

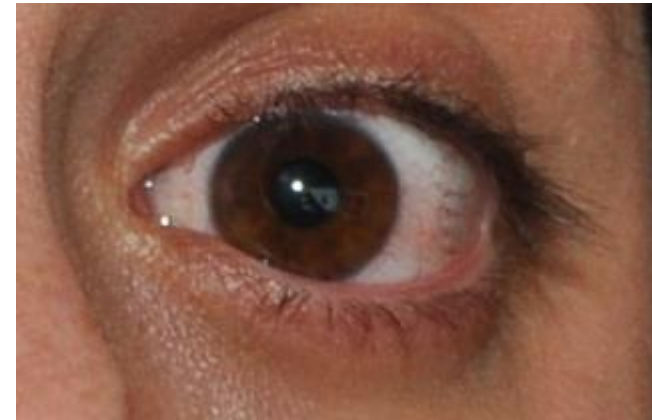
//build/

**perf what?**

# The Usual Suspects

- Resource usage
  - CPU / GPU usage
- User experience
- Battery life
- Responsiveness
- Fps

# The Guilty



Who you are



# Performance



**Why You're Here**

Oren Nachman  
Windows Phone Performance Team

**//build/**

# Agenda



**This is the guy from the template. You think you're cool with your Surface™? He's got a Wall™...**

- Perf & You
- Where we came from
  - A brief overview
- Where we're going
  - What's new in 8
- How you can get there
  - SL/XAML
  - Native / Hybrid
  - Memory
- Now go further
  - Profiling


What we've  
been working  
(hard) on





# What's Improved

**Nice way of saying – “What wasn’t as good as we would have liked it to be last time”. Which is a nice way of saying...**



What used to  
keep you up at  
night

- Startup
  - NGEN
- Splash Screen
- Fill Rate
- Panorama & Pivot Jerkiness
- ListBox Blanking
- ProgressBar – Finally!

**Thing(s)  
that keep  
me up at  
night**

**Day 2: Just before  
discovering that lungs  
(and vocal chords) are  
for more than just  
breathing...**



# What's New

**i.e. Pure, Distilled awesomeness**

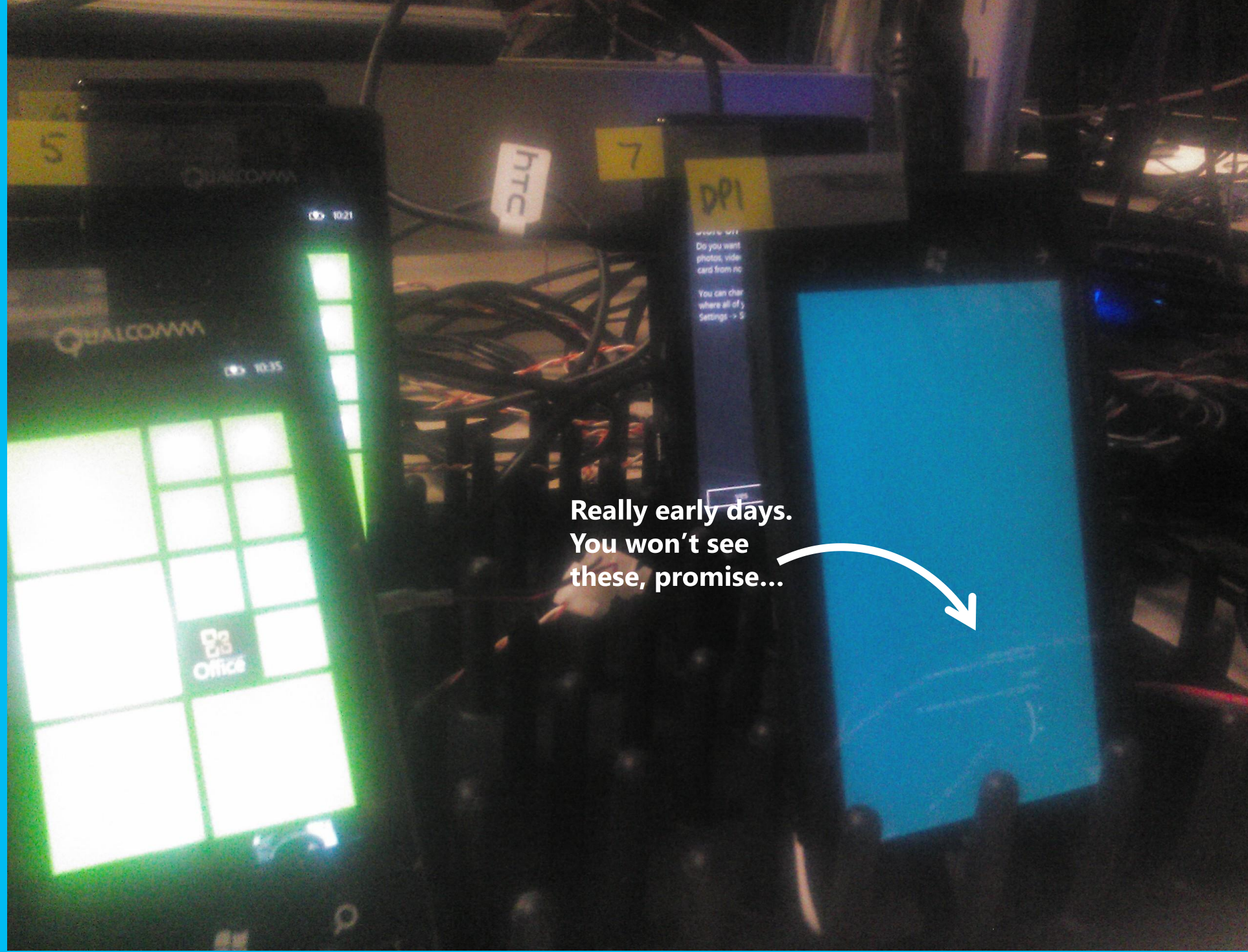


Things that  
should keep you  
up at night  
(exploring)

- LongListSelector
- Multi Core
- Image Decode to Size
- ViewportControl
- Pure Native & Hybrid
  - Windows Runtime projects only from Native to managed (but you can still use events...)



# Perf Appetisers



# Terminology

Things I'll say  
interchangeably



- Silverlight == XAML
  - XAML != Windows 8
- Native – pure C++ (D3D project)
- Mixed Mode / Hybrid – XAML project with C++ dlls

One day all of the demos  
will be as easy as this one...

... and I'll be out of a job.

The "I like free stuff" Demo:

- Upgrading a project to 8.0

For general purpose XAML  
perf see any of the talks at  
<http://aka.ms/q1fnvo>





The "I don't want to make lot's of changes – but you should" Demo:

- Convert LB to LLS

For general purpose XAML perf see any of the talks at <http://aka.ms/q1fnvo>

# Memory



- **Red Flag:** Memory limits are now enforced
- XNA & SL/XNA is default capped at 150MB (opt-in to 180MB)
  - Regardless of device specs
- Find memory table and extract nuggets that apply to you
- Exempt from limit when under debugger



# Memory (cont.)



**If you couldn't  
tell, memory is a  
big deal for perf**

- Different memory usage at different screen resolutions
  - Larger Screen == Larger Textures
- Image Decoding
- Pano (less memory)
  - Increase from hi-res
- Paging
  - Large memory users will see slow resumes especially when invoking system tasks

# Don't forget your (XAML) friends

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

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

# Hybrid

## .NET & C++



Oh. Oh. He's run  
out of pictures...

- Consider workloads
  - Small Managed WinRT projection may have a large Native backing
- Discuss DrawingSurface / DrawingSurfaceBackground Grid
  - DSBG supports scalers
- Demo: HybridMarbleMaze

D3D (Native / Hybrid) • Consider setting a different (lower) resolution

max !(always)= best

(scalers for DSBG or Back Buffer size in Native)

- See generic D3D talks
- Phone supports D3D 9 Level 3
- WARNING: Emulator supports higher D3D level

C++



**Fun fact: pure native apps are their own .exe instead of running within the regular XAML container (TaskHost.exe)**

# DEMO: Marble Maze

- Scalers (screen res)
- FPS
- DS vs DSBG

\$10 says I fall into a hole  
before actually being able  
to demo what I need to  
demo...

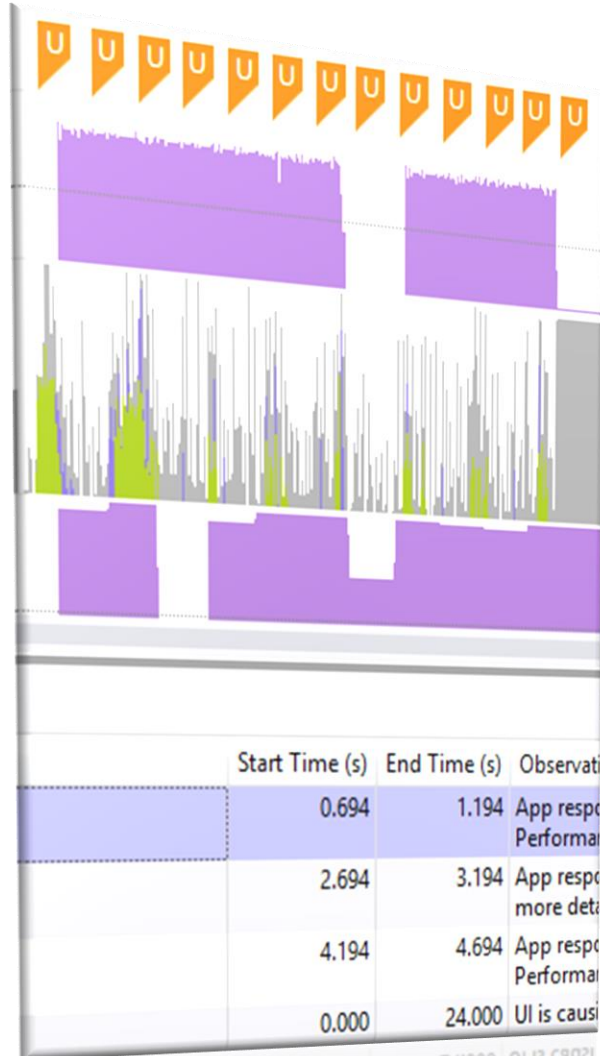
Get the demo: <http://aka.ms/vwwtxa>

00:01.7

The Doctor is In

<Insert  
reference to the  
real doctor.>  
<Who?>

# VS Profiler – SL/XAML

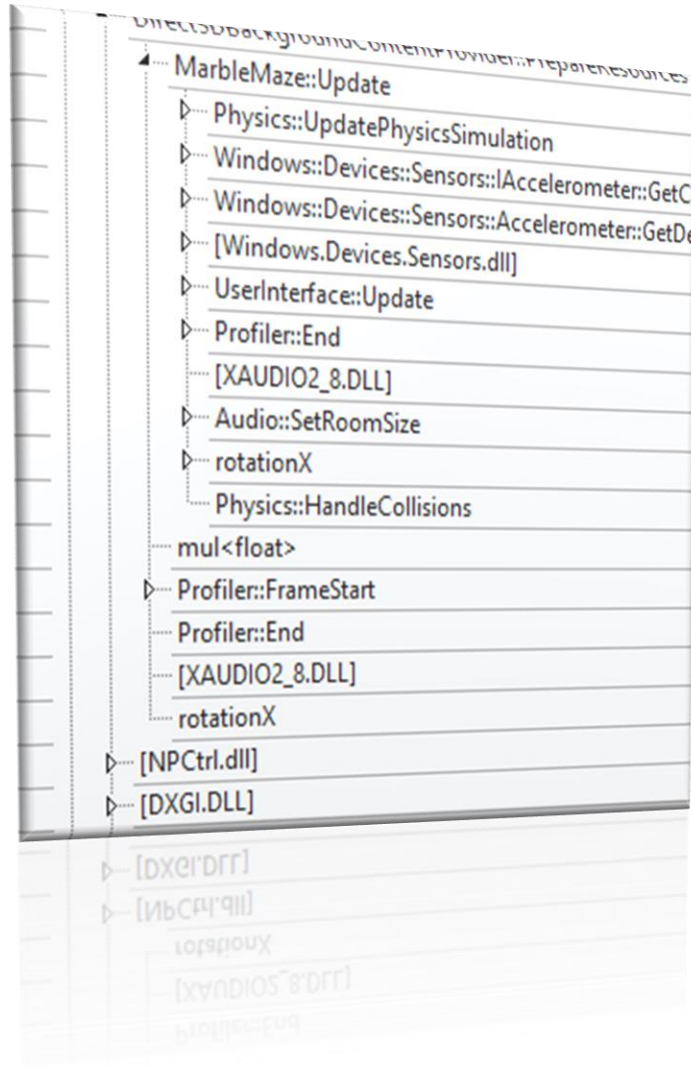


**Say "hello" to my not-so-little friend...**

- The basics – quick RealWorld profiling session
- New stuff to play around with:
  - Network
  - Battery
  - app responsiveness
  - Monitoring of various real life events (network, phone lock etc.)



# VS Profiler – Native / Hybrid



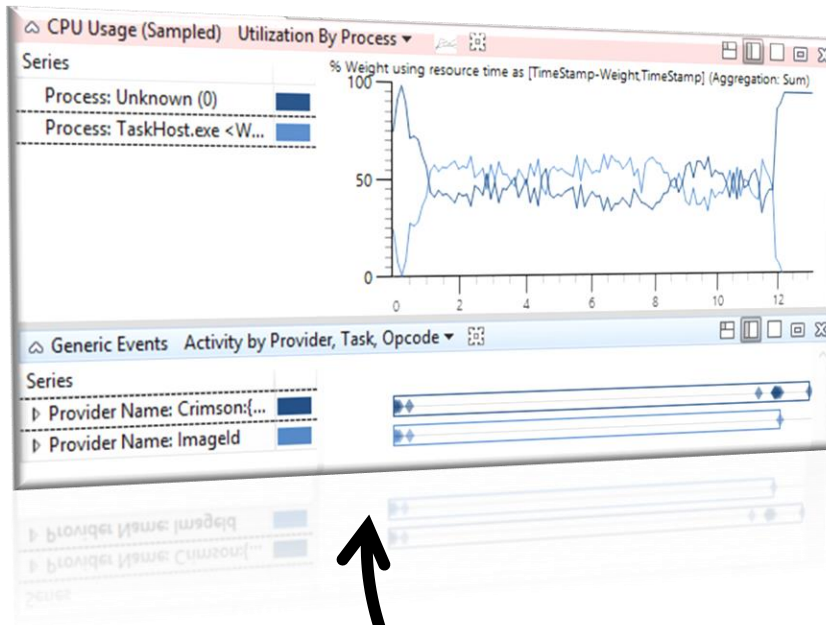
- The basics –a quick native profiling session and a run down of the in-VS experience

**If it had a black background and green foreground it would be the ultimate hacker UI from the next blockbuster movie.**



# VS Profiler + Red Pill =

**This is where things get real interesting. Ironically it's also where we run out of time...**

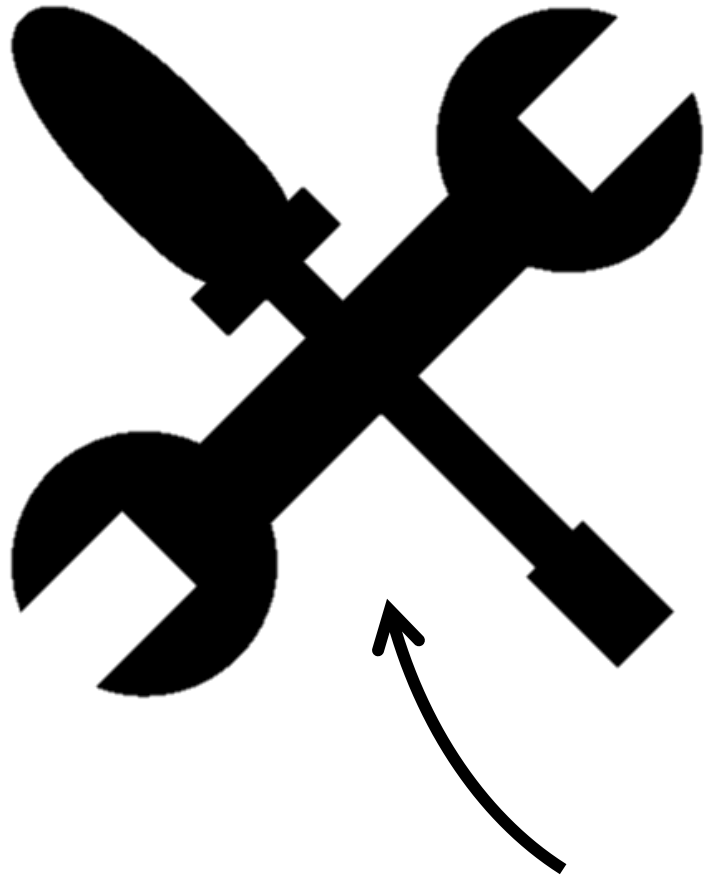


**More graphs? Really?**

Use the tools we use internally

- Open traces in WPA/Xperf
- ETW for WP

# Power Tools



**Never leave home without them...**

<http://wptools.codeplex.com>

- Visual ISO Store explorer
- Beta supports WP8 + WP7.5
- Manage developer xaps
- Profiler – coming soon



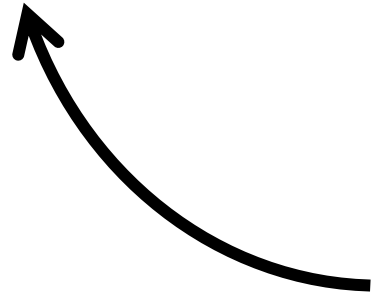
**Perf team scrum, sans  
photographer (the guy  
speaking right about now...)**

# Q&A







 **The new logo rules!**

- I'll be at the WP booth for the next couple of hours
- Grab me for lunch / beer later today
- Take an API poster!