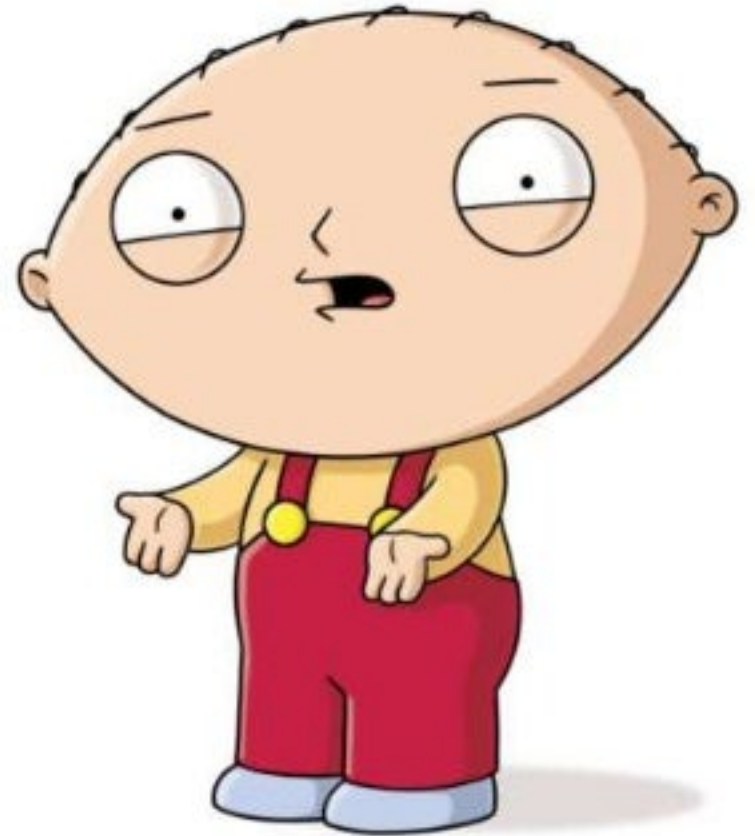solarwinds

CMake-ifying Large Projects

How to stay liquid without making a mess

Mike Gelfand

Principal Software Developer, SolarWinds MSP

- Worked with CMake on and off in and outside of company since 2009
- Lazy when it comes to slides about myself
- Lazy when it comes to slides

About our C++ code

Some background to start the conversation

- Around **30** own and **10** 3rd-party libraries/executables in 2009 (when we first started using CMake)

- Around **300** own and **30** 3rd-party libraries/executables in 2019

- Up until recently, everything in a single repository

- CMake 2.6 (2009) -> 2.8.4 (2012) -> 3.4 (2017) -> 3.12 (2018)

What we [should all] aim for

Make a wish, make it happen

- Understanding the codebase and its interdependencies
  - by maintaining physical layout and being explicit
- Using modern(-ish) CMake features
  - by using modern(-ish) CMake features
- Making sure our colleagues are happy
  - by preserving existing workflows and improving on them

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Important (or are they?) decisions

Don't overthink

- One or multiple repositories?

- Plain directory or Git submodule/subtree or Conan or...?

- Home-grown code only or third-party dependencies too?

None of the above matters!* But wait, how?!

* In an ideal world

Complex is simple, targets are power

- We can't live without them
  - every static/shared library or executable we build is a target
- We often underestimate them
  - there are other types of targets out there (e.g. those we don't build)
  - targets (and not only targets) have _lots_ or properties
  - targets could have private and public stuff
  - targets could be shared (exported and found/imported)

Useful stuff

Who doesn't want to read some more

- https://github.com/mikedld/corehard2019-cmake

- https://gitlab.kitware.com/cmake/cmake/issues/17735

- https://cmake.org/cmake/help/latest/ ;)

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