Using C++ in your Windows Phone Applications

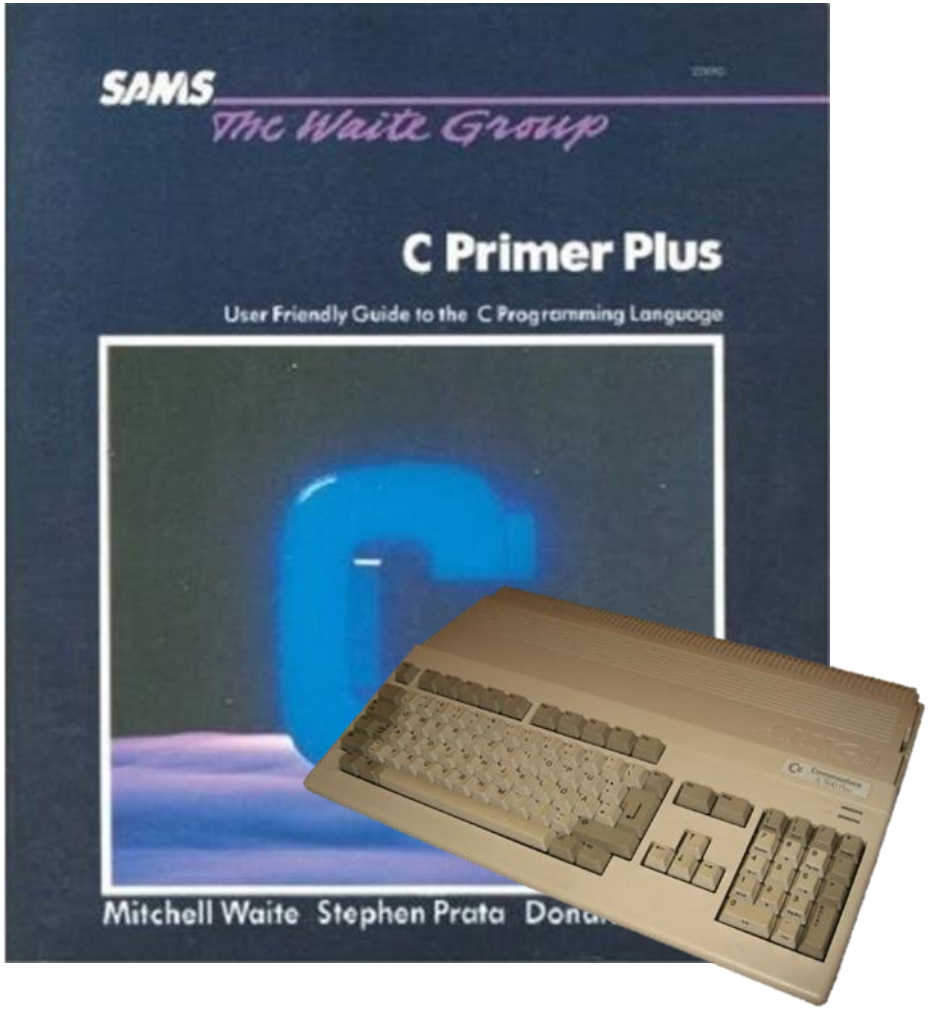
- Tim Laverty
- timlav@microsoft.com
- @timlaverty
- Principal Program Manager
- Windows Phone

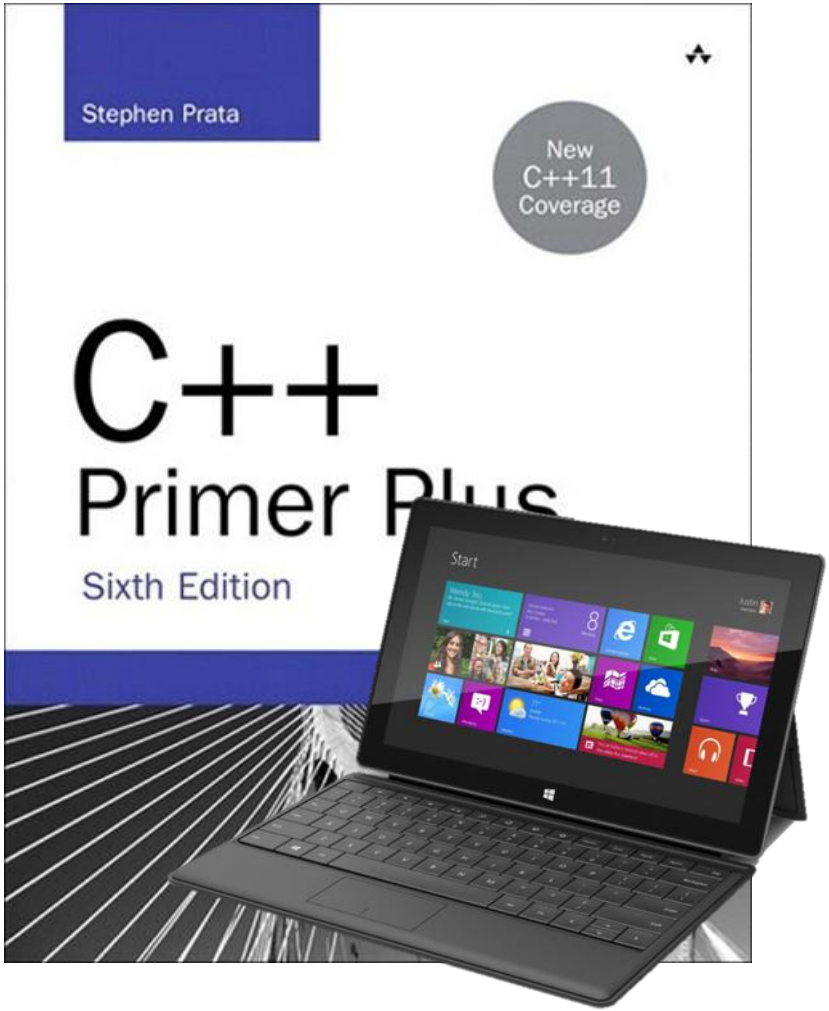
Microsoft® TechEd China 2012

Agenda

- C++ support in Windows Phone 8
- When and why to use C++
- Introduction to Windows (Phone) Runtime
- ~30 minutes of demos!

Welcome back to C++!


SAMS
The Waite Group
C Primer Plus
User Friendly Guide to the C Programming Language
Mitchell Waite Stephen Prata


Stephen Prata
New
C++11
Coverage
C++
Primer Plus
Sixth Edition
Start

C++ support

- Visual C++ 2012
- Same as Windows 8
- New C++11 features

C++ support Cont.

RValue references	Forward declared enums	Bidirectional fences
static_assert	Alignment	Data-dependency ordering
Auto	Standard-layout and trivial types	exception_ptr
Trailing return types	Extended friend declarations	Thread-local storage
Lambdas	Local and unnamed types as template arguments	__func__
Decltype	Range-based for-loop	C99 preprocessor
Right angle brackets	override and final	long long
extern templates	Minimal GC support	
nullptr	Atomics	
Strongly typed enums	Strong compare and exchange	

Derived from http://msdn.microsoft.com/en-us/library/hh567368.aspx

Quick tour of C++ features

- Demo
- Brief walk-through of key C++ features
- Direct3D default template

When and why to use C++

Using C++ in Windows Phone apps

- All Windows Phone 8 apps can use native code
- Direct3D games: Pure native
- XAML apps: Native compute + Direct3D
- ...but not all apps **need** to use native code

See 3-046 for more on native games

Top 3 use cases for C++

1. Performance
2. Reusability
3. Portability

- *There is no requirement to use C++ in your XAML apps*

C++ code re-use

- Demo
- Using legacy code in Windows Phone 8 apps

Introduction to Windows (Phone) Runtime

- reinterpret_cast<Phone>(WindowsRuntime)

What is the Windows Runtime?

Infrastructure:

- Core plumbing
- Common type system
- Standard programming model

APIs:

- Windows Phone features
- Libraries you write (or license)
- Projected to C++ and C# / VB

When is the Windows Runtime used?

- Calling APIs
- Native / Managed Interop
- Direct3D game app model

Windows Runtime

- Demo
- Calling APIs from C#
- Creating a component in C++ and using from C#
- The magic of async

Writing portable components

Sharing code across platforms

- With iOS and Android:
- Standard C and C++
- Common libraries
- Middleware providers
- With Windows 8, add:
- Windows Runtime
- Win32 and COM

See 3-043 for more on Windows 8 portability

Using SQLite in Windows Phone 8

- Demo
- Real-world example of common open source library
- Another look at async

Key takeaways for using C++

- All Windows Phone 8 apps can use C++
- C++ enables portability and code re-use
- Windows Runtime is the key to unlocking APIs

THANK YOU!