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Project: JTC1.22.32
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Minutes

WG21 Meeting No. 54
15-19 October 2012 Portland, Oregon, USA

1. Opening activities

Clamage opened the meeting and welcomed the newcomers.

1.1 Opening comments, welcome from host

Tom Plum welcomes the attendees and provides organizational information.

1.2 Introductions

Clamage has the attendees briefly introduce themselves.

1.3 Meeting guidelines (Anti-Trust)

- http://www.incits.org/pat_slides.pdf
- http://www.incits.org/inatrust.htm

Clamage presented the anti-trust links and clarified that he is not allowed to explain the anti-trust documents nor answer questions on them.

1.4 Membership, voting rights, and procedures for the meeting

Nelson explained the membership and voting rights and clarified that the rights apply to formal votes but not to straw polls taken. Abrahams asked whether the attendance of the last two meetings is required per person or per organization and Nelson and Clamage clarified that it is per organization. Sutter explained the difference between a

PL22.16 votes and the WG21 votes. Brown asked how many NBs are present, and Sutter counted seven (US, UK, Canada, Switzerland.

1.5 Agenda review and approval

Clamage entertained a motion to approve the agenda (document PL22.16/12-0063 = WG21/N3373), moved by Clow, seconded by Liber. Unanimous.

1.6 Approval of the minutes of the previous meeting

Moved by Nelson, seconded by Hedquist, unanimous.

1.7 Editor's report, approval of draft

Du Toit summarized the editor's report, saying that there were 50 core issues and two dozen library issue resolutions added to the working draft.

Draft approval moved by Du Toit, seconded by Halpern, unanimous.

1.8 Liaison reports (including WG21 study groups)

Sutter explained that nothing that we care about happened in the SC22 plenary, but pointed out that ISO is trying to require using webex for all meetings. Sutter mentioned that WG21 continues to be by far the largest working group under SC22.

Vollman asked what the situation is with the performance TR and the library TR, and Sutter explained that the position of WG21 is to withdraw library TR and affirm the performance TR, and explained that the reason for withdrawal is that the TR has been completely superseded by C++11 and the special math functions standard. The reason for not revising the performance TR is that there are no volunteers to perform the work.

Sutter showed a photo of the first meeting from 1990, and remarked that color photography has been invented since then, since we have a color photo from Madrid. Sutter then showed a bar graph of the attendance numbers of the last meetings, and pointed out that the attendance number was over 70 in Kona and is over 80 in this meeting, and seems to indicate renewed interest in C++.

Sutter explained the composition of the subgroups, and explained the new study groups and their purpose, which is to investigate solutions for new proposals and prepare the work to be consumed and refined by the subgroups and then the full

committee. Sutter explained how defect reports and new proposals travel through the subgroups and study groups.

Sutter briefly showed and explained the history of C++ standardization thus far, and pointed out that before the planned C++1y ships, there will most likely be smaller deliverables as Technical Specifications. Sutter pointed out that P.J. Plauger has said that nothing in ISO happens in under two years, and remarked that if you shout "fire" in a crowded room full of ISO people, it will take 2 years before the last person leaves the room. Sutter explained that the ISO process is nowadays streamlined, and that that allows releasing Technical Specifications more rapidly. Sutter said that the consensus from the administration side is to strive for an amendment for the standard that should ship in 2014.

Sutter then introduced isocpp.org, and said that the site will be launched at the end of October. Sutter explained the goals of the site are promotion of modern c++ style and increasing the availability of portable c++ libraries, and explained how the site fits into the picture as a successor to the comp.std.c++ newsgroup but is a lower-volume site than StackOverflow. Sutter said that there will be a separate session on the portable library effort, and announced the Standard C++ Foundation, and clarified that the foundation is completely separate from WG21, and has the goal of promoting C++ but the standardization is still done by WG21. Sutter then invited the companies present to join the foundation, and presented the board of directors of the foundation. Willcock asked how to join the foundation, and Sutter explained that emailing him is the first step of the procedure. Sutter said that the foundation will act as a "marketing department" for C++, and Stroustrup asked where he can find his "C++ inside" badge. T. Plauger asked what the prices of the membership are, and Sutter explained there to be three membership levels, with respective costs of 1000, 5000 and 10000 dollars. Sutter then continued by saying that the separate session is for brainstorming about ideas that would help getting more work done between meetings. Meredith asked whether the isocpp.org wiki is available for people to add their personal profiles, and Sutter promised to facilitate that. Sutter indicated that he wants to do straw polls about opening the reflectors to be world-readable. Spertus said he had always thought that the reflectors are closed due to the ISO rules, and Sutter explained that the reflectors are actually not an ISO facility, to which Spertus said the he has no idea why they haven't been open from the get-go. Brown requested to have such straw polls on Thursday so that more people can be present.

Plum then made a short report about the C committee, and said that ever since the updated C standard, not much has been happening. Austern said that people will expect new C features to appear in C++ as well, and asked whether there's any such features planned, and Plum and Plauger said there are none at this point. Vollman

asked what the C committee is doing if it's not adding anything, and Nelson said there are some tentative plans to support decimal floating point and have more support for certain kinds of static analysis tools.

For WG23 (security/vulnerabilities), Plum said that people are always interested in having an annex describing the security aspects and vulnerabilities of C++, but pointed out that liaising with WG23 has usually taken lower priority compared to shipping a new revision of the C++ standard. Plum summarized the security/vulnerability work ongoing for PHP, Perl and Ruby.

1.9 WG progress reports and work plans for the week

Progress Reports

Each Working Group chair presents group progress and plans for the coming week.

Core Working Group (CWG)

Miller gave the status report for Core, and explained that Core is at the moment looking at defect reports, and Core is anticipating proposals to come through from Evolution but there aren't any such proposals yet. Miller summarized that Core has 61 issues to be moved in this meeting. As of this morning, Core has 109 new issues. Thanks to the diligent effort of Jens Maurer, there's wording for 33 Core Issues. Miller concurred with the standard amendment idea, and said that Core will create a separation list of issues that are pure defect fixes and issues that are extensions. Sutter clarified that the point of doing an amendment rather than a TC is that the rules for a TC are stricter, and said that the point of an amendment is to avoid having to do such separation, and Miller explained that it's an issue of what exactly implementers support under various compatibility modes, and not just a standards-procedure-related issue, and explained further that minimizing the categorization work is an important goal, but the implementer community would like the guidance.

Library Working Group (LWG)

Meredith stated that the LWG is in overload mode, and will be in crisis mode if the trend continues. The LWG has 40 papers to look at, although some of those will go to Evolution first. There's 140 open issues, which is a large addition since C++11, because the list of open issues was practically empty after shipping C++11. Meredith requested people to try and finalize the filesystem proposal so that it gets completed and helps with the workload. Clamage asked whether there's a plan to split LWG into smaller working groups, and Meredith said that that's still to be discussed. Sutter asked whether there are any obstacles for advancing the issue processing, and

Meredith said he plans to have evening sessions for library issue processing and for creating some guidelines for proposals and issues. Dawes said that he'd like to have voting/polling software to help with the issue processing. Sutter asked whether github can do polls, and Du Toit and Dawes said it doesn't, although it does do issue tracking. Austern voiced concern about the multiple stages, but Meredith clarified that the "tentatively ready" is not a new stage, to which Austern disagreed. Spicer opined that having these multiple stages protects against errors. Meredith pointed out that for trivial issues, the tentatively-ready processing worked fine, and it was also fruitful for solicitating feedback for the more complex issues, and voiced concern about how to get such feedback with an automated poll. Dawes suggested that you can have that feedback when a poll is not unanimous. Spicer pointed out that trying to keep track of library issues is difficult when there are hundreds of email messages on the reflector saying "+1".

Evolution Working Group (EWG)

Stroustrup then gave his report, and started by saying that he's very happy with C++11 and its adoption rate, but voiced concern about the amount of proposals for things that are dramatically new. Stroustrup said he has doubts on whether we have the bandwidth to handle all the major things coming in. Abrahams asked for clarification on what the plan is for C++1y features and long-pole issues, and Stroustrup said that thus far all proposals are worked on. Stroustrup said that it's becoming difficult to characterize C++, especially C++1y, because it's going into so many directions, and voiced concern about the overall picture, and said that we need to have more discussion about direction and called for more focus on users, and clarified that he doesn't mean the committee members when referring to users. Stroustrup said he thinks it's important to fix the remaining C++11 bugs and to try and simplify the language.

Abrahams asked whether that means that more of us should focus on issues rather than new proposals. Stroustrup clarified that we have to have an effort to focus on the small fixes rather than radical new things. Stroustrup re-emphasized the importance of getting the "complete C++11" category fixes done, and explained that those fixes should go into the amendment and thus get high priority. Stroustrup gave some examples of that kind of small fixes, and Maurer pointed out that having literal types as template arguments is not a small fix. Seymour pointed out that focusing on the overall picture and focusing on a specific issue aren't necessarily mutually exclusive, and Stroustrup warned that a specialist will always win deeply technical arguments and spending time on details is very problematic.

Sutter asked whether EWG will start making scoping decisions, and Stroustrup expressed doubt whether that can be done yet. Maurer requested maintaining a list of Evolution paper statuses, and Stroustrup agreed. Voutilainen volunteered to keep such a status list. Lavavej said he thinks it's important that the list is publically visible and not hidden in a wiki, and Sutter clarified that it will be highly visible.

SG1

Boehm summarized the SG1 status, and said that there was a surprisingly large amount of people participating. Boehm mentioned that there are some controversial issues, such as future destructors and thread locals, and gave a brief overview of what's on SG1's plate, including some facilities that were targeted for C++11 but were cut out, and said that there are new proposals that are relatively entangled and take a fair amount of time to process since the proposals aren't very independent. Boehm pointed out that even though transactional memory has its own study group, the same people are working on both concurrency and transactional memory.

SG2

Gregor briefly reported that the modules study group has been mostly dormant. Clamage asked whether there's need for a meeting of the modules study group and Gregor said he doesn't think so. Sutter asked whether SG2 should continue, and Gregor said he thinks so, but SG2 will not have much to discuss before a new proposal arrives, and clarified that such a proposal is forthcoming. Carruth said he things SG2 has things to discuss and should meet, Abrahams concurred that at least a short meeting should be organized. Austern requested an analysis of what other proposals could be made obsolete by modules.

SG3

Dawes said that filesystem is progressing nicely, and explained that the study group hasn't had face-to-face meetings, but handles its work over its mailing list. Dawes explained that having the paper and a reference implementation on github was immensely helpful, and that having a dedicated mailing list also worked nicely. Dawes said that there's an updated paper that hopefully handles the remaining two issues that weren't done by the time of the pre-meeting mailing deadline, and stated that he doesn't see anything controversial left. Dawes continued by saying that he personally feels that the filesystem library should go out as a TS, but that that needs to be discussed.

SG4

Gustafsson covered for Kloepper for SG4, and described the spring scoping discussion, and explained that network protocols and network-supporting types are in scope, but serialization formats such as json aren't as they aren't specific to networking but have uses outside networking. SG4 has a plan for annual releases and their contents. Gustafsson summarized the introductory papers handled in the spring meeting and pointed out that there are some proposals that will be looked at during the meeting. Sutter recommended having a discussion about whether a TS is forthcoming soon, and clarified that he will have to apply for work items if that's the case, and Gustafsson said that such a discussion will be held.

SG5

Wong said that SG5 (transactional memory) is aiming for a TS shipping alongside approximately 2014, and explained that the study group has weekly teleconferences with the implementors. Wong asked for feedback on selecting which features should be in scope, and specified that relaxed and atomic transactions are to be discussed in a larger group for feedback.

SG6

Crowl said that SG6 (numerics) has a handful of papers to look at, and the study group needs to organize its work and figure out how to make the various numerics proposals work together and fit into C++, and mentioned that there are potential future work items, but the current workload should get handled in a single day. Meredith asked whether the study group wants to take responsibility of issues on section 26, and Crowl said he'd be happy to do it if the rest of the committee agrees. Brown pointed out the standard for special math functions and asked whether the study group wants to take responsibility of that too. Crowl explained that his original plan was to focus on number formats rather than functions, but expects the decimal number standard at least to be updated with C++11 facilities. Brown pointed out that at some point the committee will have to decide whether the special math functions should support the potential new numeric types. Crowl stated that the work organization is still to be done.

1.10 New business requiring actions by the committee

2. Organize subgroups, establish working procedures.

Clamage pointed out that there are 9 groups and 5 meeting rooms. Nelson and Clamage figured out a plan for room division. Brown requested the wiki page to be

updated for each group explaining what they'll discuss and when, so that people can plan where to go.

Miller pointed out that N3323 is to be moved without further discussion, so if anyone has something to say about it, they should contact Miller.

3. WG sessions (Core, Library, Concurrency, and Evolution).

The committee broke into the working groups and study groups.

Tuesday 16 October 8:30 a.m. – 5:30 p.m.

4. WG sessions continue.

Wednesday 17 October 8:30 a.m. - 5:30 p.m.

5. WG sessions continue.

Thursday 18 October 8:00 a.m. - 12:00 p.m.

6. WG sessions continue.

Thursday 18 October 1:30 p.m. – 5:30 p.m.

7. General session.

7.1 WG status and progress reports.

Clamage explained the purpose of the meeting to newcomers, which is to save time on Friday.

Core Working Group

Miller presented his Core Report. Miller explained the interest for having a separate set of bugfixes to C++11 distinguished from latter standards, and said that it's not necessary to have full committee approval for having such tracking. Miller further

explained that the CWG intends to have separate motions for defect reports and extensions. Halpern asked where the DRs go. Miller explained that if we're targeting an amendment, there's practically no need to worry about that because everything goes into the amendment. Miller summarized that there's 40 issues in ready status and 25 in review status.

Miller highlighted a stricter definition for a null pointer constant, and linkage of const-qualified variables. Carruth asked whether a literal false is considered a null pointer constant, Milled said it isn't, and Carruth opined that this is the only problematic breaking part that he sees. Meredith said that false is an integral constant with zero value, but Miller explained that it's not an integer literal. Kosnik asked whether the compatibility appendixes have been updated, and Miller clarified that they have. Halpern stated that he would like to see the template and constexpr parts split out from the resolution so that the strict rules apply to those, but the other cases remain the same. Miller pointed out that there's no category of constexprs that wouldn't be part of the "other cases". Miller explained that this is a defect report because it instructs people still implementing constexpr to have the right rules. Austern asked what happens to code that's valid under the C++11 rules, and thought that we don't have to power to change those rules, but such a change should happen in a future standard. Sutter clarified that he thinks there should be an amendment or a TC, but not both. Smith stated that he thinks that C++11 absolutely has a defect here, and that we absolutely need to make a change. Spicer said that the claim that we don't have the power to change the rules is incorrect.

Motions:

1) Move we accept as Defect Reports all issues in "DR" status from N3383:

.16 unanimous, wg21 unanimous

2) Move we apply N3323, "A Proposal to Tweak Certain C++ Contextual Conversions, v3," to the C++ Working Paper.

.16 unanimous, wg21 unanimous

Nelson asked whether this is a DR, Miller clarified that this is the first change targeting C++1y.

3) Move we accept as Defect Reports all issues in "ready" status from N3382, except for issues 129, 240, 240, 312, 1013 and 1417, and apply their proposed resolutions to the C++ Working Paper:

Wong voiced concern about 1328, so it's to be removed from the motion.

.16 unanimous, wg21 unanimous

Library Working Group

Meredith presented his Library report. He said that most of the time has been spent on papers, and not much on issues processing. The library reports has old paper numbers, the formal motions page has the new ones. Halpern asked for implementation status for the constexpr changes, and Meredith said that the changes have been implemented.

Nelson quipped that greater<> is apparently to be read "greater-less-greater". Vollmann pointed out that the paper N3421 wasn't in the pre-meeting mailing and voiced concern for moving it so soon. Carruth hoped for some input on whether people want to change something. Smith asked whether greater<> has special behavior for pointers, and Meredith said it doesn't. Vollmann clarified that he wants to give more people time to review the paper. Plauger said he was the one encouraging the committee to vote it in, and that doesn't preclude review, and Dawes agreed. STL said that it's intentional that greater<> doesn't handle pointers specially. Sutter explained the historic one-meeting waiting rule.

Nelson said he was looking for the new papers on the motions but didn't find any. Meredith said he plans to move the new papers after the practice vote after he knows what we plan to move, Nelson said that's a bit different from the usual way. Hinnant clarified that the papers are on the formal motions, but the links may point to documents that are still d-numbered. Sutter thought having the papers by the day-n-1 afternoon is enough, and Nelson said that that was an old way of doing things, and we have since adopted a 13:30 deadline. Dawes asked whether there should be a document explaining the procedure. Niebler pointed out that there's already three shipping implementations of sfinae-friendly result_of.

Meredith then gave a summary of papers that are candidates for C++14. Sommerlad asked for feedback for his literals paper so that he can get a reviewed version into the post-meeting mailing. Meredith explained the technique of using inline namespaces for the literals, and clarified that from N3404 the get<TYPE> part is moving forward, but the other parts need more work.

Nelson asked whether there should be a UDL suffix for string_ref. Dennett asks whether string_ref should allow access beyond the last element, and Niebler said that would mean that that beyond-last wouldn't be continuous. Austern said that there's

been discussion about a UDL suffix but there hasn't been a proposal for it. Nelson clarified that he wonders whether the string suffix should actually create a string_ref.

Meredith then went through the papers potentially slated for post-c++14, papers that had been reviewed with mixed interest, papers yet to be reviewed, and papers that have been postponed due to lack of a champion. Voutilainen wished to emphasize that users have been waiting for string::split for over a decade.

Meredith explained the issue about whether adding constexpr to a function is a conforming extensions, and people actually interpret the standard differently, so a clarification is necessary. Spicer asked whether this is to be voted on on Friday, Meredith said that's not the plan but he wants the clarification. Spicer explained his concern which is that you can use constexpr functions in SFINAE contexts, so what you can and can't use in a SFINAE context may be implementation-dependent. Nelson asked whether there should be a paper about this. Spicer explained that it's easy to slide into using extensions because people may accidentally use constexpr functions that the standard doesn't make constexpr. Austern clarified that there's no paper at this point. Dos Reis said that the situation is similar to taking the address of a library function, which you can't do due to implementations having the freedom to add default arguments, and you can use such function pointers in SFINAE contexts. Spicer explained that it's much easier to accidentally use constexpr functions in such contexts.

Meredith then described the effort for documenting library conventions.

Hedquist asked whether library issues have been split into C++11 defects and extensions, Meredith said that the LWG hasn't done split categorization.

Motions:

Move we apply the resolutions of all issues in "Ready" and "Tentatively Ready" status from N3438 to the C++ Working Paper.

.16 unanimous wg21 unanimous

Move we apply N3421, Making Operator Functors greater<>, to the C++ Working Paper.

.16 unanimous wg21 6-1

Move we apply N3462, std::result_of and SFINAE, to the C++ Working Paper.

.16 unanimous wg21 6-1

Move we apply the following papers, applying constexpr in the standard library, to the C++ Working Paper.

.16 unanimous wg21 unanimous

Evolution Working Group

Stroustrup presented EWG status, and announced two new study groups, for reflection (SG7) and concepts (SG8).

Stroustrup invited suggestions for tiny issues, and Voutilainen will create and maintain the Evolution issues list. The current procedure is to send the issue suggestions to Voutilainen over e-mail.

Stroustrup summarized that the emphasis was on things aimed for C++14, and summarized the issues that were handled.

Carruth asked whether there's any response to the concern that a space before a suffix causes bad problems with Objective-C.

Meredith asked whether hex float and binary float had been discussed, Stroustrup explained that they haven't.

Niebler asked about the similarity of string_ref and dynarray, specifically whether dynarray is like an array_ref, and Carruth and Stroustrup explained that dynarray has storage and the size of the array will not change. Niebler then said that he wishes to withdraw his question/concern, but the note-taker decided to capture that discussion anyway. Do remember that anything you say can and will be used against you by the note-taker.

Meredith pointed out that he has a personal interest in static if and concept-like things, but he was unaware that this was to be discussed since there were no new papers. Gregor said that it's likely that there will be a new paper in the pre-meeting mailing for the next meeting, and Voutilainen pointed out that these things are likely to be handled by the Concepts Study Group chaired by Austern.

Sutter asked whether removing operator++ is the first time we have removed a deprecated feature, and Vandevoorde pointed out that C++11 removed the conversion of string literals to non-const char*. Meredith asked whether anyone spoke in favor of

keeping the operator++, because he has found it useful to get a boolean value and immediately set it to a true value.

Stroustrup presented the outcome of the discussion on N3452, and Meredith pointed out that the explicit constructor issue for tuple (see http://cplusplus.github.com/LWG/lwg-closed.html#2051) is NAD Future, said he takes this as a request to reopen, and Stroustrup confirmed that the issue should be reopened.

Nelson reported that he plans to create a study group for investigating compatibility macros and other such compatibility mechanisms. Sutter said that will be the first double-digit study group (SG10), and various people wondered where SG9 vanished, and Sutter said it's a secret to be revealed later.

Crowl asked for feedback on N3445, Pass by Const Reference or Value, because it wasn't handled by the EWG.

Sutter asked what's the status of ranges, and Meredith asked how many people would be interested. A new study group (SG9) will be created to explore the area.

PL 22.16

Hedquist presented the PL22.16 resolutions and motions.

Miller asked what exactly it means that the library TR is used but still being withdrawn, and Plauger and Hedquist explained that the technical content of it is still being used.

Withdraw TR1, confirm Performance TR: Unanimous

Member emeritus status: Unanimous.

Approval of the delegation: Unanimous.

SG4 Networking

Gustafsson presented SG4 (Networking) status, explaining that the group had 4 papers to look at, and none of them are yet to be forwarded to any subsequent groups. Austern explained how the difference between an IPv4 and IPv6 address is expressed.

SG3

Dawes presented SG3 status, and stated that he got good guidance on the technical issues, and a unanimous consent to target a Technical Specification, and the target is to have a motion in Bristol, and it's expected that the paper should be feature complete and have good or potentially complete wording. Sutter explained that he will obtain a work item for the aforementioned TS. Dawes clarified that it's the first TS and that he expects more work to come up. Carruth pointed out that there are open security concerns with the current proposal, and clarified that multiple people expressed concern about publishing the proposal as a TS. Stroustrup warned against rushing, and stated that the feedback from the study groups is important, and said he'd rather stay late than rush things.

SG1

Boehm presented (Concurrency) SG1 status, highlighting the issue of future destruction. Sutter and Boehm emphasized that the proposals are converging well. Stroustrup asked whether there are plans to get anything into C++14, and Boehm confirmed that there are some short-term items such as shared locking and stream mutexes. Meredith asked whether any Technical Specifications are planned, and Boehm said that SG5 (Transactional Memory) is such a TS, but SG1 doesn't expect to issue a TS.

SG5

Wong presented SG5 (Transactional memory) status, and explained briefly the difference between atomic transactions and normal transactions. Wong confirmed that the plan is to issue a TS, and briefly described some issues with composability. Naumann expressed concern about the maturity of transactional memory. Nelson thought it premature to have such a discussion just yet. Stroustrup expressed his happiness about having a study group for transactional memory. Crowl stated that there's a chicken-and-egg problem here, and thought it's important to focus onto a single proposal that has vendor backing, and thought that the TS would serve such a purpose well. Grover asked whether there's a proposal for WG14, and Wong said there isn't.

SG2

Gregor presented SG2 (Modules), and said that the study group has had a scope discussion. Gregor explained that the group has been looking at which proposals would be obsoleted by modules, and said that there aren't many. Gregor said that implementation work will continue in Clang, Vandevoorde will create a revision of the proposal, and the revision it's expected to be available in Bristol.

SG6

Crowl presented SG6 (Numerics), said that the study group has had scope discussions and figured out how the various proposals should work together. Crowl then described the various papers under development. Crowl also clarified that the study group will take care of library issues concerning section 26. Sutter asked whether some of the facilities proposed are fit for wide-spread standards use, and Crowl confirmed that in his view most of them are, and mentioned the potential to have certain esoteric features be actually be optional. Crowl clarified that the study group has specifically not specified how they think they will ship their work. Giroux pointed out that quaternions are useful for all OpenGL users, but Crowl warned that it requires caution because there are different quaternions in different domains.

7.2 Presentation and discussion of proposed responses to public comments. Straw votes taken.

Carruth, Austern and Clow asked interested people to have a short meeting to discuss organisation of their study groups. Meredith asked for a show of hands for people interested in discussing constexpr addition allowance.

Sutter gave a brief presentation about subgroups and ISO stages, and emphasized that every new work item requires at least five national bodies, and requested the NBs present to try and support the work item proposals in a semi-automatic fashion even if they have no time or people to provide. Sutter explained that a standard can be published with two ballots if there are no 'no' votes on a DIS, and that there's never an FDIS stage for a Technical Specification. Sutter also explained that for a C++14 to happen, we need to get a DIS out of the Chicago meeting, and a CD from the Bristol meeting, and that he will get a new work item for that, and asked to be told about other possible work items to request.

8. WG sessions continue.

Friday 19 October 8:30 a.m. – 12:00 p.m.

9. WG sessions continue

Friday 19 October 1:30 p.m. – 5:30 p.m.

10. Review of the meeting

Clamage calls the meeting to order. Roll call shows 22 PL22.16 and 7 WG21 voting members present.

10.1 Motions

Core motions

Motion 1

Move we accept as Defect Reports all issues in "DR" status from N3383:

moved by Miller, seconded by Hedquist

.16 unanimous, wg21 unanimous

Motion 2

Move we apply N3323, "A Proposal to Tweak Certain C++ Contextual Conversions, v3," to the C++ Working Paper.

moved by Miller, seconded by Wong

.16 unanimous, wg21 unanimous

Motion 3

Move we accept as Defect Reports all issues in "ready" status from N3382, except for issues 129, 240, 240, 312, 1013, 1328 and 1417, and apply their proposed resolutions to the C++ Working Paper:

moved by Miller, seconded by Smith

Miller clarified that 1328 has been removed from the motion, and it will be moved in Bristol

.16 unanimous, wg21 unanimous

Library motions

Motion 1

Move we apply the resolutions of all issues in "Ready" and "Tentatively Ready" status from N3438 to the C++ Working Paper.

moved by Meredith, seconded by Clow

.16 unanimous, wg21 unanimous

Motion 2

Move we apply N3421, Making Operator Functors greater<>, to the C++ Working Paper.

moved by Meredith, seconded by Clow

.16 unanimous wg21 5-1-1 (favor-against-abstain)

Motion 3

Move we apply N3462, std::result_of and SFINAE, to the C++ Working Paper.

moved by Meredith, seconded by Hinnant

.16 unanimous wg21 5-1-1 (favor-against-abstain)

Motion 4

Move we apply the following papers, applying constexpr in the standard library, to the C++ Working Paper.

moved by Meredith, seconded by Clow

.16 unanimous wg21 6-0-1 (favor-against-abstain)

PL22.16

RESOLUTION #1:

PL22.16, the US TAG to SC22/WG21, APPROVES the following recommended answers to the Systematic Review Questions for TR 19768:2007 and TR 18015:2006.

ISO/IEC TR 19768:2007, Extensions to the C++ Library

1. Recommended action?
Withdraw

Comment:
TR 19768:2007 has been incorporated into two separate ISO/IEC Standards.
TR 19768:2007, Section 5.2, Mathematical Special Functions was adopted as ISO/IEC 29124:2010, Extensions to the C++ Library to Support Mathematical Special Functions.
The remaining Sections of TR 19768 were incorporated into ISO/IEC 14882:2011, Programming Language C++.

2. Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication?
NO

3. Is the national publication identical to the International Standard or was it modified?
N/A

4. Is this International Standard used in your country without national adoption or are products used in your country based on this standard?
YES

5. Is this International Standard, or its national adoption, referenced in regulations in your country?
NO

ISO/IEC TR 18015:2006, Technical Report on C++ Performance

1. Recommended action?
Confirm

2. Has this International Standard been adopted or is it intended to be adopted in the future as a national standard or other publication?
NO

3. Is the national publication identical to the International Standard or was it modified?
N/A

4. Is this International Standard used in your country without national adoption or are products used in your country based on this standard?
YES

5. Is this International Standard, or its national adoption, referenced in regulations in your country?
NO

MOTION #1: PL22.16 APPROVES RESOLUTION #1 AS STATED ABOVE. (Hedquist/Clow)
Roll Call Vote: (22-0-0-7)

Apple -	Yes
Bloomberg LLC -	Yes
BoostPro -	Yes
CERT Coordination Center -	Absent
Cisco Systems Inc -	Absent
DRW Holding LLC -	Yes
Dinkumware Ltd -	Yes
Edison Design Group -	Yes
Embarcadero Technologies -	Absent
Fermi National Accelerator Laboratory	Absent
Fujitsu Laboratories of America -	Absent
Gimpel Software -	Yes
Google -	Yes
Hewlett-Packard Company -	Yes
IAR Systems AB - Advisory -	Absent
IBM Corporation -	Yes
Indiana University -	Yes
Intel Corporation -	Yes
Microsoft Corporation -	Yes
NVidia Corporation -	Yes
Oracle -	Yes
Perennial -	Yes
Plum Hall Inc -	Yes
Red Hat -	Yes
Riverbed Technology -	Absent
Roundhouse Consulting Ltd -	Yes
Seymour -	Yes
Symantec -	Yes

Texas A&M University - Yes

RESOLUTION #2 - Member Emeritus Status

PL 22.16 NOMINATES MR. BEMAN DAWES AND DR. WALTER BROWN FOR APPOINTMENT AS EMERITUS MEMBERS TO PL22.16.

Criteria

1. Ten years or longer as a member of PL22.16.
2. Dates of Membership/Last Organization(s) represented.
3. History of Contributions to the Committee
4. Retirement from the ICT Industry - date.

Beman Dawes

Beman Dawes was a member of PL22.16 during the period 1992 to 2010, representing himself (DAWES). During this period Mr. Dawes made immeasurable and significant contributions to the development of 1998, 2003, and 2011 ISO/IEC Standards for the Computer Programming Language C++; 2006 ISO/IEC Technical Report on C++ Performance; and the 2007 ISO/IEC Technical Report on Extensions to the C++ Library. Mr. Dawes also served as Chairman of the SC22/WG21 Library Working Group. Mr. Dawes retired in 2010. PL22.16 wishes to continue to benefit from Mr. Dawes's considerable talents and expertise in carrying out its ongoing program of work, and recommends he be appointed Emeritus Member status.

Dr. Walter E Brown

Dr. Walter E Brown has been a member of PL22.16, representing Fermi National Accelerator Laboratory, from 2000-2012. During that period, Dr. Brown made numerous and significant contributions in the development of the 2003, and 2011 ISO/IEC Standards for the Computer Programming Language C++; 2009 ISO/IEC 29124, Programming Language C++ Mathematical Special Functions; 2007 Technical Report on Extensions to the C++ Library. Dr. Brown is the Project Editor for ISO/IEC 29124, Programming Language C++ - Mathematical Special Functions and served as a member of the US Delegation to JTC1 SC22/WG21. Dr. Brown retired from Fermi National Accelerator Laboratory in March 2012. PL22.16 wishes to continue to benefit from Dr. Brown's considerable talents and expertise in carrying out its ongoing program of work, and recommends he be appointed Emeritus Member status.

MOTION #2:

PL22.16 APPROVES RESOLUTION #2 AS STATED ABOVE. (Hedquist/Stroustrup)

RESULTS: APPROVED - UNANIMOUS

MOTION #3

PL22.16 designates the following voting members of PL22.16 as the US delegation to JTC1 SC22/WG21 for any and all WG21 meetings and teleconferences for calendar year 2013. (Hedquist/Liber)

Barry Hedquist - Perennial
William 'Mike' Miller – Edison Design Group
Howard Hinnant – Apple Computer

Steve Clamage - Oracle
Lawrence Crowl - Google
Thomas Plum – Plum Hall, Inc.
Bjarne Stroustrup – Texas A&M
Clark Nelson - Intel

RESULT: APPROVED - UNANIMOUS

10.2 Review of action items, decisions made, and documents adopted by the committee

None.

10.3 Issues delayed until today.

Clamage asks if there are other issues. Sommerlad announces a call for papers for a refactoring tools conference that will be taking place in Rapperswil, Switzerland.

11. Plans for the future

11.1 Next and following meetings

Sutter presented the future meetings, noting that Bristol will be a six-day meeting. Liber said Chicago will be last week of september or first week of october. Sutter stated that two meetings per year has benefits, we never have to worry whether ballots fit, and there's some room for study group meetings. Kühl reminded that ACCU is before the Bristol meeting in Bristol. Orr said that the reservation website should be the same for ACCU and the WG21 meeting, and said that it should be possible to do a single booking. Talbot asked whether it would be a good idea to push back the meeting in Chicago, to have a more balanced distribution of meetings during a year, and thought that it's better to sit indoors during bad weather than during good weather.

Meredith recommended SG chairs to cooperate with Sutter if they need face-to-face meetings.

11.2 Mailings

Nelson reviewed the following mailing deadlines:

- Post-Portland: 2 November 2012
- Pre-Bristol: 15 March 2013

12. Adjournment

Becker moved to thank the host. Seconded by the whole committee, unanimous approval.

Clamage entertained a motion to adjourn.

Moved by Clow, seconded by Hedquist. Unanimous.

Attendance

Company/Organization	NB	Representative	Mo	Tu	We	Th	Fr	Sa
Apple		Howard E. Hinnant	V	V	V	V	V	
Apple		Doug Gregor	A	A	A	A	A	
Bloomberg		John Lakos	V	V	V	V	V	
Bloomberg		Alisdair Meredith	A	A	A	A	A	
Bloomberg		Dietmar Kühl	A	A	A	A	A	
BoostPro Computing		David Abrahams	V	V	V	V	V	
BoostPro Computing		Eric Niebler	A	A	A	A	A	
BoostPro Computing		John Wiegley	A	A	A	A		
Dinkumware		P. J. Plauger	V	V	V	V	V	
Dinkumware		Tana Plauger	A	A	A	A		
DRW Holdings		Nevin Liber	V	V	V	V	V	
Edison Design Group		Jens Maurer	A	A	A	A	A	
Edison Design Group		William M. Miller	A	A	A	A	A	
Edison Design Group		John H. Spicer	V	V	V	V	V	
Edison Design Group		Daveed Vandevoorde	A	A	A	A	A	
Gimpel Software		James Widman	V	V	V	V	V	
Google		Lawrence Crowl	V	V	V	V	V	
Google		Matthew Austern	A	A	A	A	A	
Google		James Dennett	A	A	A	A	A	
Google		Chandler Carruth	A	A	A	A	A	
Google		Richard Smith	A	A	A	A	A	
Google		Jeffrey Yasskin	A	A	A	A	A	
Hewlett-Packard Development		Hans Boehm	V	V	V	V	V	
IBM	CA	Michael Wong	V	V	V	V	V	
IBM		Paul E. McKenney	A	A				
IBM		Maged Michael		A	A	A		
Indiana University		Jeremiah Willcock	V	V	V	V	V	
Indiana University		Larisse Voufo	A	A	A	A	A	
Intel		Clark Nelson	V	V	V	V	V	

Company/Organization	NB	Representative	Mo	Tu	We	Th	Fr	Sa
Intel		Pablo Halpern	A	A	A	A	A	
Intel	CA	Stefanus Du Toit	A	A	A	A	A	
Intel		Tatiana Shpeisman			A	A		
Intel		Justin Gottschlich		A	A	A		
Intel		Robert Geva			A	A	A	
Intel		Marius Cornea			A			
Microsoft		Jonathan Caves	V	V	V	V		
Microsoft		Herb Sutter	A	A	A	A	A	
Microsoft		Artur Laksberg	A	A	A	A		
Microsoft		Niklas Gustafsson	A	A	A	A		
Microsoft		Stephan Lavavej	A	A	A	A	A	
Louisiana State University		Hartmut Kaiser	A	A	A			
NVidia		Vinod Grover	V	V	V	V		
NVidia		Olivier Giroux	A	A	A	A	A	
NVidia		Jaydeep Marathe	A	A	A			
NVidia		Jared Hoberock	A	A	A	A		
Oracle		Stephen D. Clamage	V	V	V	V	V	
Oracle		Mark Moir		A	A	A		
Perennial	US	Barry Hedquist	V	V	V	V	V	
Plum Hall		Thomas Plum	V	V	V	V	V	
Programming Research Group		Christof Meerwald	V	V	V	V	V	
Red Hat		Jason Merrill	V	V	V	V	V	
Red Hat		Benjamin Kosnik	A	A	A	A	A	
Roundhouse Consulting		Pete Becker	V	V	V	V	V	
Seymour		Bill Seymour	V	V	V	V	V	
Symantec		Mike Spertus	V	V	V	V	V	
Texas A&M University		Bjarne Stroustrup	V	V	V	V	V	
PL22.16 Non-members								
HSR	CH	Peter Sommerlad	N	N	N	N		
Basho Technologies		Jesse Williamson	N	N	N	N	N	
CERN	CH	Axel Naumann	N	N	N	N	N	

Company/Organization	NB	Representative	Mo	Tu	We	Th	Fr	Sa
Electro Scientific		Scott Schurr	N	N	N	N	N	
LTK Engineering		Alan Talbot	N	N	N	N	N	
Integrable Solutions	FR	Gabriel Dos Reis	N	N	N	N	N	
University Carlos III	ES	J. Daniel Garcia	N	N	N	N	N	
Vollmann Engineering	CH	Detlef Vollmann	N	N	N	N	N	
	FI	Ville Voutilainen	N	N	N	N	N	
	UK	Roger Orr	N	N	N	N	N	
		Faisal Vali	N	N	N	N	N	
		Beman G. Dawes	N	N	N	N		
		Walter E. Brown	N	N	N	N		
		Robert Klarer	N	N	N		N	
MIT		Charles E. Leiserson	N	N	N	N		
Qualcomm		Marshall Clow	N	N	N	N	N	
Research in Motion		Tony Van Eerd	N	N	N	N	N	
POCO		Aleksandar Fabijanic	N	N	N	N	N	
		Mike Winterberg		N	N	N		