# Recent C++ goodies: tools and more

CAN C++ DEVELOPERS BE MORE PRODUCTIVE IN 2018?

Bartłomiej Filipek, bfilipek.com

# About me

See my coding blog at: www.bfilipek.com

10y+ experience

Currently @Xara.com
◦ Text related features for advanced document editors

Somehow addicted to C++ ☺

# The plan

C++ Status

Tool Demo
- Visual Studio 2017
  - Clang Power Tools for VS
  - Core Guideline Checker
  - …
- SourceTrail
- Live++
- Conan

Summary

# C++ Status

4th December 2017 - C++17 has been published as ISO/IEC 14882:2017

C++20 on the way!

ISO Meetings
- November 2017: Albuquerque [AL-bu-kur-key], USA
  - Herb Sutter Report
  - botondballo trip report
  - r/cpp/ live thread
- March 2018: Jacksonville (JAX), USA
  - r/cpp/2018_jacksonville_iso_c_committee_reddit_trip/
  - Vittorio Romeo: trip report: first ISO C++ meeting experience
- June 2018: Rapperswil, Switzerland
- November 2018: San Diego, USA

# C++20 what's already there?

Albuquerque, November 2017
- operator<=> (aka the spaceship operator) and library support for operator<=>
  - P0515 R3
- Range-based for with initializer
- Lambdas in unevaluated contexts
- Deprecate POD - P0767R1 – "trivial" and "standard-layout"
- Apply [[nodiscard]] to the standard library - P0600R1
  - On async, allocate, launder, new, empty
- std::osyncstream
- std::to_address
- constexpr std::complex
- constexpr algorithms
- Floating point std::atomics
- std::string/std::string_view .starts_with and .ends_with

# C++20 what's already there?

Jacksonville, March 2018

- ◦ [[no_unique_address]], which enables the empty base optimization for final types
- ◦ Make typename optional in more places
- ◦ [[likely]] and [[unlikely]]
- ◦ <version> header
- ◦ Calender and timezone library
  - ◦ https://github.com/HowardHinnant/date
- ◦ syncstream manipulators for C++ Synchronized Buffered Ostream
- ◦ span
- ◦ Pack expansion in lambda init-capture: [...args = std::move(args)](){}

# C++20 – what's planned?

To boldly suggest an overall plan for C++20 - P0592R0

- ◦ Modules
- ◦ Concepts
- ◦ Ranges
- ◦ Networking

# Tools

Disclaimer: In most cases I'm not an expert! ☺

# Visual Studio 2017

Released in March 2017
- 5 updates in 2017
- Current version: 15.6.2 (8th March 2018)
- Community version is free

Open Folder

Cmake support – 15.4

Clang compiler!

Improvements…
- Google and Boost Tests adapters since 15.5!
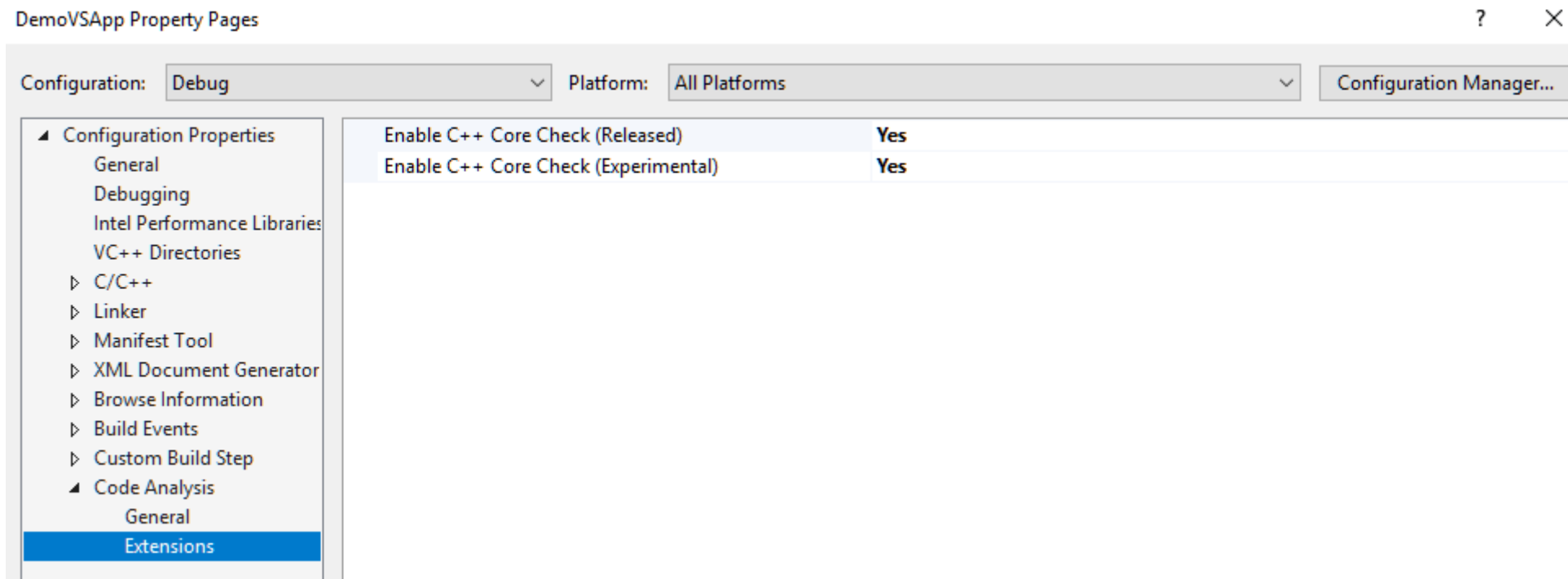- https://docs.microsoft.com/en-us/visualstudio/test/how-to-use-google-test-for-cpp

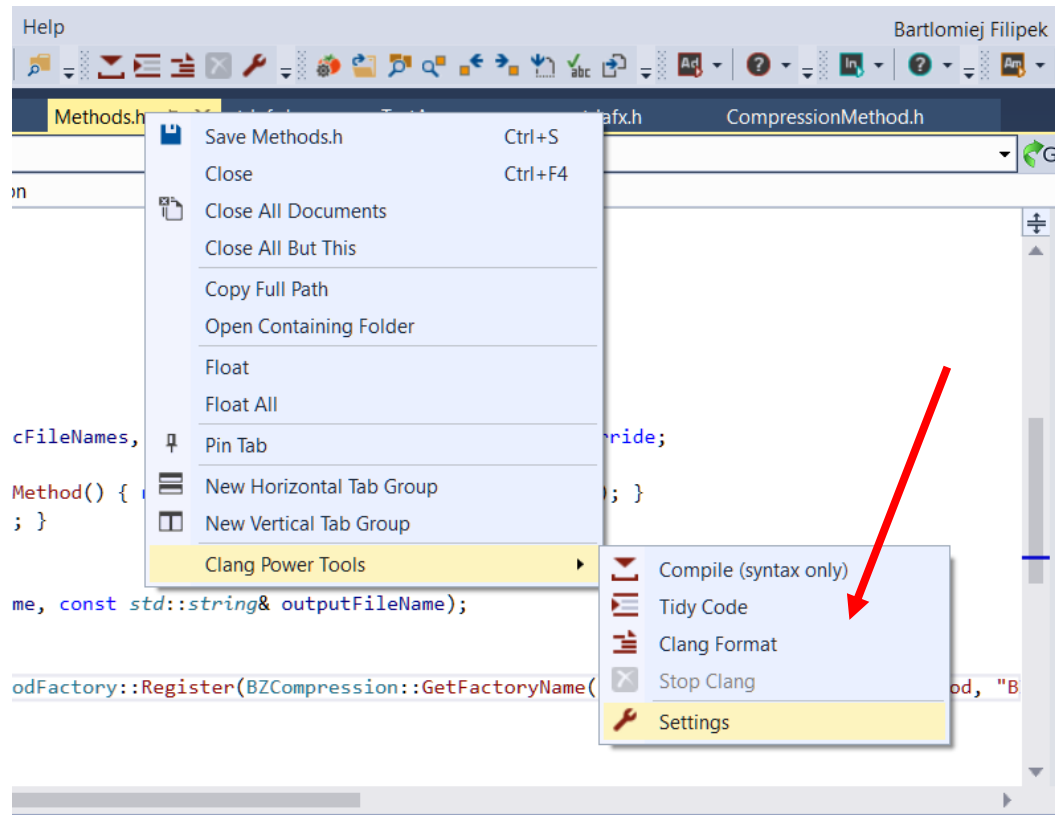Visual Studio 2017 for C++ developers – you will love it

# Core guidelines

Cpp CoreGuidelines - Main Link

C++ Core Guidelines Checker in Visual Studio 2017

# Clang Power Tools for VS

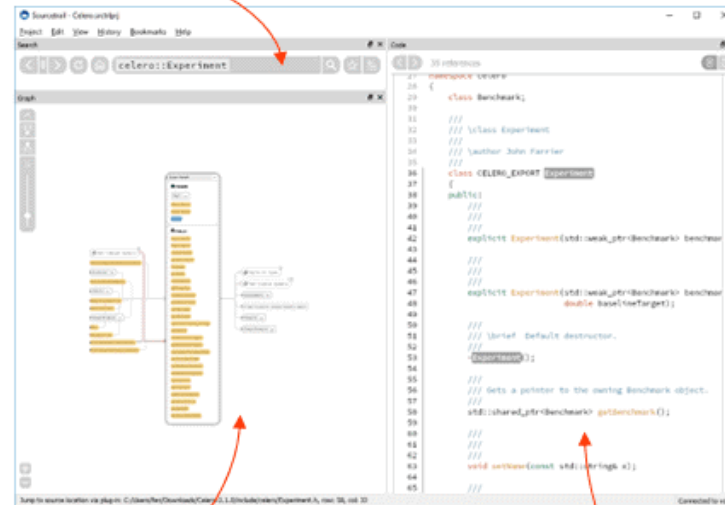https://zed0.co.uk/clang-format-configurator/

# SourceTrail

http://www.bfilipek.com/2017/10/sourcetrail.html

# Conan

Package Manager for C++, version 1.1 currently

www.conan.io

Conan Center

Conan Transit

# Live++, from Molecular Matters

Hot patch your app on the go!

MSVC compiler
◦ LLVM in progress

x86/x64 - bit mode

Single DLL – loaded into your app

Compilation & patching process in the background

*Live++* will be released on March 27th



Molecular Matters -> Live++

# Others?

Clang:
◦ Address Sanitizer
◦ Undefined Behavior Sanitizer
◦ Memory Sanitizer

Static analysers
◦ CppCheck

IDE
◦ Clion
◦ QTCreator

Visual Assist

Vtune Free for commercial use!
◦ 90-day trial, with unlimited number of renewals

# Questions ?