

# Banishing the slow

And other cheesy clichés

Oren Nachman

Software Development Engineer in Test  
Microsoft Corporation

<http://www.nachmore.com>

<http://blogs.msdn.com/oren>



# Agenda

- Back to Basics
  - Silverlight Threading on the Phone
  - Performance debugging
- Real-World app pain points
  - ListBox
  - Memory
  - Networking
  - Popup
- Tools Demo / Information
- Summary / Q&A



- WhitePaper
  - <http://bit.ly/aSJHS8> - doc
  - <http://bit.ly/9A93TN> - samples
- Shane's Channel 9
  - <http://bit.ly/9h3V7u>
- PDC Talk
  - <http://bit.ly/cvVvY4>

# *Further Reading*





*The Usual Reaction...*



**Back to  
Basics**

# Fake App

FrameRate Counters  
Redraw Regions  
Cache Visualization

*demo*

# Flags in Code

```
Application.Current.Host.Settings.EnableFrameRateCounter = true;
```

```
Application.Current.Host.Settings.EnableRedrawRegions = true;
```

```
Application.Current.Host.Settings.EnableCacheVisualization = true;
```

Friendly reminder: Turn these off before shipping! (I wrap them if #if DEBUG)





# Simple Reddit

The Bad & The Ugly



*demo*



# Desktop Threading Model

UI  
Thread



`new Thread()`  
`ThreadPool.QueueUserWorkItem(BackgroundTask)`

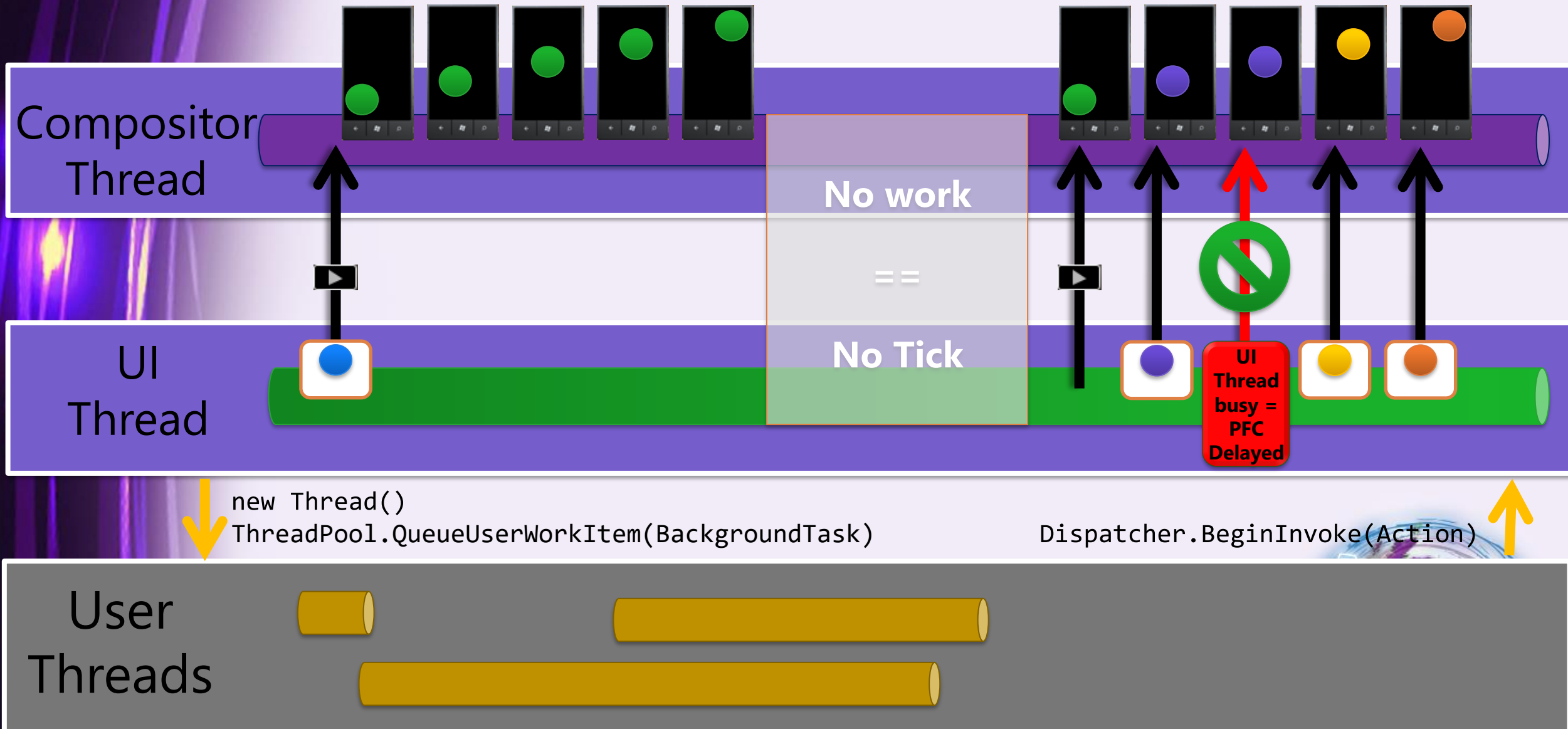
`Dispatcher.BeginInvoke(Action)`



User  
Threads



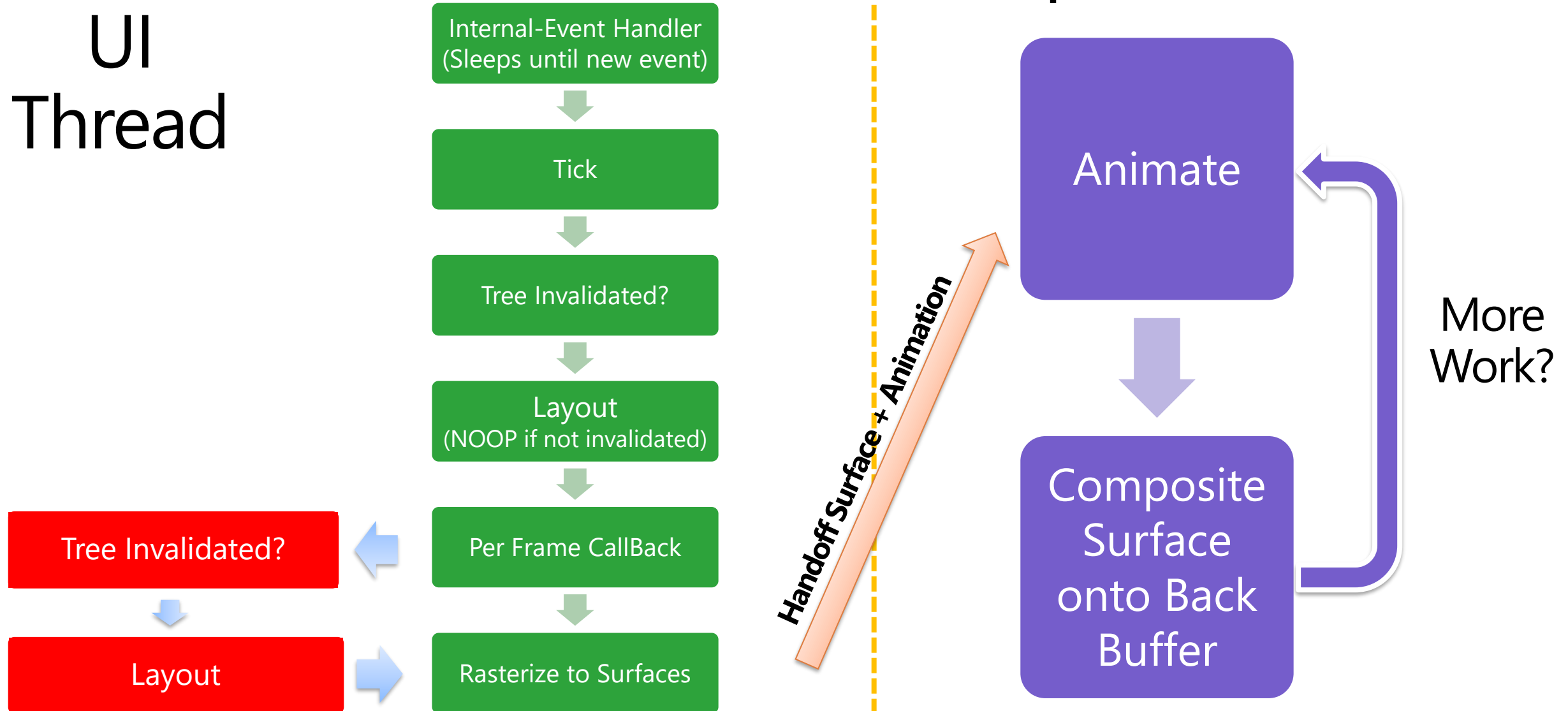
# Phone Threading Model



# Thread Responsibilities

## Compositor Thread

## UI Thread



# What is *not* Hardware Accelerated

- Anything that modifies the base texture of an object (e.g. a colour animation)
- Opacity Mask
- Non-Rectangular Clips
- Non-Storyboard animation (per-frame callbacks)
  - **CompositionTarget.Rendering**





# Simple Reddit

Anatomy of a perf fix



*demo*



# Pain Points

# ListBox

- Toolkit – LongListSelector ([silverlight.codeplex.com](http://silverlight.codeplex.com))
- LowProfileImageLoader (David Anson)
- Watch out for UI thread work during a ListBox action
- Architecture tradeoffs:
  - Virtualized vs Non-Virtualized
  - Populate while loading (**INotifyCollectionChanged**) vs
    - Load everything and bind at the end





# Panorama / Pivot

- Panorama will load all pages – from the get go
- Pivot will collapse pages that are not in or next to view
- Delay load if loading is killing your UI thread
- Binding will bind across all pages!
  - Update your View according to what is in the user's view!





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Benson Porter, Addison Avenue's current President and CEO, will become President and CEO of the new First Tech Federal on January 1. Although we will legally become First Tech Federal Credit Union on January 1, 2011, we'll continue to be known as First Tech. There's really **nothing** you need to do differently now. You can continue to bank just as you do today, and we'll continue to offer you the same accounts and services.

We're proud to be a part of this important milestone in First Tech's history, and we're excited about what the future holds for you as a First Tech member. If you have any questions, please visit [www.firsttechcu.com](http://www.firsttechcu.com) or email [learnmore@firsttechcu.com](mailto:learnmore@firsttechcu.com).

# Copy & Paste

- No developer API
- Automagically applies to all TextBox controls
  - And derivatives
- Textbox in Pivot or Panorama? Requires recompile + resubmit
- TextBox is heavier than TextBlock



# Networking

- Use HttpWebRequest on Background Thread
  - Background -> Background ThreadPool
  - UI Thread -> UI Thread
- Limit of 6 parallel requests (extras will queue)
- Serialization – JSON, XML, Binary?
  - Network? Payload size will dominate
  - Isolated Storage? Speed will dominate
- Advanced: WiFi? Download larger chunks & in parallel



# Popup

- Minimal Hardware Acceleration
- Plan Ahead Instead!
- See blog for full screen popup workaround





# Summary

- 60fps is attainable!
  - But don't kill yourselves if you're at 45
- No "blue pill"
  - Use the debug flags!
    - (Counters + RedrawRegions)
  - Plan & test for perf from the start
  - Plenty of resources – use them!
  - Feel free to reach out for help

## Winning Patterns!







**Q&A** *(if time)*



# Useful Links

- SLM Perf Team Blog
  - <http://blogs.msdn.com/slmpperf>
- Performant Progress Bar (and other controls)
  - <http://silverlight.codeplex.com/>
- David Anson's LowProfileImageLoader
  - <http://bit.ly/ajnDch>
- Oren Nachman
  - <http://www.nachmore.com> or <http://blogs.msdn.com/oren>



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