C++ Club UK

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What Happened to C++20 Contracts?

Nathan Myers: https://www.reddit.com/r/cpp/comments/cmk7ek/what_happened_to_c20_contracts/

> *This was the first time, in the (exactly) 30 years since ISO was first asked to form a Working Group to standardize C++, that the committee has removed from its Working Draft a major feature, for no expressible technical reason.*
>
> *Almost immediately after the feature was voted in, one party to the original agreement -- authors of the rejected 2012 design -- began to post a bewildering variety of proposals for radical changes to the design, promoting them by encouraging confusion about consequences of the agreed-upon design.*

What Happened to C++20 Contracts? (cont.)

> *One of the proposals, not seen before the day it was presented, seemed to offer that simplicity, and the group seized upon it, voting for it by a margin of 3 to 1. It was opposed by four of the five participants of the original design group, because it was fatally flawed: in use, programmers would need to define preprocessor macros, and put calls to those in their code instead of the core-language syntax defined. It would breed "macro hell".*
>
> *On top of its inherent flaws, it amounted to a radical redesign from what was originally accepted by the full committee.*
>
> *The immediate, predictable effect was panic. <...>*
>
> *Two days later, the same Evolution Working Group voted to remove the feature entirely.*

My word, what a thread.

How do C++ developers manage dependencies?

https://www.reddit.com/r/cpp/comments/c6l3eg/how_do_c_developers_manage_dependencies/

Through much pain and anguish.

Scott Meyers' TD trick

https://www.reddit.com/r/cpp/comments/c6vnb3/just_started_learning_c_coming_from_python_and/eshq8vb?utm_source=share&utm_medium=web2x

```
1 template <typename T> struct TD; // no definition
```

Now you write something like `TD<decltype(thing)>` and the error message tells you the type of thing (as deduced by `decltype`, of course, but in this case that's probably what you want).

Just started learning C++ coming from Python

https://www.reddit.com/r/cpp/comments/c6vnb3/just_started_learning_c_coming_from_python_and/

> *The new GCC compiler with colour highlighting is a little bit better at pointing out errors. It's generally quite helpful for pure C/C++ until you make an error with the standard library and you get 200 lines about std:: whatever<random characters>*
>
> *In C++ a trick I always use when the error message is massive is to just focus on the first error.*

Use **constexpr** for faster, smaller, and safer code

https://blog.trailofbits.com/2019/06/27/use-constexpr-for-faster-smaller-and-safer-code/

https://www.reddit.com/r/cpp/comments/c646ng/use_constexpr_for_faster_smaller_and_safer_code/

https://github.com/trailofbits/constexpr-everything (Apache 2.0)

A closer look at **bake**: a tool that makes building C/C++ code effortless

https://medium.com/@cortoproject/a-closer-look-at-bake-a-tool-that-makes-building-c-c-code-effortless-b2e0409fad8f

- https://www.reddit.com/r/C_Programming/comments/a85f6w/meet_bake_a_new_build_system_package_manager_for/
- https://www.reddit.com/r/cpp/comments/a8d7ny/meet_bake_a_new_build_system_package_manager_for/
- https://news.ycombinator.com/item?id=18787777

https://github.com/SanderMertens/bake (GPLv3)

> *A cargo-like buildsystem and package manager for C/C++*

Magic.

Introducing the Rule of DesDeMovA (1/4)

Blog post by Peter Sommerlad

https://blog.safecpp.com/2019/07/01/initial.html

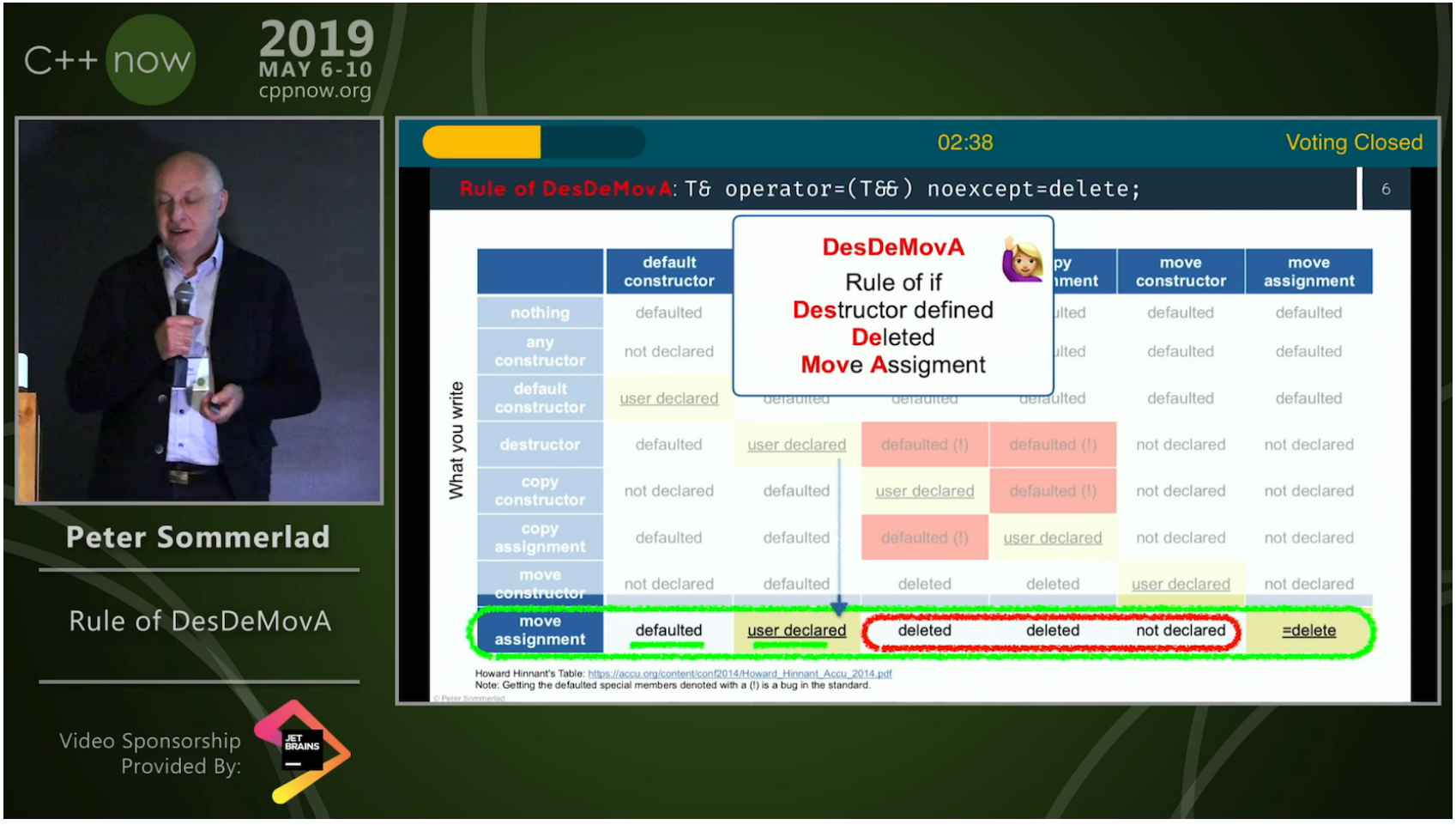
https://accu.org/content/conf2014/Howard_Hinnant_Accu_2014.pdf

Rule of Zero:

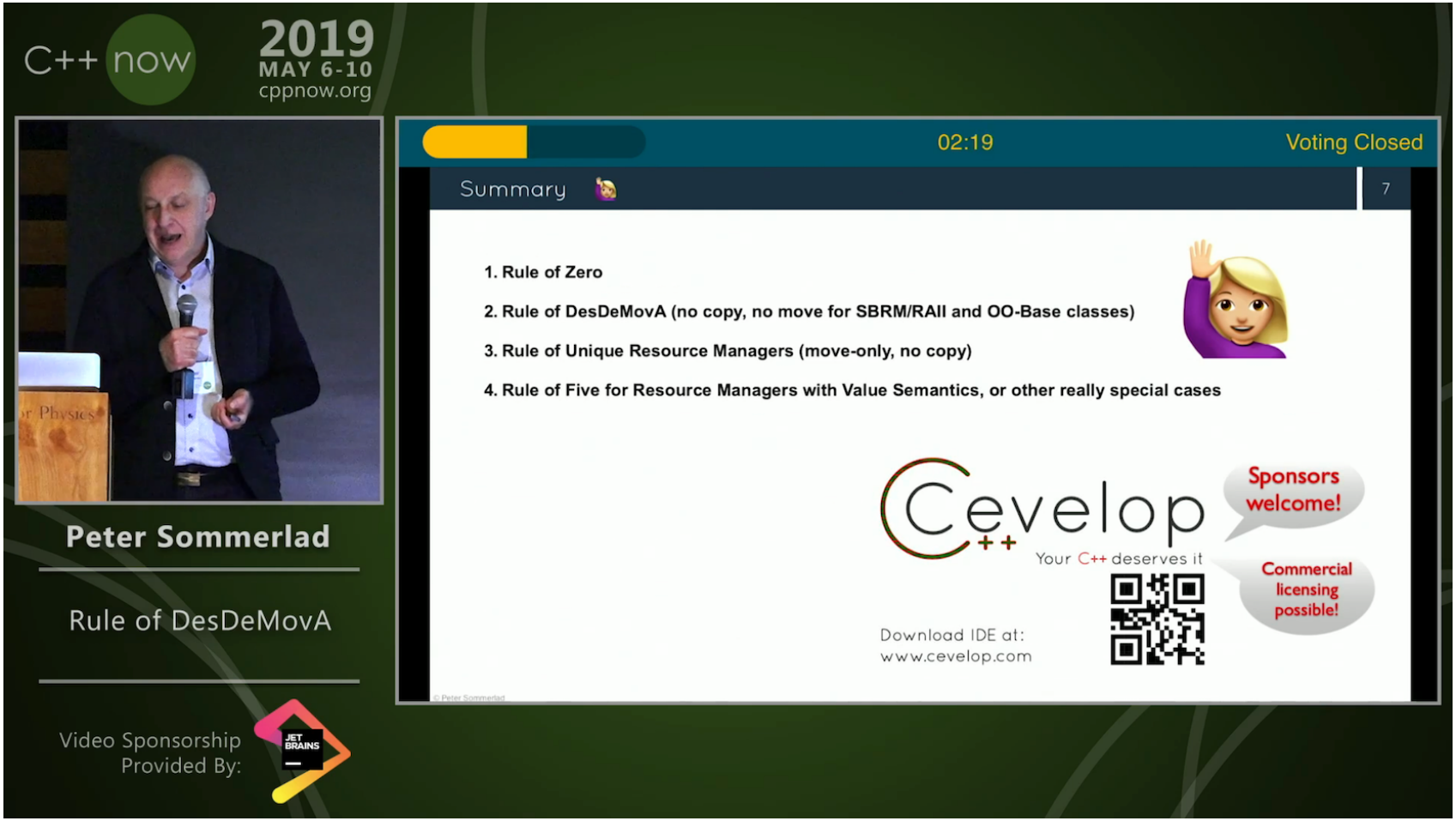
> *Code that you do not write cannot be wrong.*

Introducing the Rule of DesDeMovA (2/4)

Introducing the Rule of DesDeMovA (3/4)



Introducing the Rule of DesDeMovA (3/4)



strong_typedef - Create distinct types for distinct purposes

Article by Anthony Williams

https://www.justsoftwaresolutions.co.uk/cplusplus/strong_typedef.html

https://github.com/anthonywilliams/strong_typedef

```
1 using transaction_id =
2   jss::strong_typedef<struct transaction_tag, std::string>;
3
4 bool is_a_foo(transaction_id id)
5 {
6   auto &s = id.underlying_value();
7   return s.find("foo") != s.end();
8 }
```

Elements C++ GUI library

https://www.cycfi.com/2019/07/photon-micro-gui/

https://www.reddit.com/r/cpp/comments/ccq9pn/elemental_c_gui_library/

Are there any good C++ libraries for data visualization?

- VTK https://vtk.org/
- ROOT https://root.cern.ch/
- matplotlib-cpp https://github.com/lava/matplotlib-cpp
  - matplotlib (Python) https://matplotlib.org/
- QCustomPlot (QT, GPL/commercial) https://www.qcustomplot.com/

CppCast - CMake and VTK with Robert Maynard

http://cppcast.com/2019/07/robert-maynard/

https://www.reddit.com/r/cpp/comments/c9bpxb/cppcast_cmake_and_vtk_with_robert_maynard/

CMake line by line - creating a header-only library

http://dominikberner.ch/cmake-interface-lib/

https://www.reddit.com/r/cpp/comments/c8ty2h/a_line_by_line_explanation_how_to_create_a/

https://github.com/bernedom/SI

Professional CMake: A Practical Guide, 4th ed., CMake 3.15
https://crascit.com/professional-cmake/ $30

Are there any OSes built using C++

https://www.reddit.com/r/cpp/comments/cho1qb/are_there_any_oses_built_using_c/

- TempleOS
- Haiku
- Google Fuchsia
- IncludeOS
- DistortOS (RTOS)
- Symbian OS (Dead)
- SerenityOS