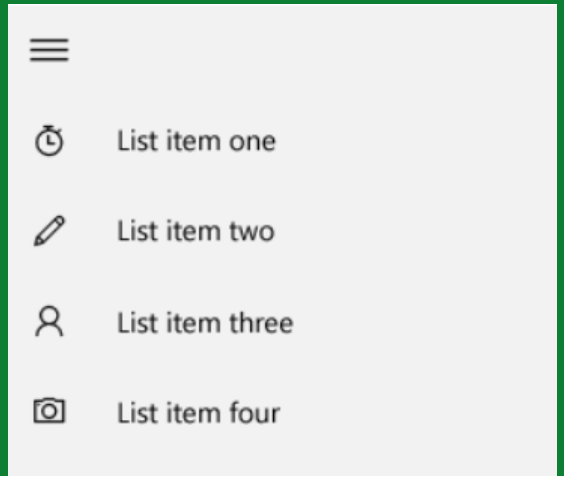


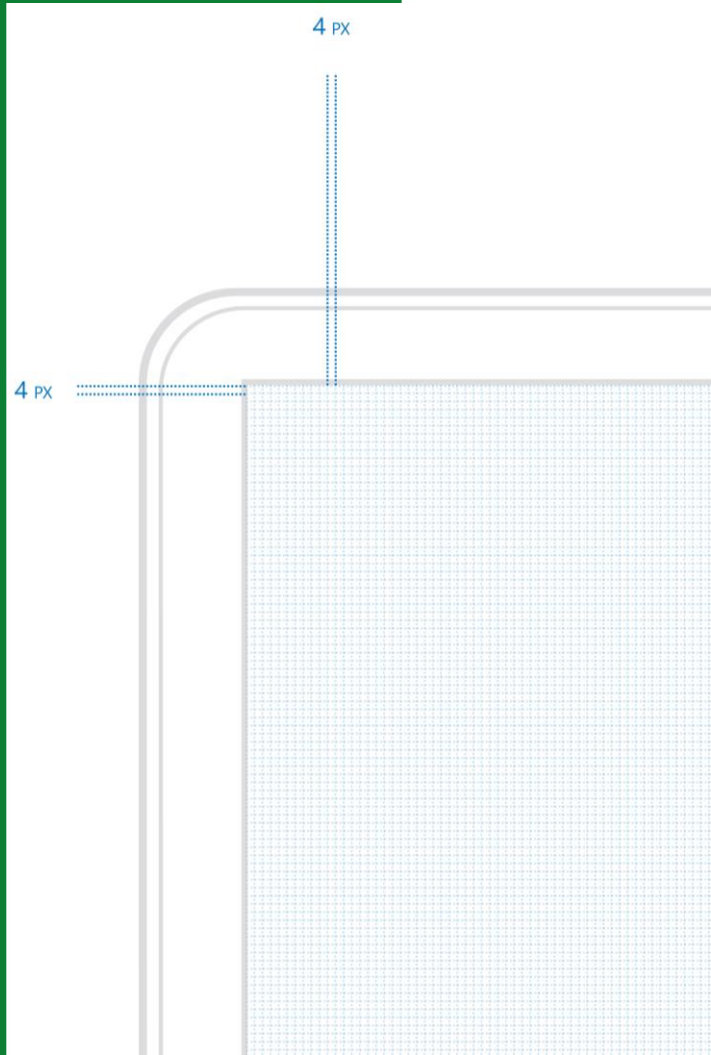


For most text, use
15 epx Segoe UI Regular

Windows

Four is the magic number

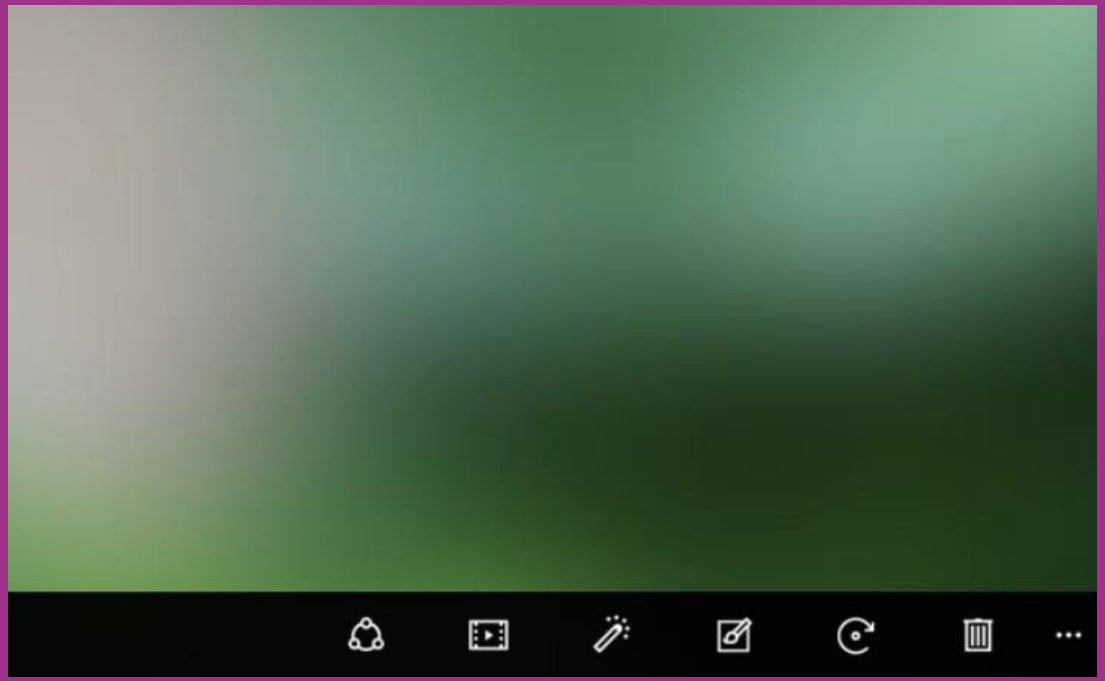




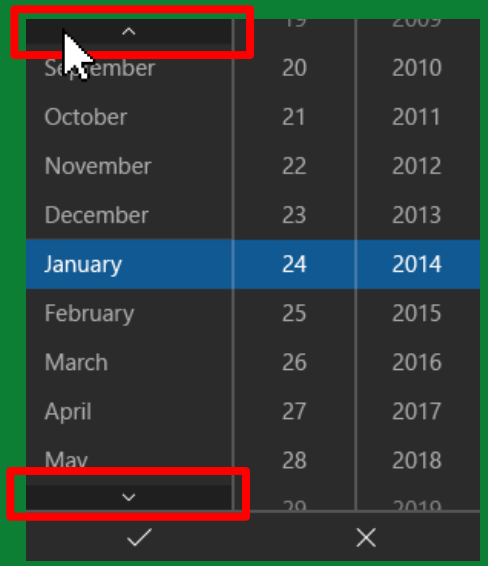
How Windows makes design easier

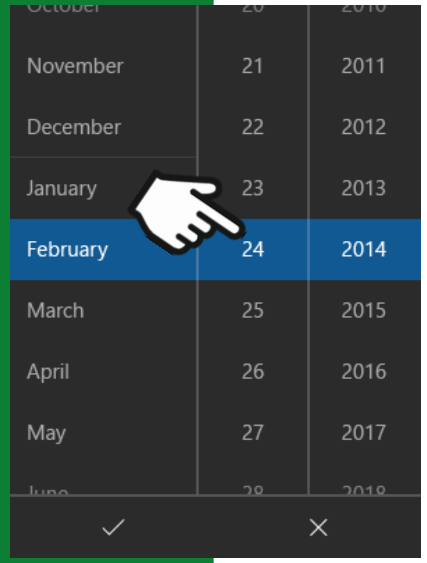
Microsoft

Adaptive controls

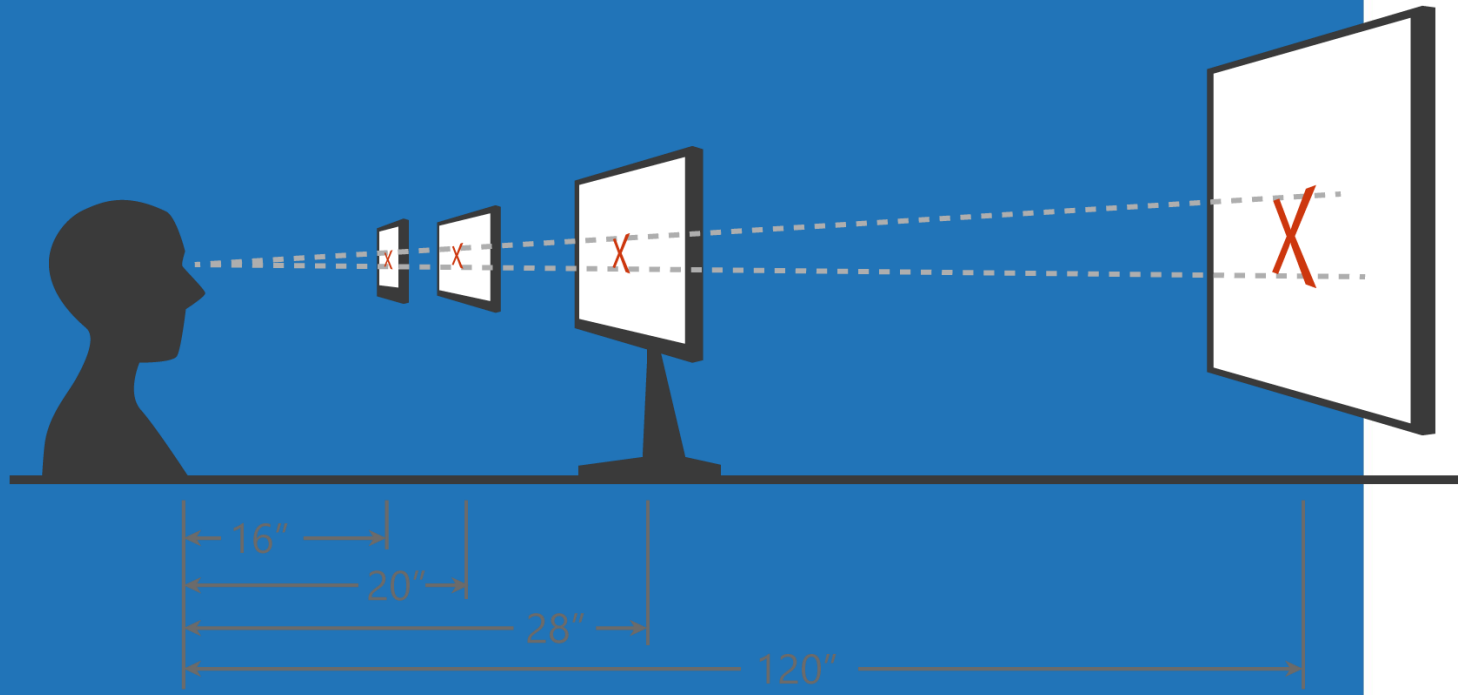


Input intelligence





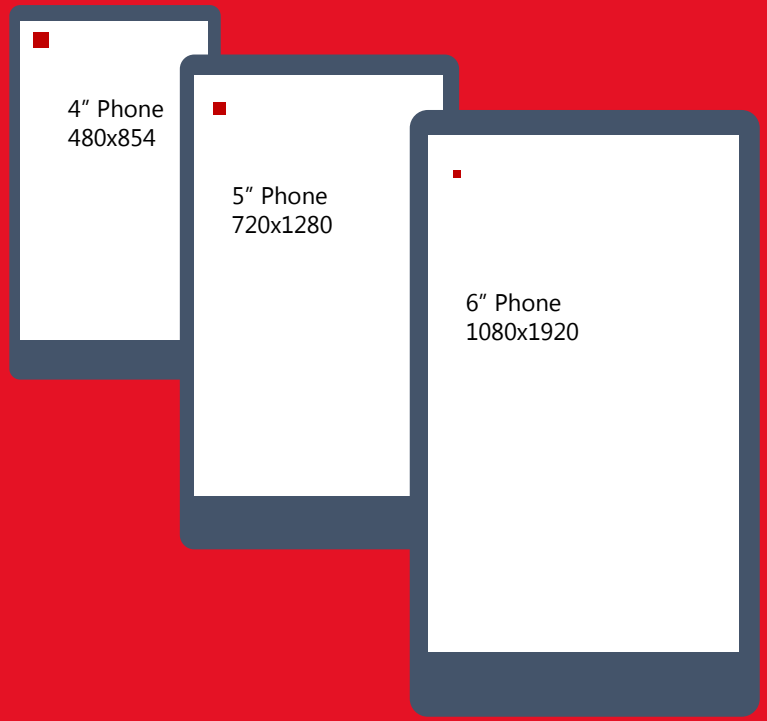
Scaling algorithm

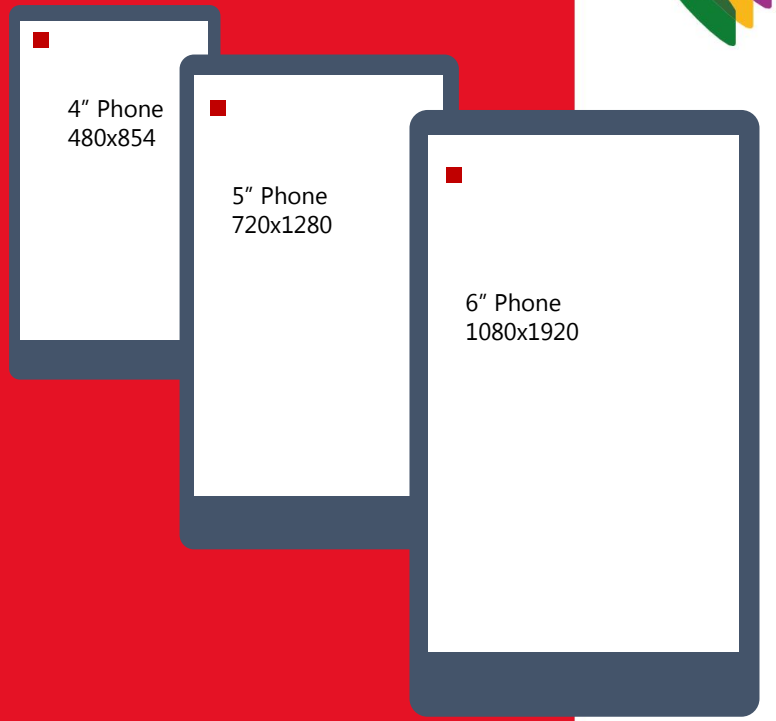


Universal Windows Platform apps

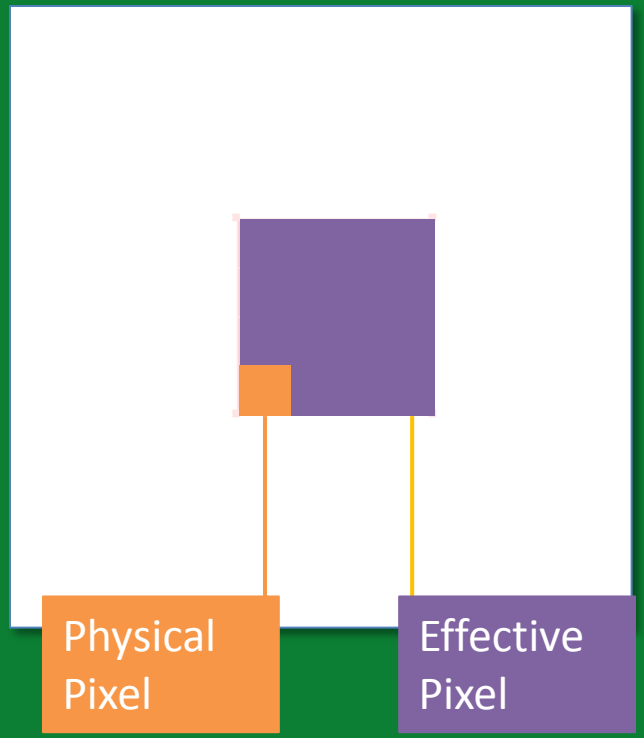
for Universal Windows Platform Apps

Physical versus effective pixel





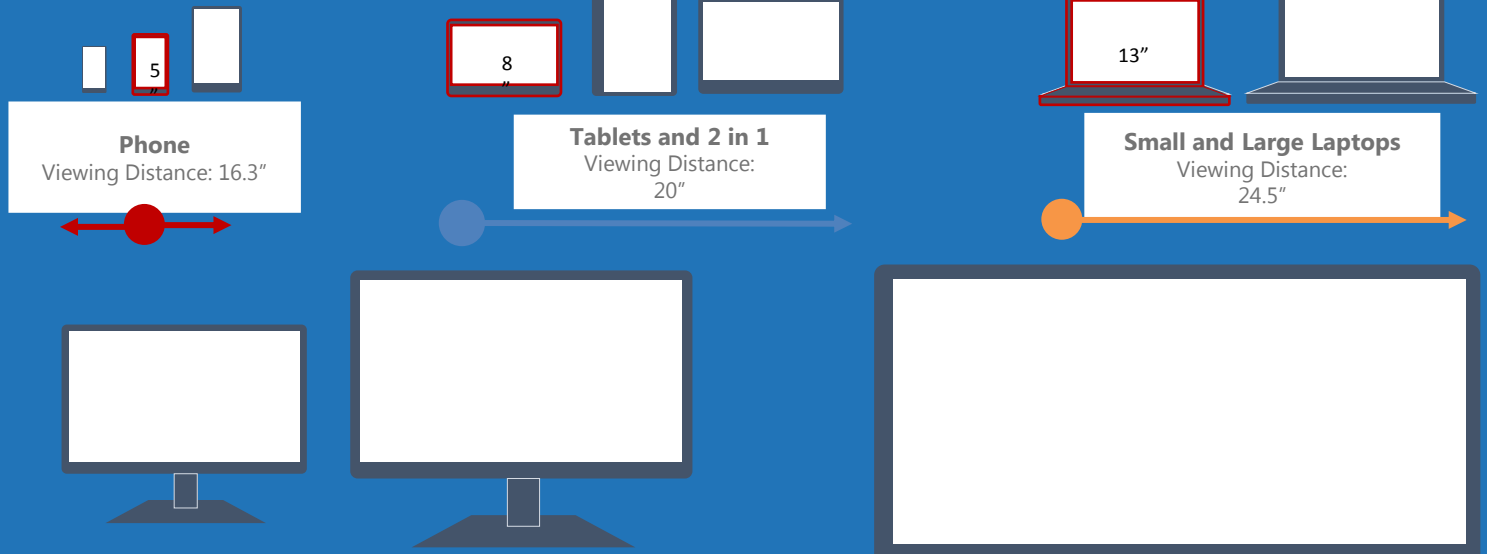
Effective pixel



Ignore scale, resolution, & dpi.
Design in Effective Pixels

Microsoft

Planning your design



Phone
Viewing Distance: 16.3”

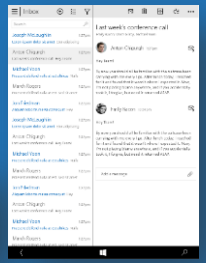
Tablets and 2 in 1
Viewing Distance:
20”

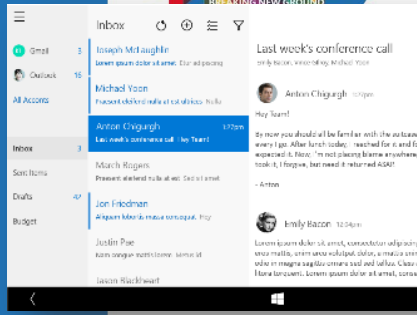
Small and Large Laptops
Viewing Distance:
24.5”

Small and Large Desktop Monitors
Viewing Distance:
28”

TV
Viewing Distance:
84”

Snap points





epx 320 548 720 1024

phone

- limited landscape support
- one frame at a time
- sys tray on the left
- steering wheel on the right
- 4+ actions on the bottom
- tabs are centered

- limited landscape support
- one frame at a time
- sys tray on the left
- steering wheel on the right
- 4+ actions on the bottom
- single column stops scaling
- tabs are centered

phablet & tablet

- full landscape support
- two frames
- actions at the top
- one "…" visible - TBD
- tabs are left aligned
- Show search field if search was represented as an icon on smaller devices

desktop

- full landscape support
- three frames
- compact nav pane
- actions at the top
- one "…" visible
- tabs left aligned

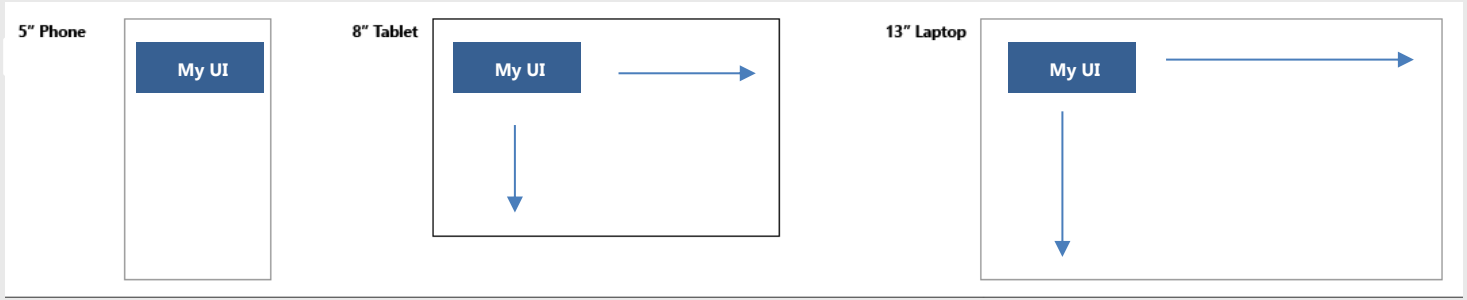
Microsoft

Demo

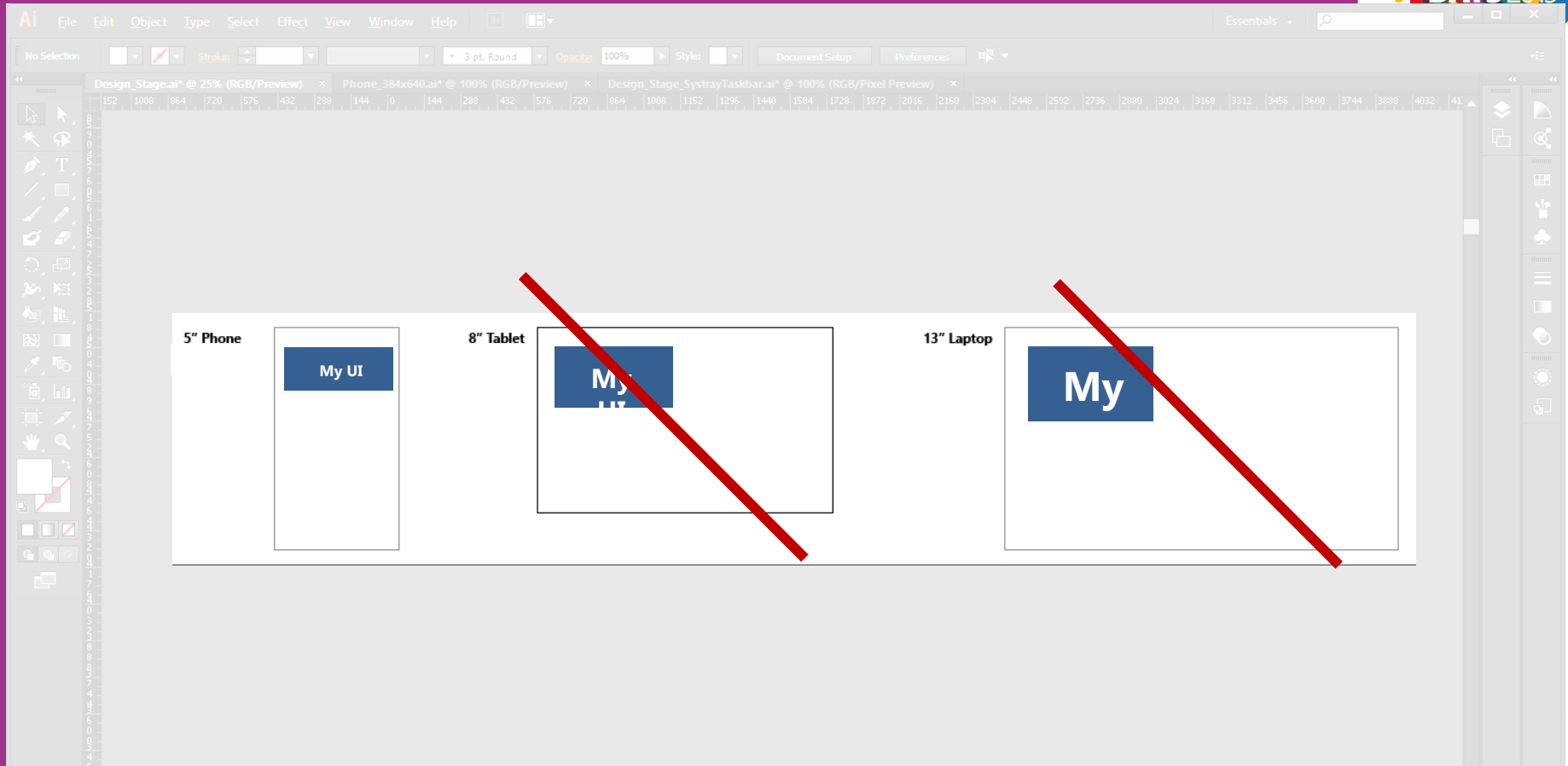
The Weather App

Microsoft

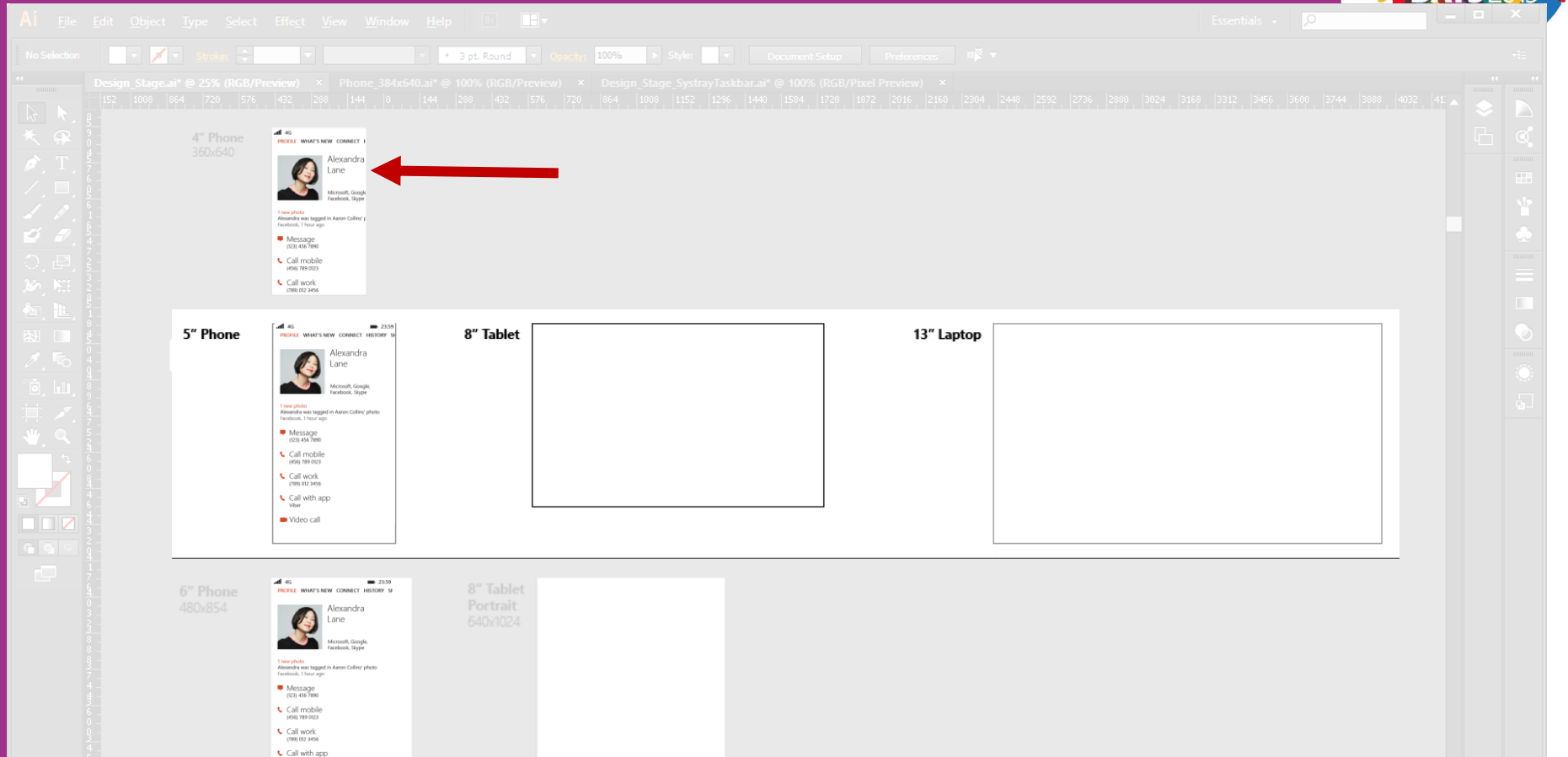
Flow, not size



Flow, not size



Check variants



As you design

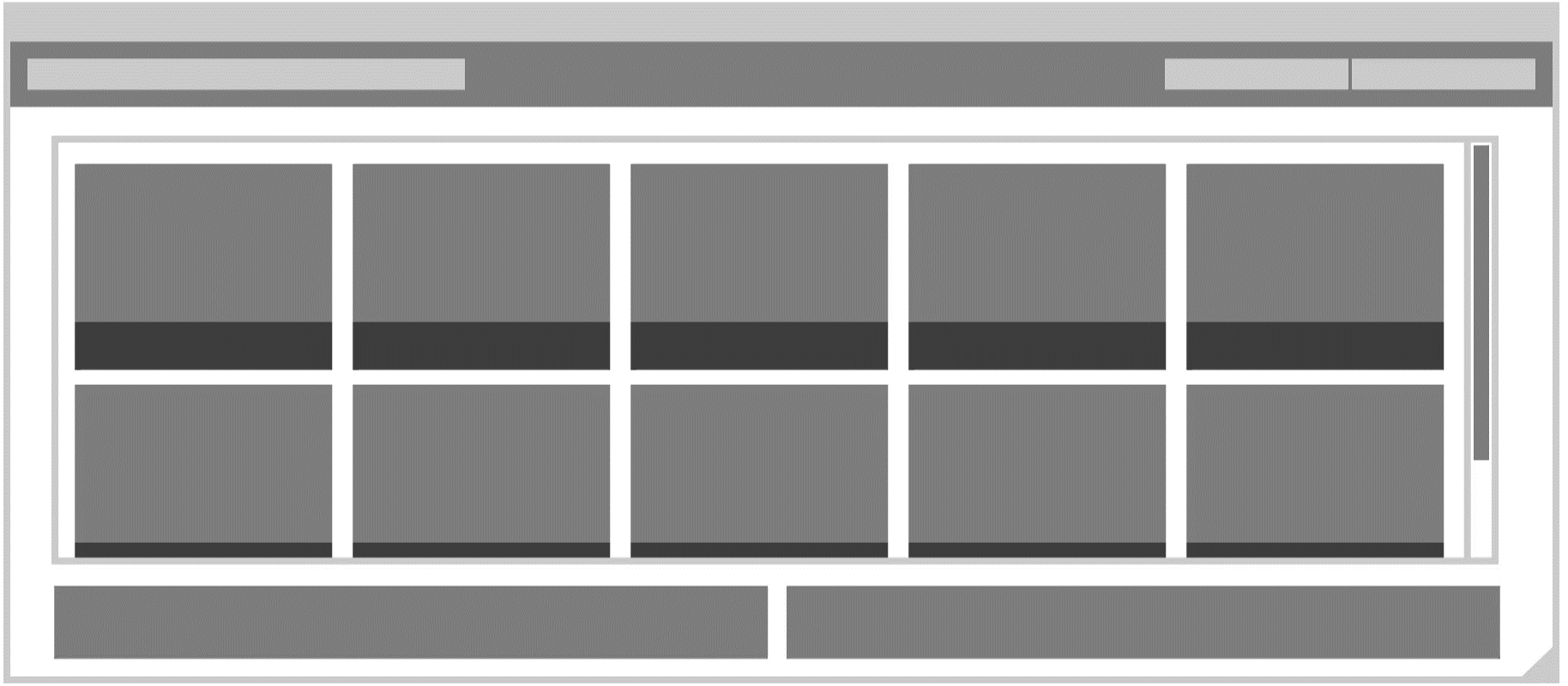
1. Adapt to size change
2. Adapt to input change
3. Build with effective pixels
4. Count on the scaling algorithm

Windows

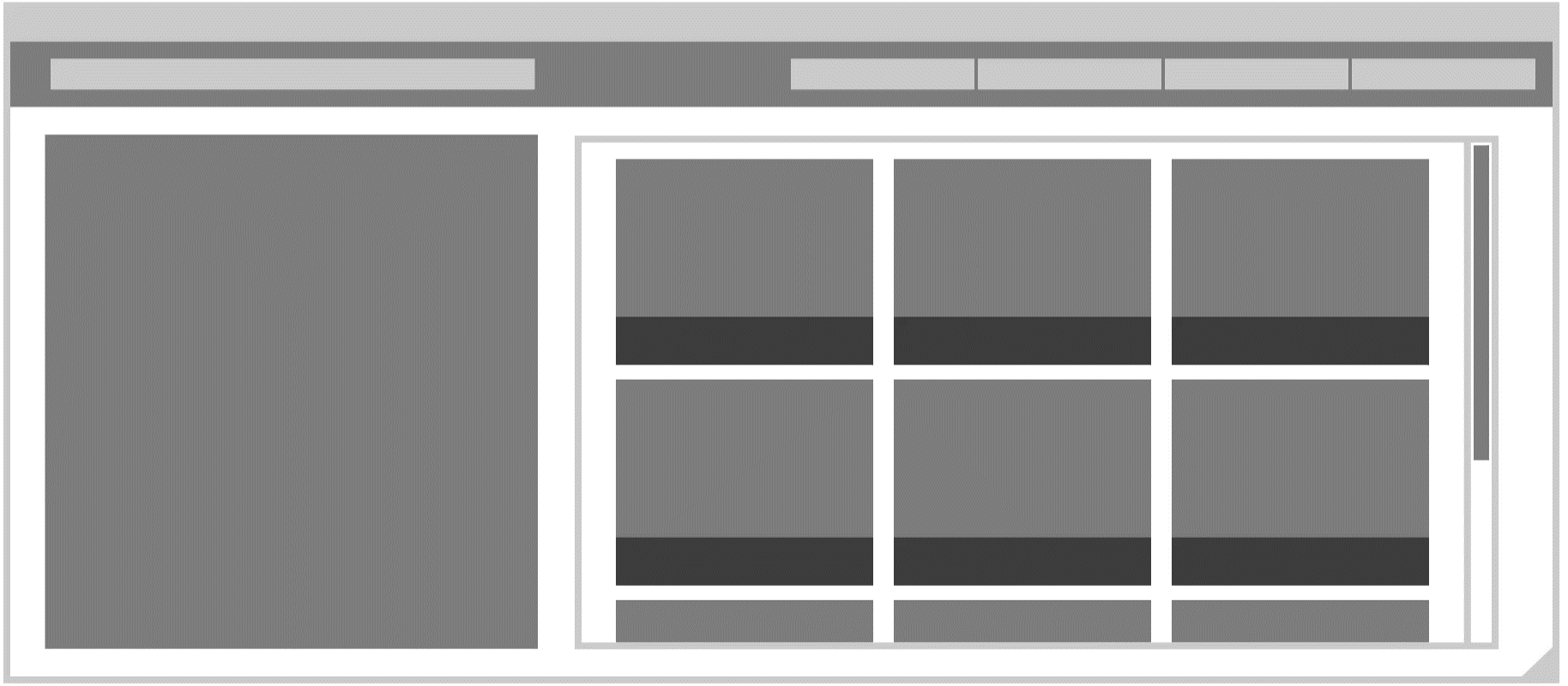
Adaptive UI design techniques

Microsoft

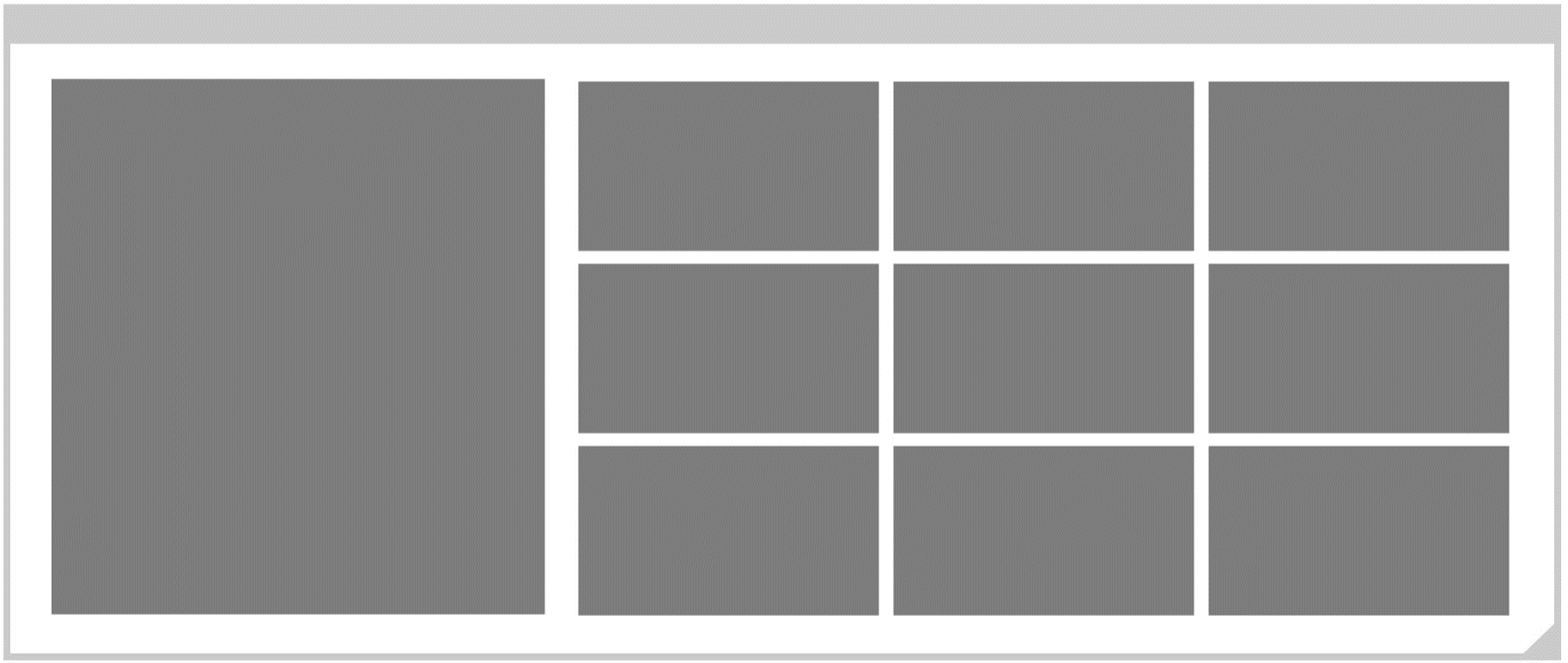
Responsive



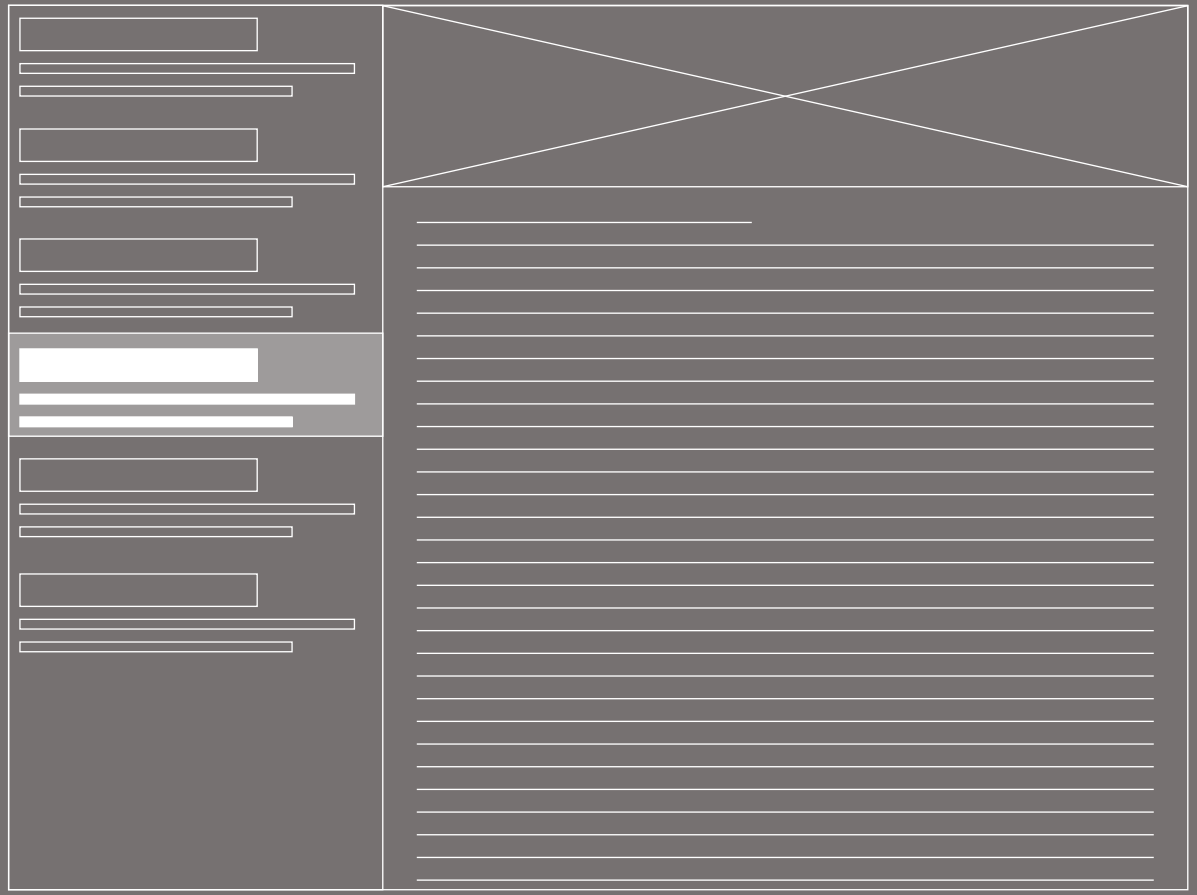
Adaptive

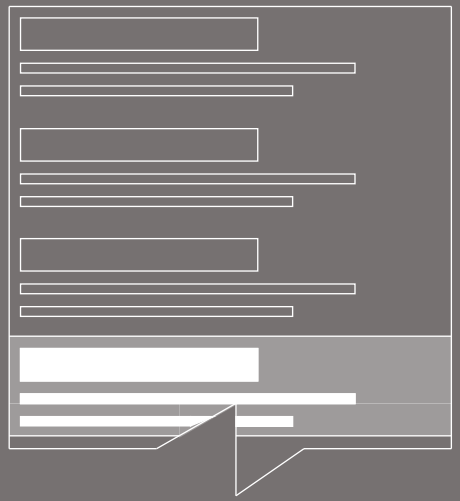


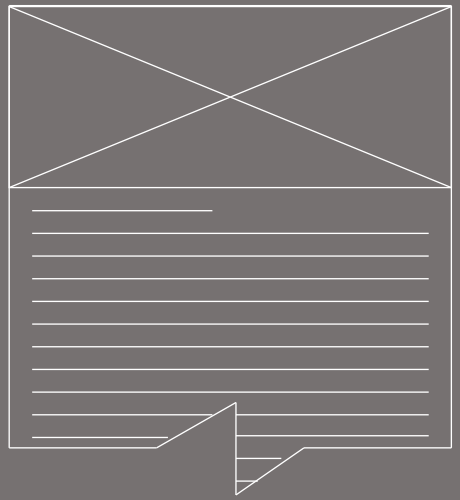
Scaling



ReArchitect/tailored design

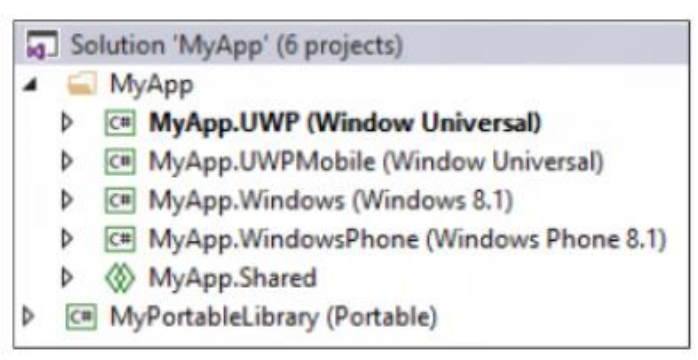






Dedicated, targeted apps

Nothing is stopping you from creating a multi-headed solution



Tools for building an adaptive UI

Microsoft

Visual States

- Define XAML views
  - Unique layout for distinct states
- Simplify animation
  - Automatically implement state transitions
- Build in Blend
  - Design and preview states and transitions

Microsoft

Demo

Visual States

Visual states let designers define many different layouts of a view

Select a visual state in code

VisualStateManager.Goto(element, state, transition)

```
public MainPage()
{
    this.InitializeComponent();
    this.SizeChanged += (s, e) =>
    {
        var state = "VisualState000min";
        if (e.NewSize.Width > 500)
            state = "VisualState500min";
        else if (e.NewSize.Width > 800)
            state = "VisualState800min";
        else if (e.NewSize.Width > 1000)
            state = "VisualState1000min";
        VisualStateManager.GoToState(this, state, true);
    };
}
```

Demo

Adaptive triggers

Adaptive triggers

Code-free state transition

Two built-in triggers:

- MinWindowHeight (Taller than this)
- MinWindowWidth (Wider than this)

```
<VisualState x:Name="VisualState500min">
    <VisualState.StateTriggers>
        <AdaptiveTrigger MinWindowWidth="501" />
    </VisualState.StateTriggers>
</VisualState>
```

Adaptive triggers allow selection of visual states from XAML

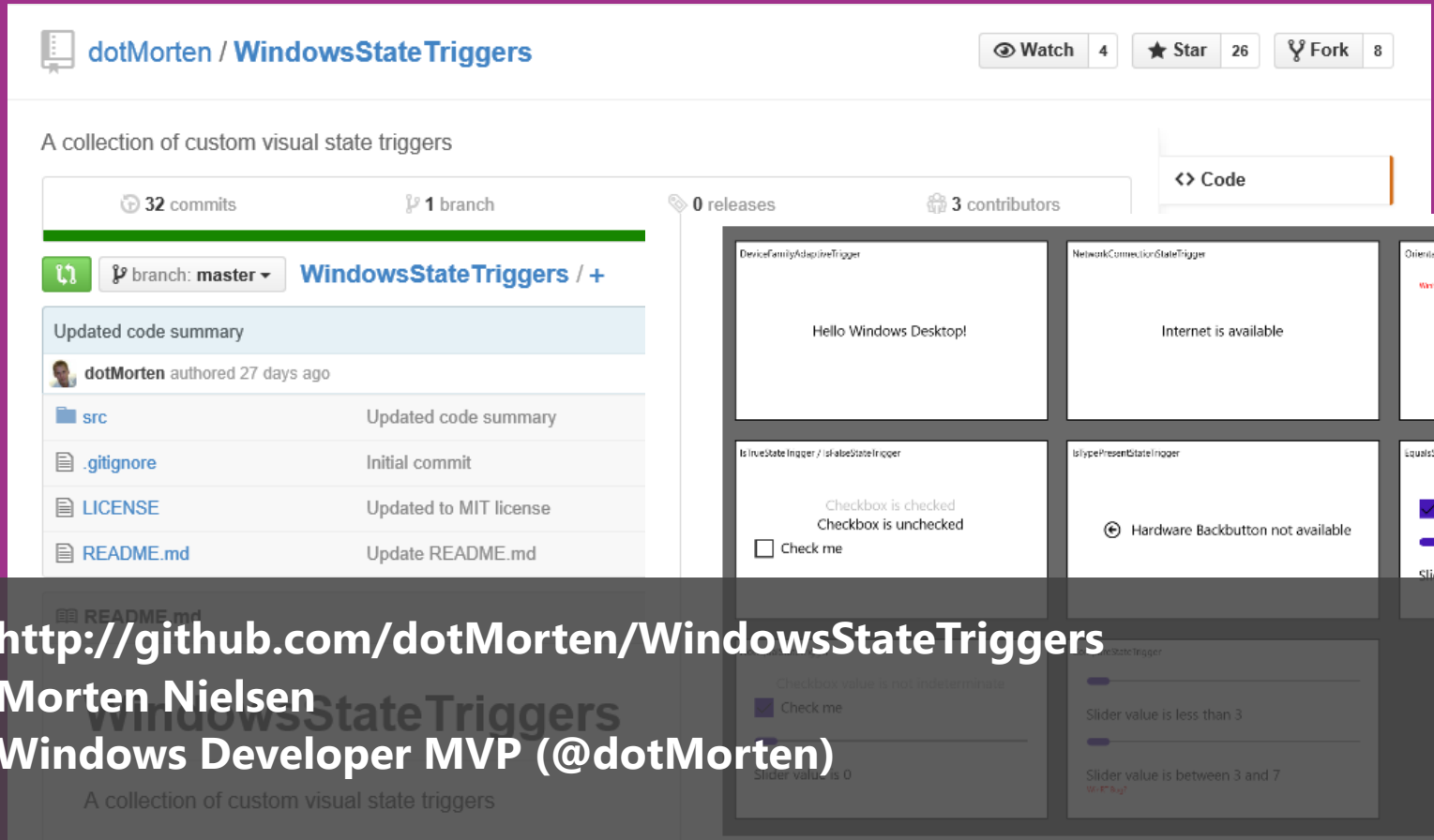
Custom triggers support your special scenarios

Custom adaptive triggers

Build to handle special cases


```
public class DeviceFamilyTrigger : StateTriggerBase
{
    private string _deviceFamily;
    public string DeviceFamily
    {
        get { return _deviceFamily; }
        set
        {
            var qualifiers = Windows.ApplicationModel.Resources.Core
                .ResourceContext.GetForCurrentView().QualifierValues;
            if (qualifiers.ContainsKey("DeviceFamily"))
                SetActive(qualifiers["DeviceFamily"] == (_deviceFamily = value));
            else
                SetActive(false);
        }
    }
}
```

Windows Insiders FTW!



http://github.com/dotMorten/WindowsStateTriggers

Morten Nielsen

Windows Developer MVP (@dotMorten)

Demo

Custom adaptive triggers

Visual state setters

Setting a simple, scalar value

Great when you think of ENUM values like Visibility, Str

Does not invoke a storyboard

Does not require ObjectAnimationUsingKeyFrames

```
<VisualState.Setters>
    <Setter Target="MyText01.FontSize" Value="24" />
    <Setter Target="MyImage.Stretch" Value="UniformToFill" />
    <Setter Target="MyImage.Height" Value="150" />
</VisualState.Setters>
```

Introducing the Relative Panel

Windows XAML layout controls

Grid | Stack Panel | Canvas | Scroll Viewer | Border | View Box | Wrap Grid | **Relative Panel**

Relative Panel is a XAML layout control. It arranges children by declaring relationships between them.

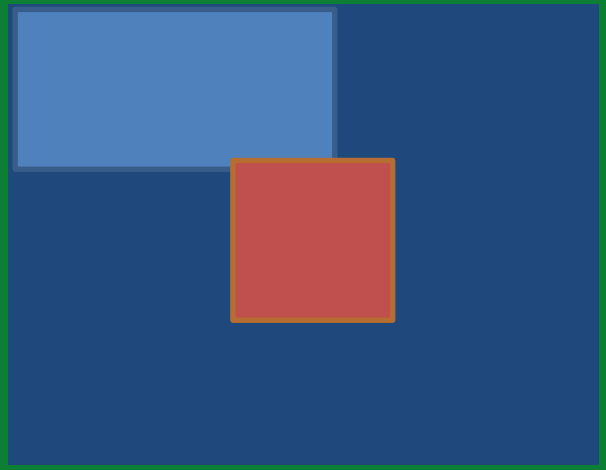
Microsoft

XAML's RelativePanel control

- A child or two act as a anchor elements
  - They are relative to the panel
- Other children are relative to the anchors
  - RelativePanel.Above = "ElementName"
  - RelativePanel.RightOf = "ElementName"
  - RelativePanel.Below = "ElementName"
  - RelativePanel.LeftOf = "ElementName"
- RelativePanel simplifies adaptive UI
  - A simple Visual State setter can rearrange the UI
  - One element can move a family of related element

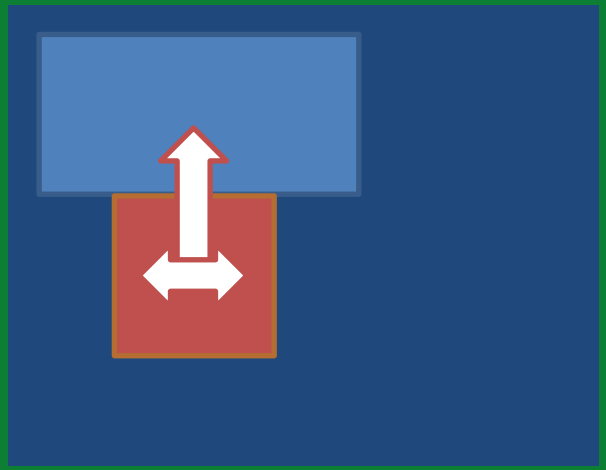
Microsoft

Align with panel



```
<RelativePanel>

    <Rectangle x:Name="RedRect"
     Height="100" Width="100" Fill="Red"

     RelativePanel.AlignHorizontalCenterWithPanel="True"
     RelativePanel.AlignVerticalCenterWithPanel="True" />

    <Rectangle x:Name="BlueRect"
     Height="100" Width="200" Fill="Blue" />

</RelativePanel>
```

Align with sibling (below, center)



```
<RelativePanel>

    <Rectangle x:Name="BlueRect"
     Height="100" Width="100" Fill="Blue" />

    <Rectangle x:Name="RedRect"
     Height="100" Width="100" Fill="Red"
     RelativePanel.Below="BlueRect"
     RelativePanel.AlignHorizontalCenterWith="BlueRect" />

</RelativePanel>
```

Developers have many tools to build an adaptive UI

Review

The Microsoft design language

How Windows makes design easier

What am I designing?

Techniques to adapt

Adaptive Tooling

- Visual States Triggers
- Relative Panel

Microsoft

Related sessions (28-5)

Timeslot	Session	Speaker
12:15-13:15	The Windows 10 App platform: an introduction to the Universal Windows Platform	Andy Wigley
12:45-13:45	App lifecycle in Windows 10	Dave Smits
13:00-14:00	Design for Universal Windows Apps	Martin Tirion
14:15-15:15	Building adaptive Windows 10 XAML apps: from Raspberry Pi to Surface Hub	Andy Wigley
15:30-16:30	Universal Windows Platform app to app communication	Martin Tirion
15:30-16:30	Universal Windows Apps: 21st Century WIMP – Adding Ink, Speech and More	Mike Taulty
17:30-18:30	Windows 10 Universal Windows Apps for Enterprise	Matthijs Hoekstra

Microsoft

Related sessions (29-5)

Timeslot	Session	Speaker
08:15-09:15	Universal Windows Apps: Background >= Foreground	Mike Taulty
12:15-13:15	The Windows 10 App platform: an introduction to the Universal Windows Platform	Andy Wigley
13:45-14:45	What's new in XAML for Universal Windows Apps	Martin Tirion
15:00-16:00	Windows 10 for Makers: Raspberry Pi, Arduino, AllJoyn & Microsoft Band	Rajen Kishna
16:15-17:15	Maps and Location in Windows 10	Joost van Schaik
16:15-17:15	Integrate with Windows 10	Dave Smits

Microsoft

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Scan de QR Code.

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Microsoft

TECH DAYS 2015

BREAKING NEW GROUND

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