Without Warning

Keeping the Noise Down in Legacy Code Builds

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> *legacy code* is simply code without tests
>
> — Michael Feathers, *Working Effectively With Legacy Code*

DANGER
WARNING
WARNING
WARNING
WARNING!
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING
WARNING THIS SIGN IS ONLY A DISTRACTION
DONT P
FINAL WARNING
WARNING
WARNING
TO AVOID INJURY DON'T TELL ME HOW TO DO MY JOB
WARNING
WARNING
WARNING
2 Minute WARNING
WARNING ! DO NOT TOUCH AUTHORIZED PERSONNEL ONLY
Microsoft Warns Use Windows 7 'At Your Own Risk'
EARLY WARNING
WARNING
DROP! COVER! HOLD ON!
WARNING YOU
WARNING
WARNING SMOKING MAY CAUSE CANCER, BIRTH DEFECTS, LUNG DAMAGE, OR BRAIN DAMAGE
0-3
WARNING
WARNING
BIOHAZARD
SPOILER WARNING
WARNING UNHOLY EXPERIMENT IN PROGRESS
CONES warning
EBOLA ALERT
WARNING
WARNING ICE
EARLY WARNING LABS
WARNING
Do not touch
Emergency Warning
DANGER
WARNING BEWARE OF DASHED DREAMS
WARNING NO TRESPASSING VIOLATORS WILL BE SHOT SURVIVORS WILL BE HUNTED
WARNING GENIUS AT WORK
Warning Men working overhead
IKEA
Warning
IKEA Home furnishings
WARNING ZOMBIES AHEAD
WARNING THE FOLLOWING PHOTOGRAPHS INCLUDE GRAPHIC IMAGERY
CAUTI HIGH VOLT
TERROR
PARENTAL ADVISORY
FIRST WARNING WEATHER
WARNING
WARNING

THIS WAY
HANDLE W
GREAT C
THIS WAY UP
HANDLE WITH
GREAT CARE
DO NOT DROP
THIS WAY UP
THIS WAY UP
HANDLE WITH
CARE

```
p(16958): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
p(16962): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
p(17006): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
p(17010): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
p(17054): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
p(17058): warning C4244: '=' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
s (git)\5d-git\5d_gui\5d_gui\src\plotting\plotting files\t21plottingarea.cpp(272): warning C4701: potentially uninitialized local variable 'iWidth' used [C:\Users\E184727\Workspaces (git)\5D-git\5D
s (git)\5d-git\5d_gui\5d_gui\src\plotting\plotting files\t21plottingarea.cpp(273): warning C4701: potentially uninitialized local variable 'iHeight' used [C:\Users\E184727\Workspaces (git)\5D-git\5D
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(358): warning C4100: 'target' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(357): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(360): warning C4100: 'leaseLine' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(359): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(358): warning C4100: 'target' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(357): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(360): warning C4100: 'leaseLine' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(359): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(248): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(250): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(259): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
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es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(250): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(259): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
hLabels.cpp(67): warning C4189: 'dPHD_East' : local variable is initialized but not referenced [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(68): warning C4189: 'dTVD_North' : local variable is initialized but not referenced [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(433): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(476): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(664): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(707): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(866): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
hLabels.cpp(909): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(248): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(250): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
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es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(259): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
on.cpp(209): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
on.cpp(277): warning C4244: 'argument' : conversion from 'double' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
on.cpp(563): warning C4267: 'initializing' : conversion from 'size_t' to 'int', possible loss of data [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(358): warning C4100: 'target' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(357): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(360): warning C4100: 'leaseLine' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(359): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
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es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(360): warning C4100: 'leaseLine' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_GUI\5D_GUI\src\plotting\Plotting Files\qtDlgPlotting.h(359): warning C4100: 'plotPoint' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(248): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(250): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(259): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
oxyModel.cpp(14): warning C4100: 'sourceParent' : unreferenced formal parameter [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
s (git)\5d-git\5d_gui\5d_gui\src\proximitytablesortfilterproxymodel.cpp(73): warning C4702: unreachable code [C:\Users\E184727\Workspaces (git)\5D-git\5D_GUI\5D_GUI\5D_GUI.vcxproj]
es (git)\5D-git\5D_Database\5D_DatabaseClient\include\5D_Database/DatabaseObjects.hpp(248): warning C4482: nonstandard extension used: enum 'Weatherford::FiveD::Database::Databas
```
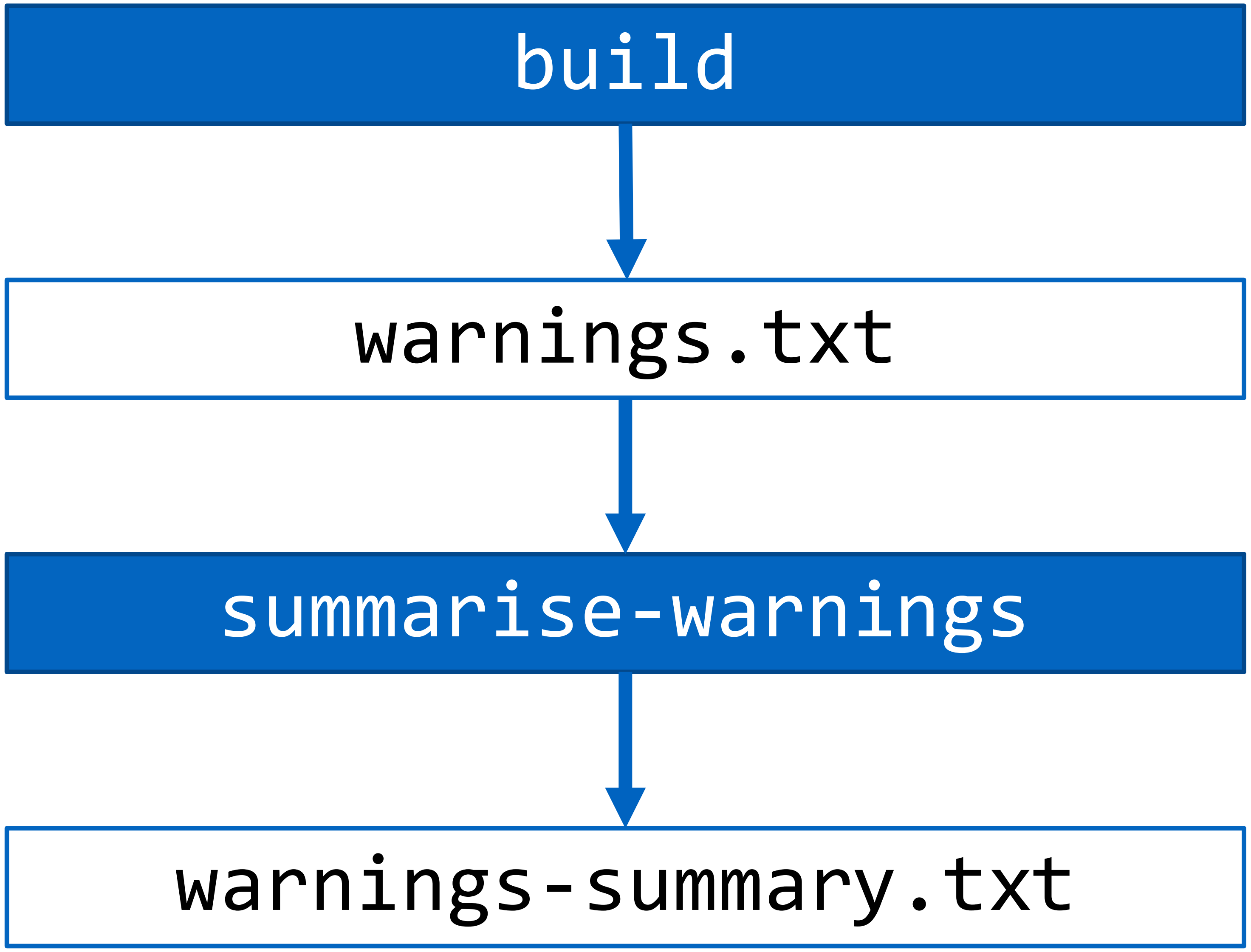

Know Your Enemy



build

warnings.txt

summarise-warnings

warnings-summary.txt

```
=== Warnings by project

5780 GUI
  3876 C4244
    3457 conversion from 'double' to 'int', possible loss of data
     389 conversion from 'TChar' to 'char', possible loss of data
      12 conversion from 'double' to 'long', possible loss of data
       9 conversion from 'int' to 'float', possible loss of data
       5 conversion from 'int' to 'wchar_t', possible loss of data
       2 conversion from 'const double' to 'int', possible loss of da
       2 conversion from 'double' to 'unsigned int', possible loss of
   822 C4482
     469 nonstandard extension used: enum 'GUIOnlyStructs::wpColOrder
     309 nonstandard extension used: enum 'Company::Product::Database
      32 nonstandard extension used: enum 'GUIOnlyStructs::csngColOrd
       4 nonstandard extension used: enum 'GUIOnlyStructs::wpType' us
       4 nonstandard extension used: enum 'Company::Product::Database
       1 nonstandard extension used: enum 'Company::Product::Core::ta
       1 nonstandard extension used: enum 'Company::Product::Core::Ed
       1 nonstandard extension used: enum 'Qt::CheckState' used in qu
       1 nonstandard extension used: enum 'PlannerStructs::secondaryS
   533 C4267
     515 conversion from 'size_t' to 'int', possible loss of data
      16 conversion from 'size_t' to 'unsigned int', possible loss of
       2 conversion from 'size_t' to 'const int', possible loss of da
```

```
=== Warnings by type

  4036 C4244
    3462 conversion from 'double' to 'int', possible loss of data
      3457 GUI
         4 Reporting
         1 Planner
     389 conversion from 'TChar' to 'char', possible loss of data
       389 GUI
      96 conversion from 'XMLSize_t' to 'int', possible loss of data
        96 Planner
      14 conversion from 'int' to 'unsigned short', possible loss of
        14 Reporting
      12 conversion from 'double' to 'unsigned __int64', possible los
        12 UT_Core
      12 conversion from 'double' to 'long', possible loss of data
        12 GUI
   971 C4482
     469 nonstandard extension used: enum 'GUIOnlyStructs::wpColOrder
       469 GUI
     451 nonstandard extension used: enum 'Company::Product::Database
       309 GUI
        54 UT_Core
        49 UT_GUI
        27 Core
```

```
=== Warnings by file

1776 src\DataPlotHandler.cpp
  1776 C4244 conversion from 'double' to 'int', possible loss of data
1251 src\plotting\Box.cpp
  1245 C4244
    1144 conversion from 'double' to 'int', possible loss of data
     100 conversion from 'TChar' to 'char', possible loss of data
       1 conversion from 'const double' to 'int', possible loss of da
     4 C4189 local variable is initialized but not referenced
     1 C4267 conversion from 'size_t' to 'int', possible loss of data
     1 C4800 forcing value to bool 'true' or 'false' (performance war
 245 src\TableWPView.cpp
   245 C4482
     243 nonstandard extension used: enum 'GUIOnlyStructs::wpColOrder
       2 nonstandard extension used: enum 'GUIOnlyStructs::wpType' us
 231 src\plotting\Graph2.cpp
   190 C4244
     189 conversion from 'double' to 'int', possible loss of data
       1 conversion from 'const double' to 'int', possible loss of da
    34 C4267 conversion from 'size_t' to 'int', possible loss of data
     7 C4100 unreferenced formal parameter
 196 src\plotting\GraphFileOperations.cpp
   169 C4244
     167 conversion from 'TChar' to 'char', possible loss of data
```

Know your enemy

- Globally suppress warnings we don’t care about
- Fix low-incidence “risk-free” warnings
- Suppress other warnings

Suppress other warnings

- MSVC

```
__pragma(warning(suppress: 4244))
unsigned u = –1;
```

- clang

```
_Pragma("clang diagnostic push")
_Pragma("clang diagnostic ignored \”–Wconversion\""))
unsigned u = –1;
_Pragma("clang diagnostic pop")
```

- MSVC

```
POTENTIAL_BUG__CONVERSION_LOSES_DATA
unsigned u = -1;
```

- clang

```
POTENTIAL_BUG__CONVERSION_LOSES_DATA(
unsigned u = -1;
)
```

LegacyCodeCompilerWarnings.hpp

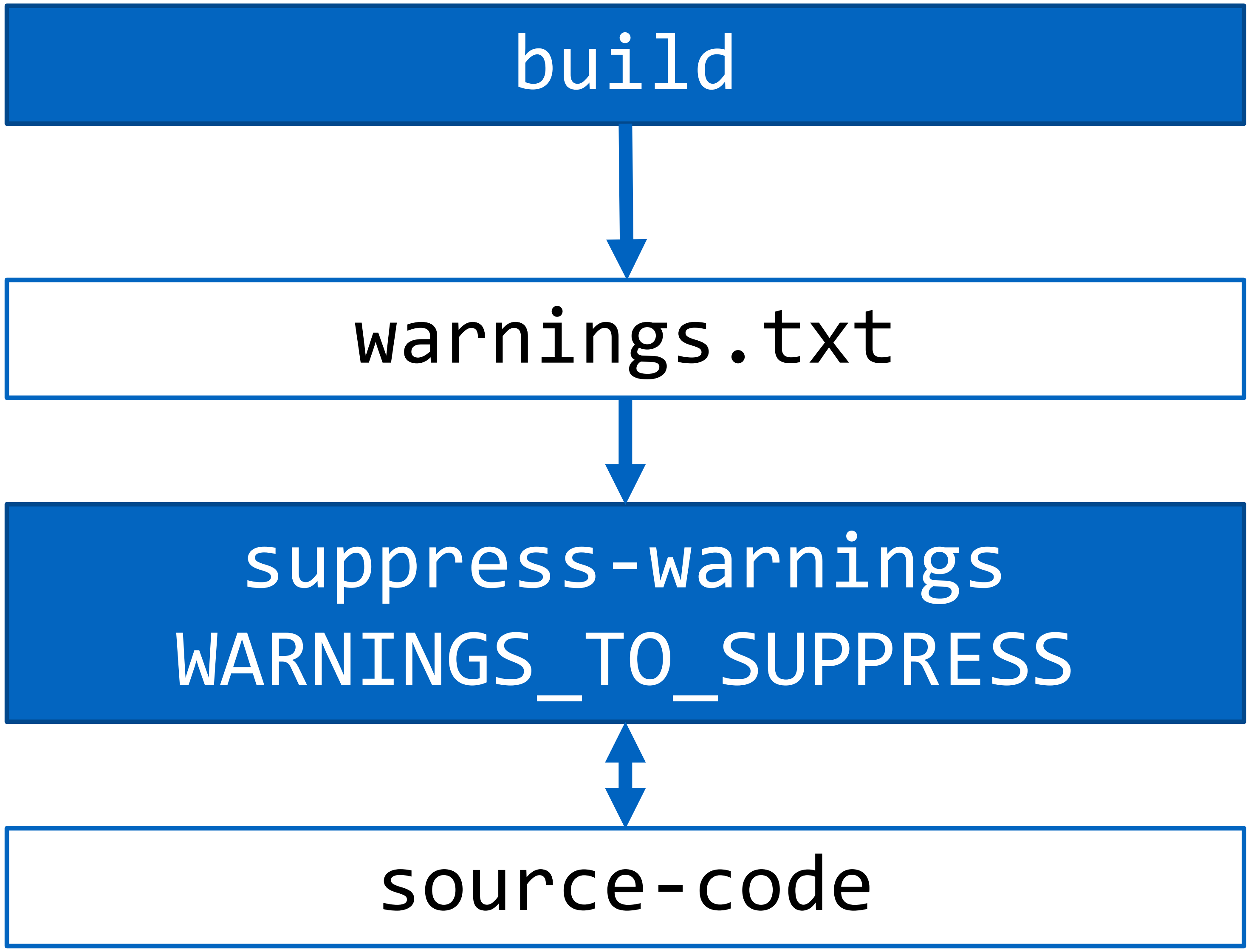
- MSVC

```
#define POTENTIAL_BUG__CONVERSION_LOSES_DATA \
  __pragma(warning(suppress: 4244)
```

- clang

```
#define SUPPRESS_CLANG_WARNING_STR_(x) #x
#define SUPPRESS_CLANG_WARNING(warning, code) \
  _Pragma("clang diagnostic push") \
  _Pragma(SUPPRESS_CLANG_WARNING_STR_(clang diagnostic ignored warning)) \
  code \
  _Pragma("clang diagnostic pop")
#define POTENTIAL_BUG__CONVERSION_LOSES_DATA(code) \
  SUPPRESS_CLANG_WARNING("-Wconversion", code)
```

Suppress other warnings



build

warnings.txt

suppress-warnings
WARNINGS_TO_SUPPRESS

source-code

Summary

- Warnings are a good static analysis tool
- But only if they’re not there already
- Get rid of existing warnings: fix or ignore
- Make new warnings errors