



Windows



# App LifeCycle

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# Why Lifecycle?



phone resources are scarce (battery especially)



OS runs one foreground app at a time



other apps are suspended and/or terminated



OS has many mechanisms for an app to appear 'alive'



OS has controlled mechanisms for background code

# Memory Caps - WP Silverlight

- In WP8 & Silverlight 8.1 apps got a predefined memory cap
  - 150 Mb on 512Mb devices
  - 300 Mb on 1gig.
  - 450 Mb on 2gig
- Worked well but could be overly conservative
  - 94% of apps  $\leq$  150MB, 96%  $\leq$  100MB, 80%  $\leq$  80MB, 70%  $\leq$  60MB
- Result:
  - Apps were terminated (tombstoned) that didn't need to be on low end devices
  - User experience suffered since app always restarted

# Memory Caps - WP 8.1 Runtime

## Dynamic Memory Estimation

- ▶ System monitors how much memory your app is using over time
- ▶ Adjusts memory cap for app based on this data

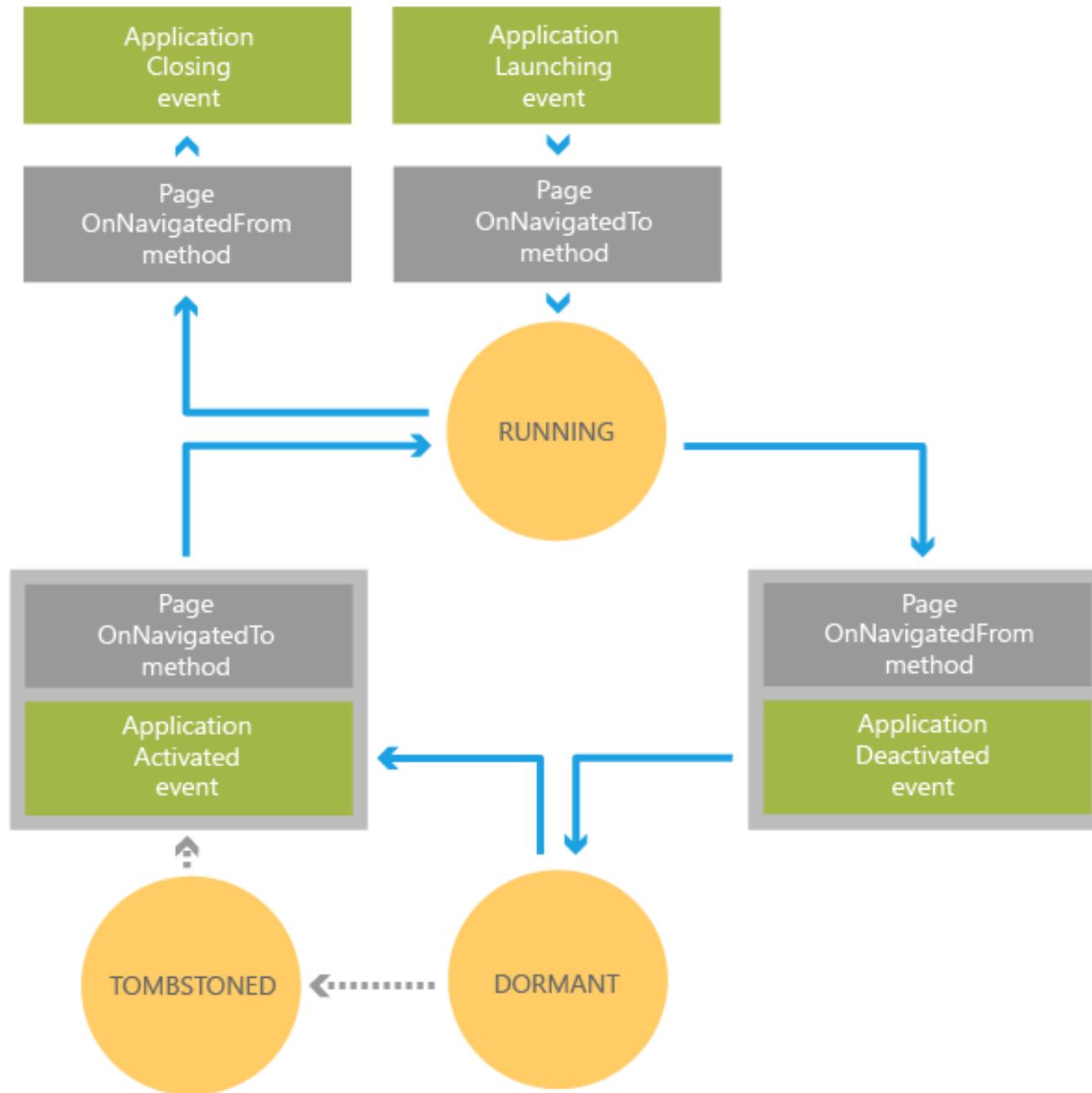
## Result

More apps stay in memory

512 Mb – some apps resume

> 1Gig – nearly all apps resume

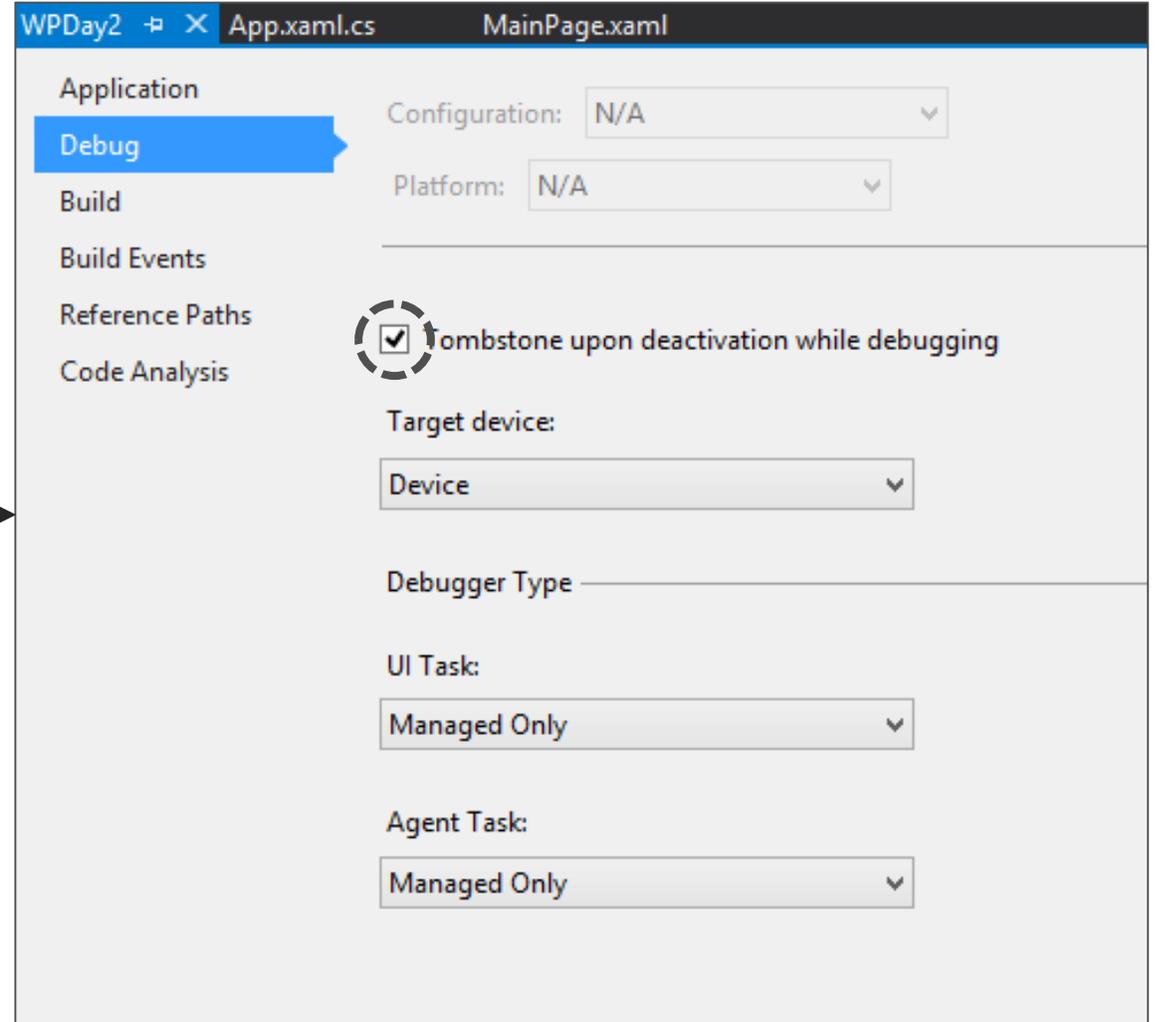
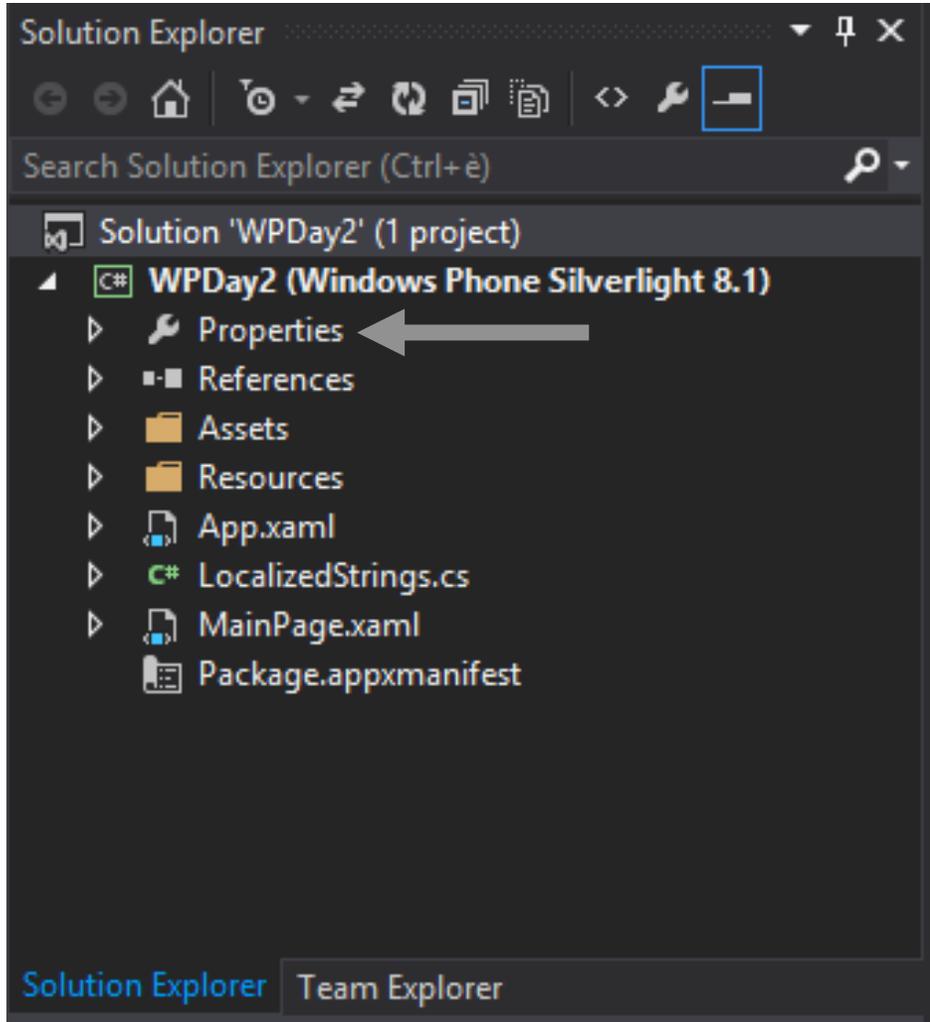
# LifeCycle in WP Silverlight



# Dormant - Tombstoned

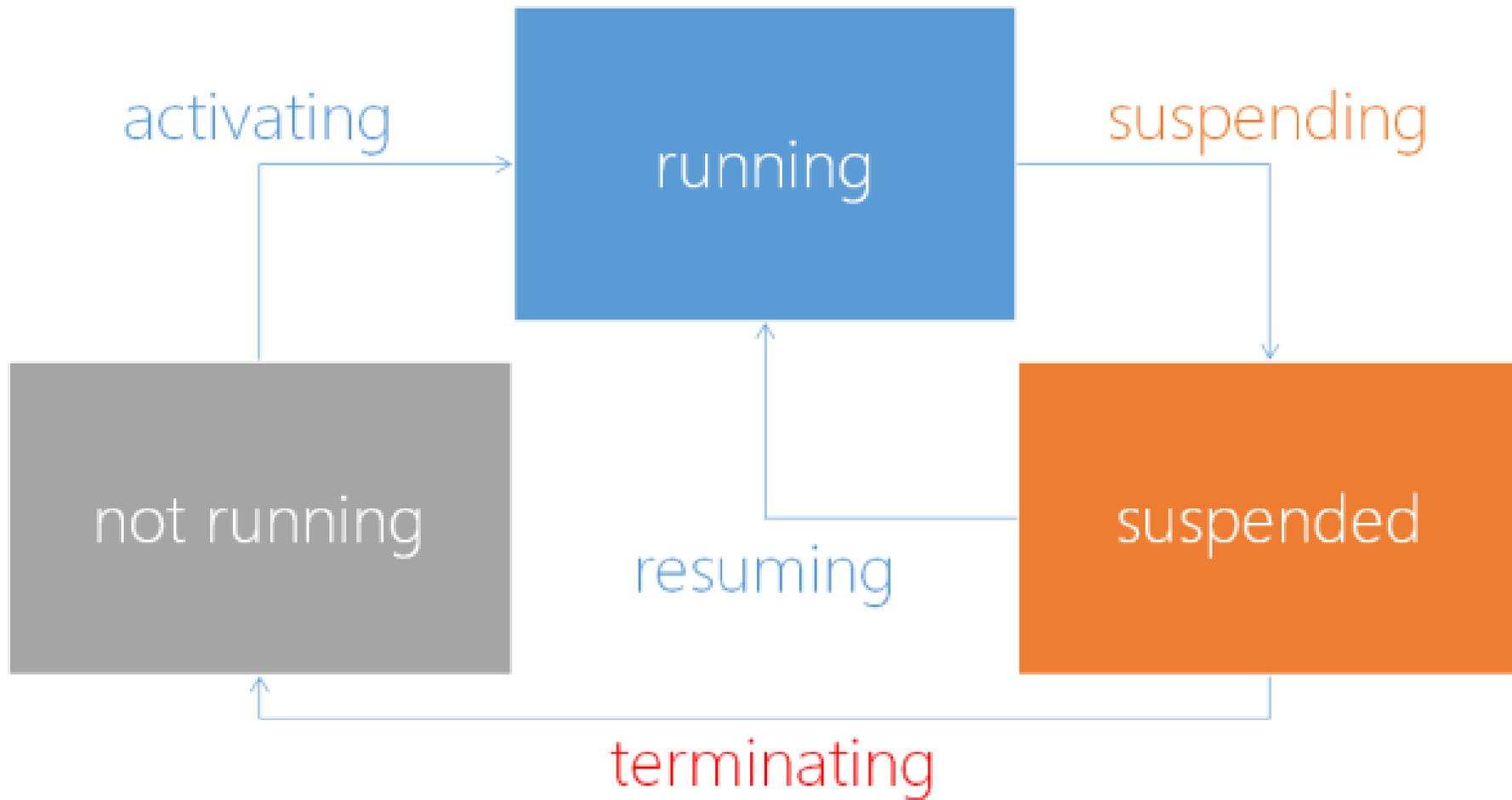
```
private void Application_Activated(object sender, EventArgs e)
{
    if (e.IsApplicationInstancePreserved)
    {
        // Dormant - objects in memory intact
    }
    else
    {
        // Tombstoned - need to reload
    }
}
```

# Tombstoned tests



# LifeCycle in WP 8.1

## Runtime



# DEMO

# Navigation overrides



`OnNavigatedTo`



`OnNavigatedFrom`

# Rapid saving of "WIP" (WinRT)

▶ `NavigationHelper`

▶ `LocalSettings`

# Navigation Helper

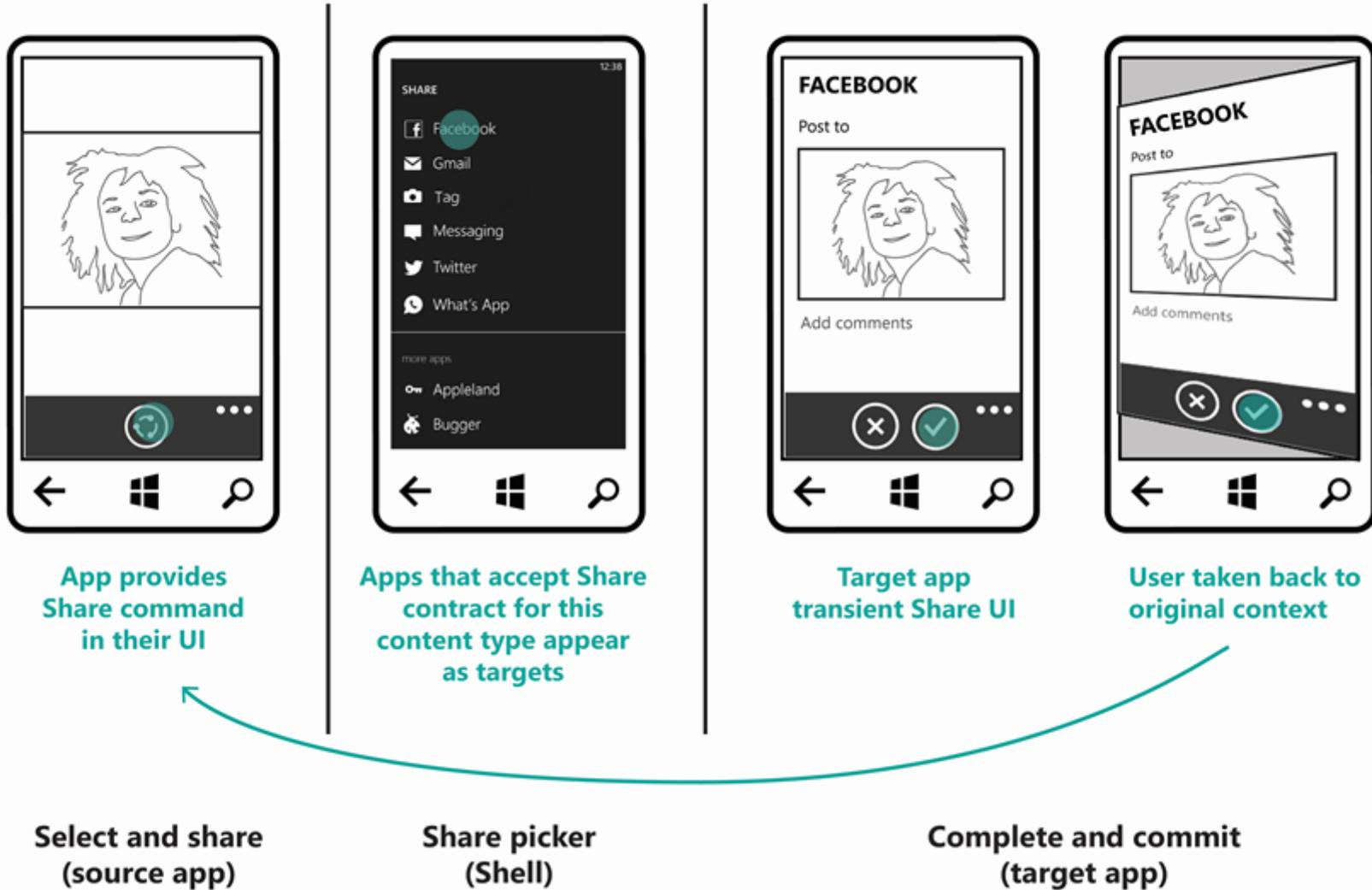
```
//Salvataggio
```

```
private void NavigationHelper_SaveState(object sender, SaveStateEventArgs e)
{
    e.Pagestate["value"] = TextBox.Text;
}
```

```
//Caricamento
```

```
private void NavigationHelper_LoadState(object sender, ActivatedEventArgs e)
{
    if (e.PageState != null && e.Pagestate.ContainsKey("Value"))
    {
        TextBox.Text = e.PageState["Value"].ToString();
    }
}
```

# Pay attention on low memory devices



# Do's....

- When **resuming** after a short period of time, return users to the state the app was in when the user left.
- When **resuming** after a long period of time, return users to your app's default landing page.
- Save app data when the app is being **suspended**.
- Update the UI if content has changed since it was last visible to the user.

# ...Don'ts

- Restore state for an app that was explicitly **terminated** by the user.
- Restore state for an app that was **terminated** as the result of a crash.
- Strand users on deep-linked pages.
- Don't include Close buttons or offer users other ways to **terminate** your app in its UI.

# THANK YOU

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