WG21 2023-10 Admin telecon minutes

SC22/WG21 pre-meeting telecon
Convener: Herb Sutter
Dates: Monday 2023-10-23
Time: 08:00 N.Am. Pacific Time (San Francisco)

1 Opening and introductions

Herb Sutter opens the meeting at 08:04 N.Am. Pacific Time

John Spicer : for the agenda in Kona, use the one on the wiki as it's the most recent one.

1.1 Roll call of participants

Herb Sutter
John Spicer
Erich Keane
Ben Craig
Jeff Garland
Detlef Vollmann
Hans Boehm
Olivier Giroux
Matthias Kretz
Jonathan Wakely
Roger Orr
J. Daniel Garcia
Vassil Vassilev
Inbal Levi
Nina Ranns
Fabio Fracassi
Hana Dusíková
Jeff Snyder
Hubert Tong
Michael Wong

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

We've had a mailing every month since Varna. The next mailing will be mid-December.

There is an attendance spreadsheet on the Kona wiki, which I'll unlock closer to the meeting. We no longer keep track of INCITS-specific information (such as company), as INCITS meetings are now completely separate.

There are no plans for Admin to meet in Kona.

• **DG**, Direction group: Bjarne Stroustrup

Roger Orr reports. We will meet informally in Kona. We have been meeting roughly every 2 weeks online. Nothing in particular to report.

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

ARG does not typically "meet". Instead, questions can be sent to our list (abi@lists.isocpp.org) regarding ABI issues.

Since the last meeting, we had one such question (and ensuing discussion). The question concerned the potential evolution of a design defect with the std::char_traits<char16_t> specialization (hoping

for potential ABI tricks to resolve the issue without breaking backward compatibility — we found no such tricks).

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

We do not meet between the meetings. We have a pretty decent paper list, but not a huge workload. I have to leave on Thursday so I will try to schedule everything before then. If we spill over , someone else will run the room.

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

There's no updates since the last meeting. We have a paper from Dietmar on Senders and Receivers that we will be looking at in Kona.

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

SG6 has not met since Varna. For Kona, the SG6 workload is getting back up to pre-pandemic levels, with 6 papers to discuss and one CWG issue to comment on (before EWG gets it back). SG6 will meet all of Tuesday.

I expect this meeting to be the start (or rather a restart) on developing user-defined numeric types, which can augment/replace built-in arithmetic type usage, for increased safety, precision, and/or performance. From the start, we will consider composition and interaction between such types and existing types in the library and the current pipeline (such as std::simd).

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

Hana Dusíková reports :

SG7 didn't meet since Varna. We will be meeting for half day. We will see presentations from authors of papers:

P2911R1: Python Bindings with Value-Based Reflection
P3010R0: Using Reflection to Replace a Metalanguage for Generating JS Bindings

and then we will discuss

P2996R0: Reflection for C++26

I do expect general consensus on this direction and hopefully the group will forward the paper to EWG. I do expect a discussion about some details in the proposed paper and expect the following papers at the Tokyo meeting.

I will be attending remotely and because Daveed is co-author of P2996 I asked JF to chair the session in person.

• **SG9**, Ranges : : Daisy Hollman, Casey Carter

SG9 has not met since I took over as chair, but did have several telecons before that. Based on Inbal's summary on GitHub (https://github.com/cplusplus/SG9/blob/main/2023-Telecons.md), we had three telecons, during which we looked at:
P2728R5: Unicode in the Library, Part 1: UTF Transcoding (and also P2728R6 in the subsequent telecon)
P2022R2: Rangified version of lexicographical_compare_three_way
P2542R4: views::concat

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

Jonathan Wakely reports. It has been very quiet. Barry has updated the standing document with all the latest macros and the links to the papers that added them.

• **SG14**, Low latency: Michael Wong + **SG19**, Machine learning: Michael Wong, Vincent Reverdy

SG14 and SG19 continued to meet online monthly. IN SG14, we have been focused on
P2996R1 Making C++ Better for Game Developers

In SG19, we have been focused on trying to get P1709R4 Graph library out. This is a big paper so I'm encouraging them to break it up into two papers.
In SG19, we have also been advancing More Statistics.

We also had a very productive combined SG14/19 session at CPPCON 2023 co-chaired by Michael Wong, Guy Davidson, Patrice Roy, and Inbal Levi, resuming our usual practice before the pandemic.

Our next calls will be in December 13 (SG14) and 14 (SG19)

We're not currently planning to meet in Kona, but that may change.

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

No report

• **SG16**, Unicode: Tom Honermann, Peter Brett

Summaries of SG16 meetings held since the last pre-meeting admin telecon, with the exception of the 2023-10-11 telecon, are available in P2995 (SG16: Unicode meeting summaries 2023-05-24 through 2023-09-27).

Steve Downey has graciously accepted a co-chair position with SG16. Many thanks to Peter Brett for the service he has provided to SG16 over the last few years, his guidance, and his many insightful comments. I hope that we will continue to benefit from his involvement long into the future.

Following the meeting in Varna, SG16 has kept busy reviewing the following proposals/issues.

- Forwarded to LEWG:
    - P2845R3: Formatting of std::filesystem::path
    - P2872R1: Remove wstring_convert From C++26
    - P2909R0: Fix formatting of code units as integers

- - LWG 3944: Formatters converting sequences of char to sequences of wchar_t
  - Still under review awaiting further updates:
    - P1729R3: Text Parsing
    - P2728R6: Unicode in the Library, Part 1: UTF Transcoding
  - Others:
    - P1030R5: std::filesystem::path_view
      SG16 forwarded this proposal quite some time ago, but it landed back in SG16's queue to address some questions of locale support. Feedback inline with LEWG requests was provided.
    - P2779R1: Make basic_string_view's range construction conditionally explicit
      Consensus to solve the problem this proposal seeks to address was not achieved. Feedback on various aspects of the design and the problem space was provided to the author.
    - P2811R7: Contract-Violation Handlers
      This was reviewed for encoding concerns. Feedback that confirmed the author's intentions was provided.
    - WG14 N3145: $ in Identifiers v2
      This was reviewed to gauge support for a companion paper for WG21. No clear consensus has emerged yet, but a paper might be forthcoming.

SG16 previously forwarded the following proposal to LEWG. However, I'm going to pull it back into SG16 due to overlapping concerns with LWG 3767 (`codecvt<charN_t, char8_t, mbstate_t>` incorrectly added to locale). This will be discussed at the SG16 meeting scheduled for this week.

- - P2873R0: Remove Deprecated Locale Category Facets For Unicode from C++26

SG16 will not meet in Kona since it is difficult to attain quorum at in-person meetings due to contention with the WGs and other SGs.

SG16 will continue to meet at its regular twice monthly cadence.

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

We met in Varna for 2 days.
We do have a significant number of papers and will meet Monday afternoon and Tuesday afternoon in Kona. The schedule has not been finalized yet.

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

SG18 LEWGI has not had meetings separate from LEWG. The chairs of SG18 will again rotate with the LEWG chairs during the Kona meeting.

Chairing duties for P2267 Library Evolution Policies will fall to SG18 since the LEWG chairs are the authors.

Inbal : LEWGI will not meet in Kona as it looks like we won't have a quorum. We have mailing list reviews. We might re-activate the virtual meetings after Kona.

• **SG20**, Education: JC van Winkel

SG20 will not meet in Kona. SG20 has met a whole a few weeks ago and subgroups (of SG20) meet more often in work sessions, one in US-and one in EMEA friendly timezones. There we write

drafts of the topics for our education guidelines which we then vote on in our plenary" SG20 meetings. Our github repository can be found at https://github.com/cplusplus/SG20. We want to continue to steadily keep adding more guidelines.

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

SG21 has had telecons regularly every two weeks since Varna. Following our roadmap for the Contracts MVP targeting C++26 (P2695R1), we are currently focusing on syntax. There are two proposals for Contracts syntax currently still under consideration: the so-called "attribute-like syntax" (P2935) and the so-called "natural syntax" (P2961). The primary goal for Kona is to get consensus on choosing one of these two for the Contracts MVP. The secondary goal is to make progress with the remaining outstanding design questions for the Contracts MVP, of which there are currently six (listed in P2896).

We are planning to have three half-day sessions in Kona, currently scheduled for Tuesday AM, Thursday AM, and Friday AM. There is potential to add some afternoon sessions in Kona if we feel it's necessary to stick to our roadmap.

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

SG22 has not met since Varna. We have no plans to meet in Kona.

We have a virtual meeting this coming Friday (27th of October) to discuss the two currently proposed papers for C++ Contracts syntax. After that, we will schedule further SG22 meetings depending on the availability of authors for the issues we have on our plate.

We have been upgrading the SG22 process and now have an SG22 specific github repository to track SG22 issues independently of the corresponding WG14 and WG21 issues. See https://github.com/sg22-c-cpp-standard-compatibility/sg-compatibility
The new process is still in progress; feedback and comments are welcome

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

SG23 has one day of meetings planned for Wednesday in Kona. We have six active papers to look at:
P2878R4 "Reference checking"
P2947R0 "Contracts must avoid disclosing sensitive information"
P2951R3 "Shadowing is good for safety"
P2955R1 "Safer Range Access"
P2973R0 "Erroneous behaviour for missing return from assignment"
P2981R0 "Improving our safety with a physical quantities and units library"

2.2 Pipeline stage 2 groups: Design subgroup status reports

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

JF reports via email :

EWG had seen all the papers which could be presented in Varna. I expect that we will perform similarly in Kona. That said, we have a significant backlog of paper either without presenters, or marked as needing revision. I'm going to do some follow-up on those, but please reach out privately if you would like to take over or support the advancement of any of these papers. We have a decent number of CWG/LWG issues to consider as well.

EWGI has a rather large set of papers which seem in an early phase, or need some polish before the wide EWG can consider them. Erich took a good amount of time in Varna to help increase paper quality and provide feedback to early ideations.

WG12 (Undefined Behavior) is currently dormant but has significant amounts of work in front of it. EWG will spend at least a day on SG12 targeted papers and issues.

Since Varna we've officially added Hana to the EWG team. Welcome Hana! She'll be remote for this meeting, but was a great help in the Varna meeting and I look forward to working with her further in EWG. As always, Erich is a reliable co-chair (or is it co_chair?), whose work I also appreciate.

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

LEWG had 10 Telecons since Varna (we will have one more prior to Kona), and saw the following papers and issues:

Forwarded to LWG:
1. D2836R1:std::basic_const_iterator should follow its underlying type's convertibility
2. P2821R3:span.at()
3. P2591R4: Concatenation of strings and string views
4. P1068R9: Vector API for random number generation
5. P2833R1: Freestanding Library: inout expected span
6. P2447R4: std::span over an initializer list
7. P2870R0: Remove basic_string::reserve() From C++26
8. P2868R0: Remove std::allocator::is_always_equal
9. P2937R0: Freestanding: Remove strtok
10. P2871R1: Remove Deprecated Unicode Conversion Facets

Scheduled for next electronic poll:
1. P2542R6:views::concat
2. P2810R1: is_debugger_present is_replaceable
3. P2976R0: Freestanding Library: algorithm, numeric, and random
4. P2867R1: Remove Deprecated strstreams From C++26 (from ML review)

Requires additional review by LEWG:
1. P2901R1: Extending linear algebra support to batched operations (will be seen before Kona)
2. P2019R3: Thread attributes (Scheduled for Kona)
3. P2642R3: Padded mdspan layouts (Scheduled for Kona)
4. P2141R1: Aggregates are named tuples
5. P2075R2: Philox as an extension of the C++ RNG engines
6. P2897R0: aligned_accessor: An mdspan accessor expressing pointer realignment
7. P2875R0: Undeprecate polymorphic_allocator::destroy For C++26
8. P2895R0: noncopyable and nonmoveable utility classes

Needs revision:
1. P2880R0: Algorithm-like vs std::simd based RNG API
2. Github Issue1580: LWG2095 & LWG3003

3. [P2944R1](): Comparisons for reference_wrapper
4. [P2945R0](): Additional format specifiers for time_point
5. [P2930R0](): Formatter specializations for the standard library
6. [P2909R1](): Fix formatting of code units as integers
7. [P2767R1](): flat_map/flat_set omnibus

Detailed minutes are updated on the Wiki and links are posted both in GitHub issues and on our telecon schedule page: https://github.com/cplusplus/LEWG/wiki/2023-Telecons

We forwarded 15 papers to LWG in our last electronic poll. Poll results and comments can be seen here: "[P3020R0](): 2023-09 Library Evolution Poll Outcomes".
Four more papers have already been forwarded to our next electronic process (which will be conducted after Kona).

Plans For the Kona 2023 meeting:
- We have a (tentative) schedule for Kona (currently contains 36 papers, mostly on large topics) published here: https://github.com/orgs/cplusplus/projects/19
- We will have our first LEWG policy discussion on Wednesday, 08:00 AM Kona time (in LEWG's room) (focused on setting the outline for policies, and the process of adding/removing a policy).
- We will have two evening sessions (targeting all WG21 members), Tuesday, and Thursday. topics are: SIMD API and the scope of C++: https://wiki.edg.com/bin/view/Wg21kona2023/EveningSessions

Thank you to all our paper authors, co-chairs, LEWGI and ML review chairs, minute-takers, and participants!
Looking forward to seeing you all in person or virtually in Kona.

2.3 Pipeline stage 3 groups: Wording subgroup status reports

• **CWG**, Core wording: Jens Maurer

CWG held teleconferences approximately every three weeks to process issues.
There are currently 11 issues in "Ready" and 31 in "Tentatively Ready"
status, plus 35 in "Review" status. All of them are candidates (with
decreasing probability) to be brought forward to plenary vote in Kona.

Three papers are awaiting CWG's attention, with others possibly
arriving from EWG during the week. About eight recent papers need
updates to implement CWG guidance.

Logistics:
 - mostly the same as last year
 - daytime meeting rooms: see https://wiki.edg.com/bin/view/Wg21kona2023/MeetingRooms
 - two evening sessions sponsored by LEWG:
https://wiki.edg.com/bin/view/Wg21kona2023/EveningSessions

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

LWG had been holding telecons most weeks, with some breaks due to cppcon, illness or lack of
quorum. Most of our telecons have been spent reviewing the form of the linear algebra BLAS

proposal, P1673. We've reviewed all the front matter and blanket wording that supports the actual API and have recently started reviewing parts of the actual API. We've also been reviewing views::concat, P2542, debugging support, P2547, partial classes for freestanding, P2407, and saturation arithmetic, P0543.

I will be remote for the Kona meeting, which makes it challenging to chair so I will be relying on Jeff and Dietmar to do the heavy lifting (many thanks to both of them).

We expect to spend a lot of time in Kona on linear algebra, simd, and std::execution. As well as those huge items, our pipeline of papers from LEWG is filling up again soon we have plenty to do.

There will be some issues ready to vote on in Kona, to approve the results of LWG reflector polls. I am behind with updating the status of our issues, so I don't have the list of Tentatively Ready issues yet. Expect that in the next few days.

2.4 SC22 report

Herb Sutter :SC22 plenary was last month. More red tape things that do not affect what we do. There are ongoing discussions about paragraph numbers. We think we are resolving those and some other ISO requirements for publishing documents. We work with ISO to convince them paragraph numbers are a good idea. Our implementers and committee members find them very useful. ISO is reviewing what documents are allowed to be publicly available. P-papers are not governed by ISO.

Inbal Levi : SC22 chair was re-elected during the last meeting.

Michael Wong : ISO doesn't like color changes, which affects our TS's. I'm modifying our TS's to not have color changes.
Herb Sutter : It's not just color. ISO doesn't want to see TS's that are expressed as changes to the standard.
Jonathan Wakely : The standard doesn't use colors, but we have similar problems because they don't want to have more than two fonts. Will we get C++23 this year ?
Herb Sutter : If we can't publish it 2023, we will still call it C++23. It will happen from time to time. One reason, 2 month provision before the ballot goes out to allow translation into French.

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

JF Bastien by E-mail : I'd like to mention the updated Tokyo meeting paper, with venue change (same dates): https://isocpp.org/files/papers/N4961.pdf

John Spicer : agenda has an updated link too

Detlef Vollmann : Do we now have India as NB ?
Herb Sutter : Yes, it looks like it.

Herb Sutter : SC22 is aware of the growth in WG21 due to interest in C++

4.1 Review and approve resolutions and issues

No discussion..

4.2 Review action items

No action items.

5. Closing process

5.1 Establish next agenda

Herb Sutter : I propose the same agenda modified as suggested. Any objections ?
No objections.

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

5.4 Adjourn

Meeting adjourned at 08:53 N.Am. Pacific Time