WG21 2024-11 Wroclaw Admin telecon minutes

ISO/IEC JTC1 SC22 WG21 N4998 — 2024-11-06
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SC22/WG21 pre-meeting telecon
Convener: Herb Sutter
Dates: Monday 2024-11-04
Time: 08:00 N.Am. Pacific Time (San Francisco)

1 Opening and introductions

Herb Sutter opens the meeting at 08:03 N.Am. Pacific Time

1.1 Roll call of participants

Herb Sutter
Billy Baker
John Spicer
Jeff Garland
ben.boeckel
Erich Keane
Daisy Hollman
Tom Honermann
Bjarne Stroustrup
Olivier Giroux
Hans Boehm
Nevin Liber
Gašper Ažman
Jeff Snyder
Matthias Kretz
Nina Dinka Ranns
Hana Dusíková
Vassil Vassilev
Ville Voutilainen
Roger Orr
Jonathan Wakely
J. Daniel Garcia
Detlef Vollmann
Jens Maurer
Inbal Levi
Michael Wong
Hubert Tong

1.2 Adopt agenda

No objections.

Agenda adopted

1.3 Approve minutes from previous meeting (deferred to face- to-face meeting)

1.4 Review action items from previous meeting (deferred to face-to-face meeting)

1.5 Review of project editor and liaison assignments

Status page

Status page is up to date.

2. Status reports

2.0 Advisory subgroup status reports

• **AG**, Admin group: Nevin Liber

AG will not meet in Wroclaw. The attendance sheet will be up this week. Post meeting mailing is December 16th.
If we want to have the pre-meeting mailing four weeks before the meeting in Austria, it has to be January 13th or earlier.

• DG, Direction group: Howard Hinnant

DG has been reviewing profiles and other safety-related issues and proposals. We will probably have a lunch meeting in Wrocław.

• ARG, ABI review group: Daveed Vandevoorde, Jason Merrill

The ABI review group will not meet in Wrocław. We do have an open inquiry (about ABI stability wrt. relocatability) that will hopefully be answered before we meet in Poland.

2.1 Pipeline stage 1 groups: Specialist subgroup status reports (Sgs)

SGs 2, 3, 5, 8, 11, 12, and 13 are currently dormant and handled in the main subgroups. The active SGs are:

• **SG1**, Concurrency: Olivier Giroux, Hans Boehm

SG1 will meet 4 or 5 days, as normal.

• **SG4**, Networking: Jeff Snyder, Gašper Ažman

SG4 has no papers in the mailing, but is expecting a one late paper from Thomas & Dietmar.

• **SG6**, Numerics: Matthias Kretz, Lisa Lippincott, John McFarlane

SG6 is planning to meet for 1 day in Wroclaw. We have several papers on floating-point behavior on our agenda. It would be good for participants to prepare by familiarizing themselves with ISO/IEC 60559:2020.

The tentative plan is to process

- P3348R1 C++26 should refer to C23 not C17
- P3397R0 Clarify requirements on extended floating point types
- and CWG2752 Excess-precision floating-point literals

early in the week so that there's a chance for LEWG/EWG to look at the papers with SG6's feedback included.

We will then continue with

- P3375R1 Reproducible floating-point results
- (if needed) P2746R6 Deprecate and Replace Fenv Rounding Modes
- P3479R0 Enabling C pragma support in C++
- P3307R0 Floating-Point Maximum/Minimum Function Objects
- P3045R3 Quantities and units library
- P3161R2 Unified integer overflow arithmetic

For P3045R3 "Quantities and units library" there is a chance of overlap with LEWGI as per the current room assignments. I was hoping to have half a day of looking at it, but we currently only have one day to meet.

If you want to read the floating point standard, just ask me or Guy Davidson.

Herb Sutter : To clarify, we asked ISO if we can use a sister standard that we're referencing. They gave us a special copy. Do not post it anywhere, do not send it to an email list. Everybody has to ask for it individually, those are the rules.

Inbal Levi : we are looking into having an evening session regarding P3045R3 in one of the upcoming meetings.

• **SG7**, Compile-time programming: Hana Dusíková, Daveed Vandevoorde

SG7 will meet and will need a day and half. I already requested on wiki to have time after plenary, and afternoon, and next whole day. Maybe it will be possible to have only half a day on Tuesday.

We will have a few high-priority discussions: reflection syntax and then if reflection can access private members or not. These needs to be solved in order to get reflection in 26. Me and other EWG co-chairs agreed on having the discussion on SG7 so we can spend more time there and bring decision and rationale to EWG. So I ask everyone who is interested in these two discussions to be in SG7 after plenary (if we get the space), this will save time in general by avoiding having this lengthy bikeshedding discussion in EWG, so all implementers, paper authors, please be there!

Then we have a few more 26 specific topics: constexpr order of types from Gašper and annotations for reflection. Both should be possible to get into 26, but neither is a hard requirement.

And last we have some lower priority stuff about generative reflection, reflection on templates. And there is also paper proposing different approach to reflection (with major difference is std::meta::info is replaced with multiple of types "identifier" / "function" / "type") but while there is also existing implementation, it's not realistic to change direction completely for 26 without delaying the reflection at all. But I don't see it as a major problem as the status quo of SG7 is to not wait for such design and also keep doors open for changing return type from operator^ (or any future replacement) to something more typeful (in comparison to void* like std::meta::info) as discussed at Kona 2023 https://wiki.edg.com/bin/view/Wg21kona2023/SG7

Ville Voutilainen : Are you open for late papers on the subject?
Hana Dusikova : Yes, of course.

Herb Sutter : Rebuttal papers are always on time. Please have them available as soon as possible.

• **SG9**, Ranges : Daisy Hollman, Jonathan Müller

SG9 will meet for at least half a day on Tuesday. Pending meeting room availability, we will also meet all day on Monday.

The difference in what we do if we only get a half day vs what we can do if we get a day and a half is pretty dramatic. We will have to ruthlessly prioritize issues that have a very good chance of making C++26.

Olivier Giroux: If you want to do something joint with SG1 that could buy you a little bit more time, we can do that.
Daisy Hollman : That would be helpful.

• **SG10**, Feature test: Barry Revzin, Jonathan Wakely

Nothing to report.
Not planning to meet in Wroclaw.

• **SG14**, Low latency: Michael Wong

SG14 continues reviewing Games paper and Khalil's EH papers monthly. We do not plan to meet in Wroclaw.

• **SG15**, Tooling: Michael Spencer, Ben Boeckel

SG15 has a few papers to discuss. We'll likely need a day and a half.

• **SG16**, Unicode: Tom Honermann, Steve Downey

SG16 has met 7 times since the last pre-meeting telecon on June 10th (June 12th, July 31st, August 14th, September 11th, September 25th, October 9th, October 23rd). We will meet again this Wednesday, November 6th, and then likely suspend the meetings for the remainder of 2024 unless a concern is raised that requires urgent SG16 review.

SG16 will not meet during the Wrocław meeting so as not to increase quorum challenges for other SGs and because I won't be attending in person.

I have fallen behind on my SG16 responsibilities due to increased work demands. I haven't published minutes for SG16 meetings since June. I expect work demands to decrease in a couple of weeks and will strive to get caught up then.

SG16 reviewed the following issues and papers since the last pre-meeting telecon. I have yet to update the associated GitHub issues with a summary for most of these reviews, but will ensure they are up to date before the meeting in Wrocław.

- LWG 4070: Transcoding by std::formatter<std::filesystem::path>
  GH 1896: Awaiting further SG16 review.
- LWG 4087: Standard exception messages have unspecified encoding
  GH 1895: Awaiting further SG16 review.
- LWG 4090: Underspecified use of locale facets for locale-dependent std::format
  GH 1893: Awaiting further SG16 review.
- P2019: Thread attributes
  GH 817: There is a sustained objection in SG16 concerning the encoding of thread names; further review is warranted; the GH issue has yet to be updated.
- P2319: Prevent path presentation problems
  GH 1987: SG16 provided guidance and forwarded to LEWG; the GH issue has yet to be updated.
- P2996: Reflection for C++26
  GH 1668: Forwarded to EWG and LEWG. Thanks to Inbal for updating the issue with results from the SG16 reviews.
- P3045: Quantities and units library
  GH 1752: SG16 has reviewed several revisions and provided feedback to the authors but has not taken a position.
- P3068: Allowing exception throwing in constant-evaluation
  GH 1754: SG16 provided feedback and LEWG confirmed it. Thanks again to Inbal for summarizing the review in the GitHub issue.
- P3094: std::basic_fixed_string
  GH 1762: SG16 provided feedback to the author and forwarded to LEWG; the GH issue has yet to be updated.
- P3364: Remove Deprecated u8path overloads From C++26
  GH 2023: SG16 reviewed and provided long term guidance; the GH issue has yet to be updated.
- P3374: Adding formatter for fpos<mbstate_t>
  GH 2031: SG16 reviewed and provided feedback to the author but has not taken a position; the GH issue has yet to be updated.

• **SG17**, EWG incubator: Erich Keane

EWGI is going to try to meet for 1 day worth of meetings in an attempt to work through the EWG backlog as usual! I'll be back in person in Poland to lead!

It may be only half a day, depending on the availability of the meeting rooms.
We have a lot of papers to get through, I'm doing my best to prune them.

• **SG18**, LEWG incubator: Billy Baker, Nevin Liber

LEWGI (SG18) has not met since the St Louis meeting.

Billy Baker will be attending the Wroclaw meeting virtually. Nevin will be present. Thursday afternoon and Friday morning have been reserved if needed.

Nevin Liber : we will prioritize papers by people who are present.

• **SG19**, Machine learning: Michael Wong, Vincent Reverdy

SG19 continues reviewing Graph and Stats paper monthly. We do not plan to meet in Wroclaw.

• **SG20**, Education: JC van Winkel

SG20 (education) will meet half a day. Our main agenda points:
- retrospective (what works well, what could be improved in how we work)
- Learning paths (create paths that touch (only) on subjects relevant
  to different C++ environments (e.g. embedded, scientific, ...)

• **SG21**, Contracts: John Spicer, Timur Doumler

EWG will be meeting on Monday afternoon and all day Tuesday on the topic of Contracts, and SG21 participation is encouraged. The goal of this session is to get EWG approval for P2900, and if issues arise, develop a plan to resolve them with EWG by the end of the week.
Similarly, we will be meeting with LEWG on Wednesday afternoon, and if issues arise, develop a plan to resolve them with LEWG by the end of the week.
It may be necessary to arrange ad-hoc SG21 meetings during the week in order to make this possible.
Our current plan is to meet Thursday and Friday all day.
Our first priority will be to address any remaining issues that came up earlier in the week from EWG and LEWG.
Our hope and expectation is that P2900 is approved to advance by both EWG and LEWG.
In that case, we will work to make progress on papers that propose post-MVP extensions to P2900.
Should it be the case that P2900 is not advanced by EWG and LEWG, we will continue to work on the issues needed for it to advance as soon as possible.
Thank you Jens for trying to address meeting room requests. We still need to tweak the exact meeting times with Jens off line.

• **SG22**, C/C++ liaison: Nina Ranns, JeanHeyd Meneide, Davis Herring

SG22 met twice since St Louis.
We discussed :
P3309 R1 constexpr atomic and atomic_ref
P3140 std::int_least128_t

P2865 Remove Deprecated Array Comparisons from C++26
P2866 Remove Deprecated Volatile Features From C++26

The minutes can be found here
https://github.com/sg22-c-cpp-standard-compatibility/sg-compatibility/blob/main/README.md

We will not meet in Wroclaw.
Davis herring has been volunteered to be a vice chair. Thank you, Davis.

WG14 reports, courtesy of Robert Seacord :
C23 was published just before Halloween.
We met the first week of October in Minneapolis and passed a bunch of stuff. The draft of the
minutes can be found here https://www.open-std.org/JTC1/sc22/wg14/www/docs/n3372.pdf

We found a defect in TR 18037:2008 Programming languages — C — Extensions to support
embedded processors so now I'm trying to get it incorporated into C2Y.

The NP ballot for TS 25007 C Extensions to Support Generalize calls closed with 100% approval.

Still iterating with ISO editors on:
  • ISO DTS 6010
  • ISO/IEC DTS 18661-4 and ISO/IEC DTS 18661-5

• **SG23**, Safety and Security: Roger Orr, Ben Craig

SG23 (safety and security) has not met since St Louis. We do plan to meet in Wrocław for one to
one and a half days. We have 16 open papers slated for the attention of this SG, so we are likely to
need to schedule some telecons between meetings.
Two of the larger items on our plate are Sean Baxter's "Safe C++" proposal and Bjarne's work on
"Profiles".

2.2 Pipeline stage 2 groups: Design subgroup status reports

• **EWG**, Core evolution: JF Bastien, Erich Keane, Hana Dusíková

We are still working on schedule and it should be available this week, but as you can see already on
https://wiki.edg.com/bin/view/Wg21wroclaw2024/EvolutionWorkingGroup high-level plan is
following:

Monday: trivial relocability + contracts
Tuesday: contracts
Wednesday: reflection + pattern matching
Thursday + Friday: TBD

If we can get an excellent quorum in SG7 majority of discussion should happen there. The
discussion can continue in EWG, but we don't want to rehash it.

• **LEWG**, Library evolution: Inbal Levi, Fabio Fracassi, Ben Craig

First and foremost, I would like to take this opportunity to thank to all the people involved in LEWG, for devoting their time and effort to provide thorough reviews and produce high-quality proposals!
Thank you to our paper's authors, attendees, and co-chairs, for making our work productive. :)

Post St. Louis Report

LEWG has met 18 times Since St. Louis (we have an additional telecon set for next week). And run two electronic polls:
- [P3314R0](#): 2024-07 Library Evolution Polls
- [P3467R0](#): 2024-10 Library Evolution Polls

During these telecons, we reviewed:
- [P1732R4](#): Do not promise support for function syntax of operators (targeting SD-8) (superseded by P3392)
- [P3325R2](#): A Utility for Creating Execution Environments (Electronic Poll)
  [P2846R2](#): reserve_hint: Eagerly reserving memory for not-quite-sized lazy ranges
- [P3284R0](#): `finally`, `write_env`, and `unstoppable` Sender Adaptors
- [P3136R0](#): Retiring niebloids (Electronic Poll)
  [P3372R0](#): constexpr containers and adaptors
- [P1494R3](#): Partial program correctness
- [P3068R4](#): Allowing exception throwing in constant-evaluation (Electronic Poll)
- [P3222R0](#): Fix C++26 by adding transposed special cases for P2642 layouts (Electronic Poll)
  [P3050R2](#): Fix C++26 by optimizing linalg::conjugated for noncomplex value types (Electronic Poll)
- [P2835R5](#): Expose std::atomic_ref's object address (already passed EP, sent to LWG)
- [P2988R7](#): std::optional < T& >
- [P3247R1](#): Deprecate the notion of trivial types (sent to LWG)
  [P3138R3](#): views::cache_latest (future EP)

Notably, we also dedicated a significant amount of work to "Reflection" and rebasing C++ on C23 (thank you to Jonathan Wakely and Jens Maurer):
- [P2996R7](#): Reflection for C++26 (Post st. Louis we saw: R5, R7, D8, we plan to take a forwarding poll on it before Wroclaw)
- [P3096R3](#): Function Parameter Reflection in Reflection for C++26
- [P3348R1](#): C++26 should refer to C23 not C17 (scheduled to be seen again after Wroclaw)
- [P3370R1](#): Add new library headers from C23 (forwarded to EP)

We also dedicated a meeting for paper prioritization forwarded to LWG, results of which can be found here:
- [Papers Prioritization for LWG](#)

Wroclaw Planning Report

LEWG will meet during the full week. :)
Our schedule is published here: https://github.com/orgs/cplusplus/projects/30/views/3
We have approximately 50 papers and issues in the schedule, with an additional 14 in the overflow queue.

The main topics we plan to discuss are:
- Reflection fixes and improvements
- Sender/Reciever fixes and improvements
- Relocatability
- Contracts
- More `constexpr` in the library

In addition, we will have a "Policies" session (Thursday morning's first session, all are welcome!):
- We will discuss "explicit Constructors" policy ("P3116: Policy for explicit")

The results of such discussion will be published in our new SD-9 doc.

LEWG also asked to schedule a "Relocatability" (informational only) evening session on Tue, which will be after EWG discusses the topic (assuming forwarded).
This is to inform LEWG's participants on the topic before the LEWG discussion (scheduled on Wed).

The session will be added to the other planned sessions (Monday and Tuesday):
- Monday: Lisa Lippincott "Perspectives on Contracts" (sponsor: Herb Sutter)
- Tuesday: editorial meeting (Thomas Köppe)
- Tuesday: Relocatability informative session (sponsor: Inbal Levi)

As always, our minutes will be published on LEWG's meeting page:
https://wiki.edg.com/bin/view/Wg21wroclaw2024/LibraryEvolutionWorkingGroup

Thank you,
and looking forward to seeing you all in person!

2.3 Pipeline stage 3 groups: Wording subgroup status reports

• **CWG**, Core wording: Jens Maurer

CWG has had teleconferences every two weeks since St. Louis, processing core issues. In Wroclaw, CWG is going to continue reviewing the pending papers, in particular the one for reflection, as well as finalizing the pre-processed core issues for plenary vote.

The tentative schedule is here, subject to author availability:

https://wiki.edg.com/bin/view/Wg21wroclaw2024/CoreWorkingGroup

• **LWG**, Library wording: Jonathan Wakely, Jeff Garland, Dietmar Kühl

LWG has been holding telecons most weeks, although we recently moved our telecon slot from Wednesday to Friday. Since completing the P2300 std::execution review that was keeping us busy, we've spent time on issue processing, SIMD, mdspan enhancements and fixes, linalg fixes, and have started the review of std::hive, a very interesting container that provides a different set of design trade-offs compared to any of our current standard containers. We won't have any more telecons until December now.

LWG will meet all week in Wroclaw and will continue the reviews of SIMD and std::hive, as well as other proposals forwarded to us from LEWG.

All three library chairs will be present. I may be remote for the first day, but in person for the rest of the week.

2.4 SC22 report

Herb Sutter : C++23 is now published. ISO is becoming more detail oriented which has caused more work for the editors, but it has not changed our own process.

We have a new rule as of yesterday - all projects are required to use the ISO online platform unless they can provide a technical justification not to use it. This is unlikely to affect us.

ISO white paper for TSs or TRs is that it doesn't go all the way up to ISO. it is a more lightweight process to produce documents/

2.5 SC22/WG14 (C) report (covered in 2.1 / SG22)

3. New business

3.1 Review of priorities and target dates

• [Status page](#)
• [P1000](#)

3.2 Any other business

Jens Maurer : Can we add an agenda item for meeting logistics to the future meetings ?
Herb Sutter : Should it be under the admin group or do you want a separate item ?
Jens Maurer : Make it a separate item.

Jens Maurer : At this meeting we had some issues with allocating meeting rooms. Late last week we received confirmation that we will have more meeting rooms and that we will have larger rooms than originally anticipated. I have updated the schedule to reflect that. Please reload the page.
I think we have satisfied almost all recorded requests. There are requests from SG9 and SG23 that are more recent and have not been addressed. I don't have any more rooms available as as we speak.
Hana Dusikova : SG7 may be able to give up half a day if it helps.
Herb Sutter : Thank you, Jens, for dealing with the facilities. It's because of all the work Jens does that we rarely ever have issues with room allocations.

Nina Ranns : Wiki for Wroclaw contains a list of all invited convener guests for Wroclaw. It can be found here https://wiki.edg.com/bin/view/Wg21wroclaw2024/ConvenerInvitedGuests
It will be updated as requests come in. Please use it to check if a person who is not registered in the ISO directory is allowed to attend your SG. All the convener invited guests are also allowed to attend all the SG meetings between the previous meeting and the one for which they have an invitation. That means all the convener invited guests for Hagenberg will be able to attend SG meetings after Wroclaw and before Hagenberg. Any questions, please let me know.

Hubert Tong : The registration deadline is now over and it's no longer possible to register for the upcoming meeting.

Herb Sutter : I just adjusted the registration deadline.
Bjarne Stroustrup : Would it be possible to get a reminder before the meeting to register?
Herb Sutter : Jens will send out an email when all the information is ready.

4.1 Review and approve resolutions and issues

4.2 Review action items

Herb Sutter to add meeting logistics item to the agenda.

5. Closing process

5.1 Establish next agenda

Herb Sutter : I propose the same agenda with the modifications as suggested.
No objections.

5.2 Future meetings (deferred to full meeting)
5.3 Future mailings (deferred to full meeting)

5.4 Adjourn

Meeting adjourned at 09:15 N.Am. Pacific Time