

Faster than a speeding app...

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**

Castaway

Threading, Redraw and FillRate Problems

Early prototype of "Hungry Castaway"
By Roger Peters (SmartyPantsGaming.com)

demo



Desktop Threading Model

UI
Thread



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

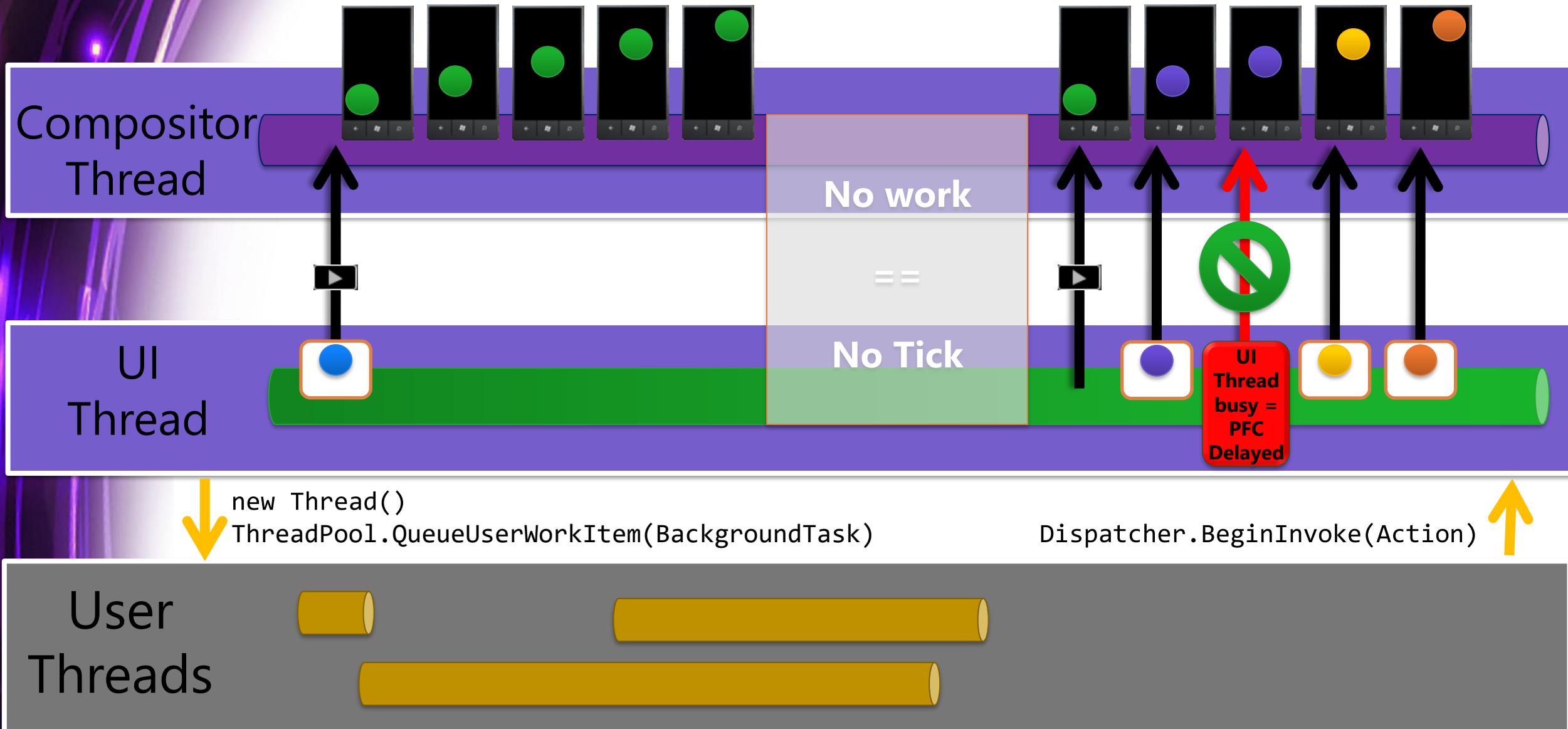
`Dispatcher.BeginInvoke(Action)`



User
Threads



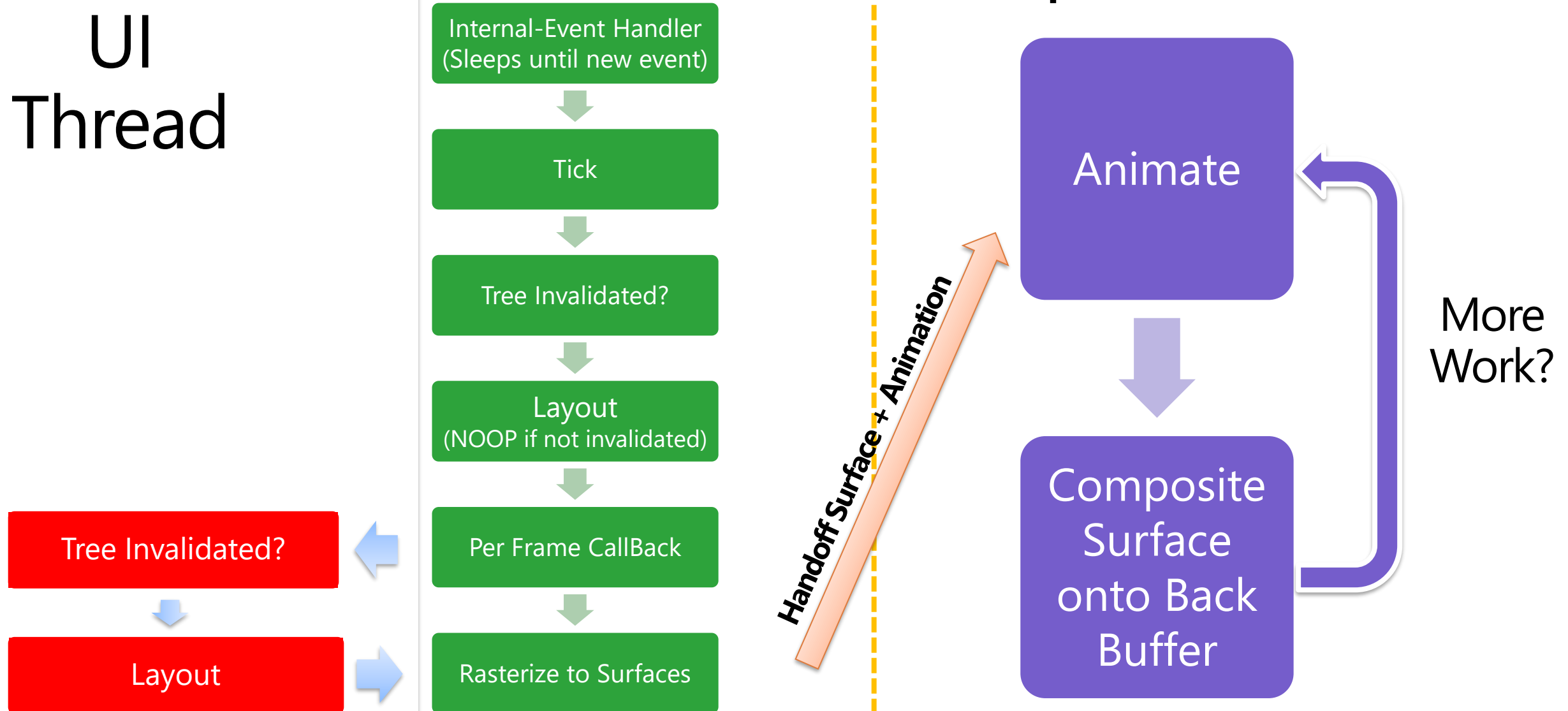
Phone Threading Model



Thread Responsibilities

Compositor Thread

UI Thread



What gets kicked off the compositor thread

- Anything that modifies the base texture of an object
- Opacity Mask
- Non-Rectangular Clips
- Non-Storyboard animation (per-frame callbacks)

CompositionTarget.Rendering

Microsoft®
tech.days
United Kingdom 2011

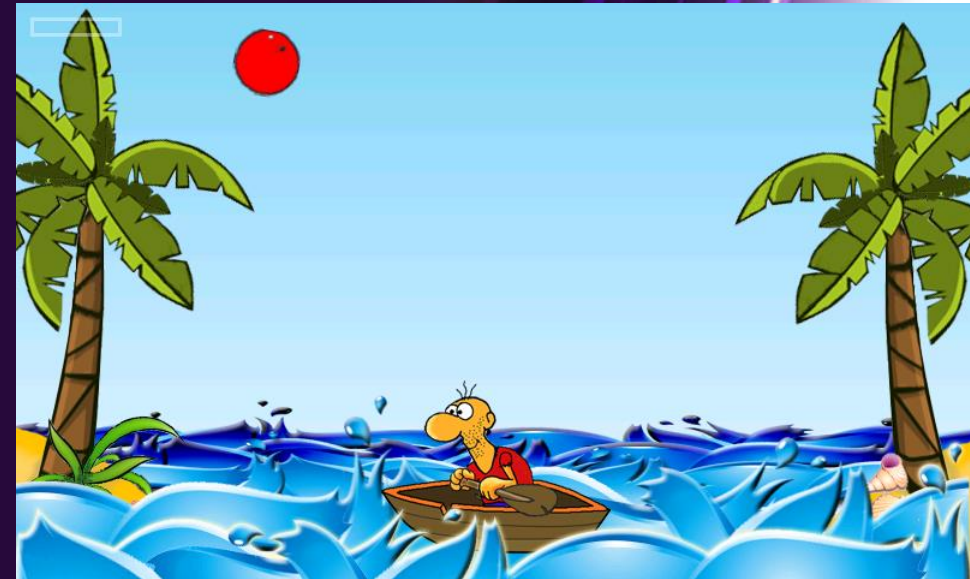
23 - 25 May | London UK

Castaway

The Solution

Early prototype of "Hungry Castaway"
By Roger Peters (SmartyPantsGaming.com)

demo





Pain Points

ListBox

- Toolkit – LongListSelector (silverlight.codeplex.com)
 - LowProfileImageLoader (David Anson)
 - Watch out for UI thread work during a ListBox action **PrepareContainerForItemOverride**
- Architecture tradeoffs:

Virtualized vs Non-Virtualized

Accidental dropping of Virtualization

Load everything and bind at the end

Slow load

Populate during loading

(**INotifyCollectionChanged**)

Possibly jerky while loading

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!

... tell you that First Tech members have approved our merger with Addison Avenue Federal Credit Union. As your Board, we unanimously supported this new partnership and a majority of First Tech members who voted agreed. Thank you for your confidence in us. We're excited about this unique partnership of equals and the opportunity to deliver more value for you.

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 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 or email 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 -> `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>

Thank You!

- Thank You for attending today's Tech.Days Online Conference.
- Today's Online Conference will be recorded. It will be made available on-demand very soon.
- Your Feedback Matters! Please complete the online evaluation form which will be emailed to you.

Microsoft®
tech.days
United Kingdom 2011

ONLINE CONFERENCE

Microsoft®

© 2008 Microsoft Corporation. All rights reserved. Microsoft, Windows, Windows Vista and other product names are or may be registered trademarks and/or trademarks in the U.S. and/or other countries. The information herein is for informational purposes only and represents the current view of Microsoft Corporation as of the date of this presentation. Because Microsoft must respond to changing market conditions, it should not be interpreted to be a commitment on the part of Microsoft, and Microsoft cannot guarantee the accuracy of any information provided after the date of this presentation. MICROSOFT MAKES NO WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, AS TO THE INFORMATION IN THIS PRESENTATION.