Minutes for 2023/12/13 SG14 Conference Call

On Wed, Dec 13, 2023 at 1:25 AM Michael Wong <fraggamuffin_at_[hidden]> wrote:

> Topic: SG14 Monthly
This meeting is focused on Finance but we can continue with
> the Games paper that
> was started in January, depending on what other papers or topics are of
> interest.
>
> Hi,
>
> Michael Wong is inviting you to a scheduled Zoom meeting.
>
> Topic: SG14 monthly
Time: 2nd Wednesdays 02:00 PM Eastern Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android:

https://iso.zoom.us/j/93151864365?pwd=aDhOcDNWd2NWdTJuT1loeXpKbTcydz09

Password: 789626

Or iPhone one-tap:

US: +12532158782,,93151864365# or +13017158592,,93151864365#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 253 215 8782 or +1 301 715 8592 or +1 312 626 6799 or +1 346 248 7799 or +1 408 638 0968 or +1 646 876 9923 or +1 669 900 6833

or 877 853 5247 (Toll Free)

Meeting ID: 931 5186 4365

Password: 789626

International numbers available: https://iso.zoom.us/u/abRrVivZoD

Or Skype for Business (Lync):

https://iso.zoom.us/skype/93151864365

Agenda:

1. Opening and introduction

ISO Code of Conduct
ISO patent policy.

IEC Code of Conduct:

WG21 Code of Conduct:

1.1 Roll call of participants

Guy Davidson, Andre Kostur, Bryan St. Amour, Jake Fevold, Lauri Vasama,
> Rene Rivera, Robin Rowe, Henry Miller, Michael Wong, Matthew Butler, Edward Catmur, Paul Bendixen, Ka Ming Chan
>

> > 1.2 Adopt agenda
> >
> > 1.3 Approve minutes from previous meeting, and approve publishing previously approved minutes to ISOCPP.org
> >
> > 1.4 Action items from previous meetings
> >
> > 2. Main issues (125 min)
> >
> > 2.1 General logistics
> >
> > CPPCON planning
> > C++23 and C++26 status
> >
> > Future and past meeting plans
> >
> > *Mar 8, 2023 02:00 PM ET: Embedded
> > *Apr 12, 2023 02:00 PM ET: Cancelled
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> * Aug 9, 2023 02:00 PM ET: Cancelled
> * Sep 12, 2023 02:00 PM ET: Games
> * Oct 1: CPPCON
> * Oct 10, 2023 02:00 PM ET: Embedded
> * Nov 8, 2023 02:00 PM ET: Kona F2F Cancelled
> * Dec 12, 2023 02:00 PM ET: Finance
>
> 2.2 Paper reviews
> Discussion on Embedded:
> Review latest mailings:
> P2532 Removing exception_ptr from the receivers concept
> Based on the last meeting and the discussions here.
> P2544 C++ Exceptions are becoming more and more problematic
> We might want to chime in here.
> /Paul
> P. S. P2327 de-deprecating volatile received a "consensus" straw poll.
>
> Discussion on Low Latency/Finance topics
> REview topics relevant to fintech
>
> -low latency: hazard pointers, RCU, Patrice games paper:
  https://etlcpp.com/
  flatmap, Zach Laine C++23
ring buffer: revival P0059

-executors Dietmar, P2762 Dietmar Kühl - Sender/Receiver Interface for Networking, Ben Deane to come to talk about Intel's embedded.

coroutine: library coroutine/generator is in C++23

-security?

-networking? Networking TS based on boost::asio rebased to sender receiver by P2762 SG4: Sender/Receiver Interface For Networking (open-std.org)

<https://www.open-std.org/jtc1/sc22/wg21/docs/papers/2023/p2762r2.pdf>

GPU and acceleration:
AI SG19

DFP Finance needs a decimal type with 64-bit integer with a fixed point decimal.

>
> Patrice's paper on games.
>
> P2300

> Swift
>
>
>
>
> Discussion about Games topics:
P2388R1 - Minimum Contract Support: either Ignore or Check_and_abort

http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2021/p2388r1.html

Patrice's WIP on Games issues.

Finance topics from July 14, 2021.

https://lists.isocpp.org/sg14/2021/06/0636.php

https://lists.isocpp.org/sg14/2021/07/0642.php

2.2.1 any other proposal for reviews?

Deterministic Exception for Embedded by James Renwick

https://www.pure.ed.ac.uk/ws/portalfiles/portal/78829292/low_cost_deterministic_C_exceptions_for_embedded_systems.pdf

Freestanding?

REview and update this master list of interested papers

SG14/SG19 features/issues/defects:
2.3 Domain-specific discussions

2.3.1 SIG chairs

- Embedded Programming chairs: Ben Craig, Wouter van Ooijen and Odin Holmes, John McFarlane

- Financial/Trading chairs: Staffan Tjernström, Carl Cooke, Neal Horlock,

- Games chairs: Rene Riviera, Guy Davidson and Paul Hampson, Patrice Roy

- Linear Algebra chairs: Bob Steagall, Mark Hoemmen, Guy Davidson

2.4 Other Papers and proposals

2.5 Future F2F meetings:

2.6 future C++ Standard meetings:

> https://isocpp.org/std/meetings-and-participation/upcoming-meetings

3. Any other business
> Reflector
> https://lists.isocpp.org/mailman/listinfo.cgi/sg14
> As well as look through papers marked "SG14" in recent standards committee
> paper mailings:
> http://open-std.org/jtc1/sc22/wg21/docs/papers/2015/
> http://open-std.org/jtc1/sc22/wg21/docs/papers/2016/
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> https://github.com/WG21-SG14/SG14
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> 4.1 Review and approve resolutions and issues [e.g., changes to SG's
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> 5.2 Future meeting
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Minutes for 2024/01/10 SG14 Conference Call

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> Topic: SG14 Monthly This meeting is focused on Games and we can continue
> with the Games paper that
> was started in January, but we also have several other proposals lined up.
> Thank you all for the suggestions and happy holidays.
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> ISO patent policy.

> IEC Code of Conduct:

> https://www.iec.ch/basecamp/iec-code-conduct-technical-work

> WG21 Code of Conduct:

> https://isocpp.org/std/standing-documents/sd-4-wg21-practices-and-procedures
1.1 Roll call of participants

Guy Davidson, Andre Kostur, Ben Deane, Brett, Bryan St.Amour, Henry Miller, Jake Favold, Nathan Owen, Patrice Roy, Paul Bendixen. Phil Ratzloff, Rene Rivera, Robin Rowe, Vikram, John McFarlane, Michael Wong, Andrew Lumsdaine, Michael caisse,

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>
> > upcoming conferences:
> EMbo++ in Bokum March
> ACCU April
> C++Now open for paper, after ACCU
> CPPNorth: mostly C++ but also multiple languages

> 2.2 Paper reviews
> >
> > Here is the latest draft of D1709r5 Graph Library for potential review in
> > this week's SG14 meeting on Wednesday.
> > Enclosed.
>
> Phil Ratzloff
> Graph Library in the name needed?
> supporting bipartite, multipartite graphs
> graph, adjacency list, edge list interface for some algorithms
> can use existing functionality to transform something into descriptor types
> use existing std containers to define a graph
> customization points used to get targetid
Not hypergraphs, parallel version of the algorithm, incoming edges (are outgoing edges of the transpose matrix, and only a very few algo needs both) on vertex, not want to limit it in the future

Patrice: Title 1.5: the «with» is misspelled
Isn't «DistanceValue» a strange name for a type (or type constraint)? Maybe it's just me...
why void fns with output arguments? because we dont want the algorithm to allocate so calling code is aware of the expected arguments
Ribin: why not return Boole? Just a design decision why not write exceptions in the throw? We would have to pick a particular type

Patrice asks about freestanding concerns and suggest removing it so as not to be slowed down
Breet mentions throws and exceptions causing problems for low-latency

breaking it up into 4 papers, glossary, terms and definitions,
FAQ?
highlights?
SG6 review?

> Patrice's Games paper review D2966
>
> Arthur's suggestions:
> (1) I put in the Slack channel
> <https://cpplang.slack.com/archives/C3TK2M6HH/p1703947057425609> a while ago Clang PR #76596 <https://github.com/llvm/llvm-project/pull/76596>,

>
from one Max Winkler, apparently in game dev. I don't think the PR stands much chance of getting merged into Clang; but it might still be of interest to SG14 folks. The issue description is very long and somewhat detailed, and then there's more discussion/debate in the comments

<https://github.com/llvm/llvm-project/pull/76596#issuecomment-1872601156>. (I'd actually be interested in talking to Max, but he doesn't publish his email address on GitHub and I guess that might be on purpose.)

(2) LEWG will be seeing my P3055 "Relax wording to permit relocation optimizations in the STL"


be interesting to folks who do EASTL-style containers. I'd be interested in early feedback and/or telecon attendance.

Discussion on Embedded:

Paul's suggestions

The next meeting would then be Embedded and I would be interested in knowing if people think a module std.freestanding is worth pursuing. In that context I'd like to get some feedback perhaps already for the upcoming meeting, if people have started using modules, and if so if it has brought the promised expectations or if you are holding back if you see any relevance in modules.

For freestanding

Brtt's networking TS on Low latency.
> Review latest mailings:
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> > [https://docs.google.com/spreadsheets/d/1JnUJBO72QVURttkKr7gn0_WjP--P0vAne8JFzbRiy0/edit#gid=0](https://docs.google.com/spreadsheets/d/1JnUJBO72QVURttkKr7gn0_WjP--P0vAne8JFzbRiy0/edit#gid=0)
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> 3. Any other business
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> Reflector
> 
> https://lists.isocpp.org/mailman/listinfo.cgi/sg14
> 
> As well as look through papers marked "SG14" in recent standards committee
> 
> paper mailings:
> 
> http://open-std.org/itc1/sc22/wg21/docs/papers/2015/
> 
> http://open-std.org/itc1/sc22/wg21/docs/papers/2016/
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Minutes for 2024/2/14 SG14 Conference Call

Thanks John for forwarding it.

On Wed, Feb 14, 2024 at 1:51 PM John McFarlane via SG14 <sg14_at_[hidden]> wrote:

> -------- Forwarded message --------
> From: Michael Wong via SG19 <sg19_at_[hidden]>
> Date: Tue, 13 Feb 2024 at 20:43
> Subject: [SG19] SG14 Feb 14 Monthly call
> To: <sg19_at_[hidden]>
> Cc: Michael Wong <fraggamuffin_at_[hidden]>
> 
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> ISO Code of Conduct
> <
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> https://isotc.iso.org/livelink/livelink?func=ll&objId=20882226&objAction=Open&nexturl=%2Flivelink%2Flivelink%3Ffunc%3DII%26objId%3D20158641%26objAction%3Dbrowse%26viewType%3D1
> /*>*
>
> ISO patent policy.
>
1. Roll call of participants

Michael, Paul Bendixen, Andre Kostur, Arthur O'Dwyer, Ben Craig, Ben Deane, Brett, Bryan St. Amour, Henry Miller, Jens Maurer, John McFarlane, Lauri Vasama, Nathan Owen, River, Robin Rowe, Stefano Fiorentino, Michael Caisse.

1.2 Adopt agenda

1.3 Approve minutes from the previous meeting, and approve publishing previously approved minutes to ISOCPP.org

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2. Main issues (125 min)

2.1 General logistics

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>
> 2.2 Paper reviews
>
> Embedded:
> * P3132 Accept attributes with user-defined prefixes
>
> RTTI enhancement, from QT remarks: if we do this, can we do this without using the unreal, not use and just fix clunky macros

> * P3134 Attribute [[asserts_rvo]]
>
> Arthur working on a patch NRVO attribute on a return statement;
> [[clang::nrvo]] return x; // guarantee NRVO here
Paul Bendixen:

Paul's suggestions

The next meeting would then be Embedded and I would be interested in knowing if people think a module std.freestanding is worth pursuing.

In that context I'd like to get some feedback perhaps already for the upcoming meeting, if people have started using modules, and if so if it has brought the promised expectations or if you are holding back if you see any relevance in modules.

might ask Odin
can I write import std, will that give me freestanding? Yes been thinking about it, if on a FS implementation, yes import std will but if you are on multi-platform mix with hosted systems, with bare metal, should get a compile error even if on a hosted tool chain, (this is the dream). Alistair is also interested in a std FS module by adding an deprecated attribute that would be hosted attribute.this warns me whenever I use hosted things

FS roadmap:
https://www.open-std.org/jtc1/sc22/wg21/docs/papers/2020/p2268r0.html

3 papers: utilities, iterators,
optional operator new and feature test macro is all in working draft for 26
P2338 is the working draft now
catchup paper on inout ptr, std span and mdspan
Laurie is working on P2889
Paul has requested to work on assert because codebases may not work with ssert, so neeed modification
I recently noted that <exception> is mandated for freestanding by <stdexcept> is not. However <stdexcept> would be nice (actual use of language exceptions or not aside) as it basically contains vocab types
that are commonly used in libraries like libfmt?

Because std string is not appropriate at runtime with FS

new concern is reflectionP2996 is all compile time, has stuff defined in terms of std vector (which is not in freestanding) due to heap alloc and exceptions)

Need help with some testing with consteval, constexpr

support for containers? in_place vectors has a lot of stuff supporting FS, otherwise, array, the other containers all have allocator concept, which has no way of signalling failure, cant be null as that would break the world; at runtime, containers need a lot more work or get P0709, or similar deterministic exceptions, use your own allocator, not std allocator

custom allocator would have to be stack and not heap, or even static global array

Why not use PM allocator? PMR mostly work except failure when it throws an exception; using a runtime switchable mechanism is fine

future discussion on allocation in embedded space? yes its very domain specific, may be we an only do hooks, we an't say specific technique, even class based op new/delete can go a long way, default one if you have exception on, which is kind of a hook
regarding modules, we are using clang 16, module support might get better later; its compile time heavy

een thing that might still be missing from FS: FS with senders? Seems Ok?
If u ignore exec facility like GPu, then it explicitly not do memory
allocation, just template magic to build call graph at compile time.
BD has an impl on sender and receiver for embedded (not FS), so use atomics, arrays, concurrency model is on interrupts, sync wait is never what you always need detach because u are going to complete when interrupting returns, and doing start detached out allocation is more challenging; so u need to have all embedded allocation techniques that we talked about - static allocators, stack, nothing from heap

agree sync wait is difficult to work with, now what about the spec? what goes in there? will it have //FS? No not in the first bit, will need it to be added to the roadmap, Eric N may be doing it
Stefano Fiorentino is interested to help, please send to ben Craig

what is the status of P2855 change in this one? still using tag_invoke, member functions are great if you deducing this to make that work, else u are delaing with value categories the old way

status paper:
https://docs.google.com/spreadsheets/d/1JnUJBO72QVURttkKr7gn0_WjP--P0vAne8JbfzbRiy0/edit#gid=0

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Freestanding Updates

Games paper review

Arthur’s suggestions:

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(I’d actually be interested in talking to Max, but he doesn't publish his email address on GitHub and I guess that might be on purpose.)

(2) LEWG will be seeing my P3055 "Relax wording to permit relocation optimizations in the STL"

Link: [https://quuxplusone.github.io/draft/d3055-relocation.html](https://quuxplusone.github.io/draft/d3055-relocation.html) in a telecon on February 20th. (Related blog post.

Link: [https://quuxplusone.github.io/blog/2024/01/02/bsl-vector-erase/](https://quuxplusone.github.io/blog/2024/01/02/bsl-vector-erase/) Might be interesting to folks who do EASTL-style containers. I’d be interested in early feedback and/or telecon attendance.
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> P. S. P2327 de-deprecating volatile received a "consensus" straw poll.

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> Discussion about Games topics:

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- Embedded Programming chairs: Ben Craig, Wouter van Ooijen and Odin Holmes, John McFarlane

- Financial/Trading chairs: Robin Rowe, Staffan Tjernström Carl Cooke, Neal Horlock

- Games chairs: Rene Riviera, Guy Davidson and Paul Hampson, Patrice Roy

- Linear Algebra chairs: Bob Steagall, Mark Hoemmen, Guy Davidson

2.4 Other Papers and proposals
> 2.5 Future F2F meetings:
>
> 2.6 future C++ Standard meetings:
> https://isocpp.org/std/meetings-and-participation/upcoming-meetings
>
> 3. Any other business
> Reflector
> https://lists.isocpp.org/mailman/listinfo.cgi/sg14
> As well as look through papers marked "SG14" in recent standards committee
> paper mailings:
> http://open-std.org/jtc1/sc22/wg21/docs/papers/2015/
> http://open-std.org/jtc1/sc22/wg21/docs/papers/2016/
>
> Code and proposal Staging area
> https://github.com/WG21-SG14/SG14
>
> 4. Review
>
> 4.1 Review and approve resolutions and issues [e.g., changes to SG's
> working draft]
>
> 4.2 Review action items (5 min)
>
> 5. Closing process
>
> 5.1 Establish next agenda
>
> 5.2 Future meeting
>