A build system generator

- CMake is a <u>generator</u>: it generates <u>native</u> build systems files (Makefile, Ninja, IDE project files [XCode, CodeBlocks, Eclipse CDT, Codelite, Visual Studio, Sublime Text...], ...),

- CMake scripting language (declarative) is used to describe the build,

- The developer edits `CMakeLists.txt`, invokes CMake but should <u>never</u> edit the generated files,

- CMake may be (automatically) re-invoked by the build system,

- CMake has friends who may be very handy (CPack, CTest, CDash)

The CMake workflow

1. <u>CMake time</u>: CMake is running & processing `CMakeLists.txt`
2. <u>Build time</u>: the build tool runs and invokes (at least) the compiler
3. <u>Install time</u>: the compiled binaries are installed
   i.e. from build area to an install location.
4. <u>CPack time</u>: CPack is running for building package
5. <u>Package Install time</u>: the package (from previous step) is installed

When do things take place?

CMake is a <u>generator</u> which means it does not compile (i.e. build) the sources, the underlying build tool (make, Ninja, XCode, Visual Studio...) does.

The CMake workflow (pictured)

CMakeLists.txt

Project file(s), Makefiles, …

Object files

Source files

Installed files

Generated Sources files

Binary package

Source package

Installed package

CMake time

Build time

Install time

CPack time

Package Install time