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J16/97-0096
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Project: JTC1.22.32
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J16 Meeting No. 25
WG21 Meeting No. 20
10-14 November 1997
US TAG Meeting 14 November 1997

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Sunday, November 9, 6:00pm - 8:00pm

1. Opening and introductions

Plum called the meeting to order at 6:05pm EST, November 9, 1997.

1.1 Welcome from host

Koenig welcomed the committee to this meeting, sponsored by AT&T. Stroustrup offered secretarial help from AT&T if needed. Koenig said that, starting tomorrow, there would be a high-volume laser printer and a collating copier on-site. All expressed thanks.

1.2 Roll call of technical experts

In attendance were:

Tom Plum (Convenor)
Steve Clamage (US)
Herb Sutter (Canada)
Beman Dawes (US)
Martin O'Riordan (Ireland, Head of Delegation)
Bjarne Stroustrup (US)
JC van Winkel (Netherlands, Head of Delegation)
Fredrik Jonsson (Sweden)
Josée Lajoie (Canada, Head of Delegation)
Nicolai Jossutis (Germany)
Valentin Bonnard (France, Head of Delegation)
Steve Rumsby (UK, Head of Delegation)
Francis Glassborow (UK)
Clark Nelson (US, Head of Delegation)
Andrew Koenig (US)
Per Andersson (Sweden, Head of Delegation)
Michael Spencer (UK)
Erwin Unruh (Germany, Head of Delegation)

1.3 Select meeting chair

Plum was selected to chair the meeting.

1.4 Select meeting secretary

Sutter was selected to act as secretary tonight. Sutter and Norm Crowfoot will share secretarial duties during the rest of the week.

1.5 Select language

English was selected.

1.6 Adopt agenda

Plum asked if there were objections to adopting the agenda from document N1100/97-0072. Paper N1120 was added to agenda item 5.7, and a typographical error in the title of 2.2.3 was corrected. There were no objections.

1.7 Select drafting committee

Unruh offered to serve as drafting committee and was selected. Koenig said that the Working Paper must be ready by Thursday noon, both because a motion was required and to ensure sufficient proofreading time. Plum said that on Friday we should be able to move that we adopt this as the Working Paper and then as the Final Draft International Standard.

1.8 Approve minutes from previous meeting

Approved by acclamation, no objections.

1.9 Review action items from previous meeting

Plum said there were none.

1.10 Recognize documents

Plum asked if there were any new documents. There were none.

2. Status, liaison and action item reports

Deferred to Monday morning.

2.1 Small group status reports

Deferred to Monday session.

2.2 Liaison Reports

Deferred to Monday session.

2.2.1 SC22 report

Deferred to Monday session.

2.2.2 SC22/WG11 (Binding Techniques) report

Deferred to Monday session.

2.2.3 WG22/WG14 (C) report

Deferred to Monday session.

2.2.4 SC22/WG15 (POSIX) report

Deferred to Monday session.

2.2.5 SC22/WG20 (Internationalization) report

Deferred to Monday session.

3. New business

Review CD2 ballot results

Tom Plum said he received email from:

Australia: that they intended to vote Yes;

Japan: that they intended to vote Yes and their issues were adequately resolved, but Plum noted that some may still require substantive change (e.g., inserting const's), and so needs to be considered by the committee;

Ireland: that they would probably vote Yes, waiting only for status on the Saks/Miller paper.

Plum said he understands France intends to vote "Yes", possibly barring one outstanding template issue. Bonnard did not know France's resolution or position on this issue. Plum said he would share with Bonnard the email received from Bonnard and consult further. Plum said that he had assured Vincent Lextrait that WG21 would do its best to resolve every issue that had been raised. Stroustrup said that he did not see the French issue on the issues list; he had exchanged some mail, and this issue had been addressed at least partly by other changes already made; and he said that WG21 could not provide a complete solution without changing some Yes votes to No. Francis Glassborow agreed with the last.

Plum asked the UK delegation for their status. Rumsby said he knew of three outstanding issues, two of which were minor. Dawes asked whether the two minor ones were on the issues list, Rumsby said he thought so, and Stroustrup said they should confirm this. Rumsby confirmed that other than auto_ptr the other two are inconsequential issues. Plum asked Rumsby whether he planned to participate in the library working group on the auto_ptr issue. Rumsby said yes.

Dawes said that the US public comments period had closed after the meeting in Nashua, and that he had eight to ten library issues that were received in the R1 document but had never been discussed and were not part of US public comment. He said that in doing a disposition of those comments he had found that fortunately all but one had been already dealt with (these were duplicates, editorial issues, and one clear rejection), but one would have been a comment had it come in time. He said that the last is not on the issue list, since it arrived within the comment period but after the US TAG meeting. Clamage said that US is required to respond to the comment, but that it was too late for US TAG vote. Plum said that anything clearly non-controversial could be brought forward, but if there were even one objection it would be deferred, and asked Dawes to deal with the comment in the library working group.

Unruh said that the "namespace std and C library" problem was not on the issues list. Dawes said that was because there are papers covering that issue. Unruh agreed but restated that it is a national body issue. Plum confirmed that just because Germany had voted Yes their comments would not get short shrift compared to comments from bodies that had voted No.

Plan the resolution of remaining issues

Plum asked whether anyone had checked to ensure that all issues listed in Nashua as open or unresolved are actually on the issue list. Nelson agreed to check. Clamage indicated he had verified that all US public comments, including late ones, were on the list. Also he said that many were already handled, some were left as issues on the core and library issues lists, and some had not been definitely assigned but do have assignments now although not all are closed. Nelson pointed out that the public comment list is not same as issues list, and Nelson will still make the check.

Plum asked Canada's state regarding issues. Lajoie said that all had been resolved in London.

Plum asked whether anyone wanted to make suggestions on procedures. Dawes asked for advice on the handling of open issues. Plum said the advice would be given tomorrow.

Organize drafting of FDIS

Plum asked what needed discussing. Koenig said that the committee could not organize drafting until it knew more.

Organize drafting of Disposition of Comments on CD2

Plum asked delegations to give a good draft of disposition comments, and said that he would author disposition comments for delegations not present. Stroustrup asked if there were any serious outstanding issues for countries not represented in person. Plum said there were not, since Japan and Australia had said yes informally.

Plum said that the committee wants to ensure that all FDIS ballots are received by the meeting in Nice, or at least enough of them so that the committee can know that there are no "No" votes pending from stragglers. Stroustrup pointed out that in the C process one No came from Denmark, and offered to liaise with Denmark and see whether there would be a surprise No vote coming.

Plum confirmed the ISO FDIS voting rules. If more than 25% of NB FDIS votes are No, the FDIS fails outright. Otherwise, if a national body that has voted "No" on the CD votes "No" again at JTC1 level, a question will be raised to determine whether due process was followed. If a NB had expressed an unalterable No vote on the CD ballot, the committee has nothing to do. If a NB had expressed an alterable No vote on the CD ballot but did not send a delegation to help deal with the points and say what they would accept, the JTC1 secretary will not give credence to their No vote on the FDIS ballot.

3.1 Review changes to working paper

Deferred to Monday session.

3.2 CD processing

Plum said that nothing outside this committee was happening at the moment.

4. Review and approve resolutions and issues

Plum said that we have made none.

5. Closing process

5.1 Select chair for next meeting

Plum was selected.

5.2 Establish next agenda

Plum said that the next agenda depends on the results of the FDIS ballot, but that the Nice meeting will have to discuss the defect reporting process. Koenig added that the next meeting must decide procedures for addenda and technical reports, such as a non-normative addendum for hash tables and the STL. Jossutis asked whether the Nice meeting would discuss changing the meeting time schedule. Stroustrup generalized the question to include all future meeting procedures.

Plum said that, while he was at the Embedded Systems conference, he had suggested to the Embedded C++ people there that they come to Nice to help bring Embedded C++ in as a Technical Report. Plum added that in general the Nice meeting should address the good ideas that were not included in this round of standardization as well as future technical reports and planning.

Plum said that, at the SC22 plenary meeting, he had spoken with C language working group convenor John Benito, and then with the whole WG14 group, ideas for improving communication between the C and C++ working groups. Plum said that he had proposed co-located meetings, and that WG14 was now considering this. Stroustrup pointed out that, to date, when WG14 has adopted a change, it has often been something slightly different from C++, and that the two groups need more coordination to prevent the languages from becoming increasingly obscure. Plum observed that the C++ delegations tend to bring more market orientation than have the C delegations.

Stroustrup said that WG14 has demonstrated that they feel WG21 is bound by its charter to adopt or conform to WG14 changes. Francis Glassborow said that C has its own domain, that the C++ committee is seeded with people with an interest in both languages, but that the C committee is less so and that more people are needed who have a broader view and an interest in both languages. Plum added that the past year has shown improvement, and that the C committee has shown more willingness to be compatible with C++ when informed of the issues, for example with the inttypes.h header and related macros. Beman Dawes said that WG21 should show its appreciation to WG14.

Various people discussed the possibilities for co-locating some, rather than all, of the C and C++ meetings, and Plum expressed strong favour for co-locating all meetings if possible. Koenig suggested the committee defer this discussion to Nice.

5.3 Future meetings

Plum said that WG21 had been invited by Ireland to come there for a 1999 meeting, and that this would be the July meeting if the current schedule continues.

5.4 Future mailings

Plum asked whether the committee had decided to go all-electronic next year. Clamage said that the committee was already on a subscription program for paper mailings. Jossutis said that the issue had been discussed in London but no decision had been made there. Clamage noted that due to ANSI schedules this must be decided at this meeting for calendar 1998. Tom Plum said that JTC1 procedures had changed in September to electronic distribution of everything within JTC1, that JTC1 had surveyed the national bodies to ask which could not do all their business by email and web servers, and that a few countries (such as China and Romania) require paper distribution.

All countries represented at the meeting confirmed that they could and preferred electronic mailings. Plum said that JTC1 procedures now allow him to stop sending paper mailings to all countries signed up for electronic distribution, and unless there was an objection he would notify JTC1 that he would only pay for printed distribution to the countries that can't take electronic distribution. There were no objections. Martin O'Riordan asked who was responsible for enforcing the availability of electronic distribution, which has until now been available due to the goodwill of committee members. Plum confirmed that he as convenor was responsible.

The convenor asked if he could curtail paper distribution only to countries that indicated they could not receive electronic distributions. There were no objections.

5.5 Assign document numbers

There were none.

5.6 Review action items

There were none.

5.7 Any other business

Document N1120 was considered. This is the offer by Keld Simonsen to host and maintain a public website for WG21. Plum recommended the committee takes up Simonsen's offer, decide on a division of labor between Simonsen and Rumsby, and have Simonsen's be the official website for WG21 to carry the official text of the FDIS that NBs will refer to for their official votes. Koenig pointed out there exists a reflector for this kind of discussion (the "-comm" reflector).

Van Winkel said that document format is important. Koenig pointed out that ISO has made Microsoft Word their official format, but suggested we choose PostScript and Adobe PDF.

Francis Glassborow objected that ISO needs to officially provide a site, rather than rely on individuals (including individual companies) who can move/die/etc. and are a point of failure. Plum said that Glassborow was urging WG21 to do something that should be done through a national body (BSI), and pointed out that a year ago ISO had addressed the more fundamental issue of having backup sites.

Glassborow asked who was responsible for deciding a person's access to documents. Plum said that this is a matter for national bodies to decide. Glassborow asked whether another group (e.g., a Java working group) could say "we need access to all C++ working group documents." Plum said that a request would be made of himself as the convenor, and that he generally delegates it to the NBs.

Koenig asked whether a national body could join SC22 with the requirement that everyone in world requires access to WG21 documents. Plum said that such a delegation would have to take it up with the ISO council responsible. Koenig said that NBs should not be prevented in this way from raising funds by selling documents, and estimated that, not including membership fees and administrative overhead, the cost of this standard so far was at least $6 million just in delegates' personal or corporate costs. Plum said that the convenor (or the head of standards organization) in that country should decide such a question.

Unruh said that Simonsen should be given guidelines on who should have access to the pages. Francis Glassborow said that NBs should tell which people should have access. Tom Plum said he would coordinate with Simonsen.

Sutter moved to accept Keld Simonsen's offer. Koenig seconded the motion. Eight countries voted in favour, none opposed.

Plum brought up the issue of better press relations in light of recent critical articles published in IT journals. Plum said that he would like WG21 to authorize himself and Koenig to contact the most prominent IT journals to offer the committee's services for fact-checking and answering questions related to C++ and its standard. Plum suggested providing IT journals worldwide with a list of recent Heads of Delegation and national delegation membership lists so that journals in other countries can contact their local representatives for information on the standards process and their own national bodies' positions. Sutter said that he and Nathan Myers had also sent letters to editors in response to some of the articles in question in letters to the editor. Stroustrup said that he was in favour of the proposal, that he has already sent specific feedback on matters of fact to one IT columnist, and that his feedback will be published in the same column that published the original criticism. Jossutis encouraged the committee members who are authors to provide more transparency to process, and to acknowledge that there are defects in the standard but show that it was not possible to do it better.

The committee voted to empower the convenor to offer this fact-checking service about the C++ standard and the standards process.

WG21: 8 in favour, 0 opposed, 0 abstain

Plum announced that a press conference to publicize the FDIS is planned for Friday afternoon, from 1:00pm to 3:00pm, and suggested that Plum, Clamage, Stroustrup and Koenig as the main panel. Unruh noted that it was an international committee and that non-American delegates should also appear. Plum confirmed that all committee members were invited, only that the panel was to be made up of leading members such as the project editor, WG21 convenor, J16 chair, and the language's inventor.

5.8 Thanks to host

Plum thanked AT&T.

5.9 Adjournment

Plum moved to adjourn at 8:30pm EST. The motion passed by acclamation.

Monday, November 10, 8:30am - 5:30pm

1. Opening activities

1.1 Opening comments

Steve Clamage called meeting to order at 8:50am EST, November 10, 1997. Mike Miller was vice-chair, Herb Sutter and Norm Crowfoot acting secretary in place of Sean Corfield.

1.2 Introductions

Group was introduced around the room.

Steve Clamage explained the purpose of the meeting is to put out a completed document. Therefore less time is allocated for WG sessions, more for proofing and correction.

1.3 Membership, voting rights, and procedures for the meeting

Steve Clamage asked Mike Miller to pass the attendance sheet around. Steve Clamage reviewed voting rules for J16 and WG21. At this meeting only J16 members may vote.

1.4 Agenda review and approval

Steve Clamage indicated a special technical session Monday evening at 7:30pm would be held on auto_ptr. Andy Koenig confirmed the main conference room would be available.

Beman Dawes pointed out that on Tuesday at 1:30pm we return to general sessions and have to have our WG proposals ready by then. Steve Clamage confirmed that half of Monday morning and all afternoon would be used for WG (Working Group) sessions. WG chairs must have working papers prepared to submit to whole committee for a Tuesday afternoon vote.

Wednesday will be devoted to drafting and proofreading.

Thursday will be dedicated to proofreading. Thursday evening will be a social evening at the hotel, sponsored by our host, AT&T. Friday's full committee meeting will begin an hour later than usual, to allow people to review text. Two votes will be taken, to approve working paper as amended and to approve working paper as the FDIS.

Tom Plum reminded that following that would be a meeting of the US TAG (Technical Advisory Group) meeting. Steve Clamage confirmed that following the close of the J16 meeting there would be a US TAG. Members of the US TAG are those people representing companies domiciled in the United States.

The agenda was approved.

1.5 Distribution of position papers, WG progress reports, WG work plans for the week, and other documents that were not distributed before the meeting.

Beman Dawes said he has an R1 on the library issues list. Andy Koenig confirmed that there would be a high-speed two-sided printer and photocopier available later in the day. Our usual secretary Sean Corfield is not here. A table at the back of the main meeting was designated as the document table.

1.6 Approval of the minutes of the previous meeting

Steve Clamage called for corrections. There were no comments or corrections. Miller moved to approve, Dawes seconds motion. There was no discussion. Minutes are approved J16 in favor: lots; opposed: 0; abstain: 0. Minutes approved.

1.7 Report on the WG21 Sunday meeting

Tom Plum summarized WG21 meeting. There are currently five “No” votes. Plum has received from Japan and Australia email indications that they were already satisfied. In addition, he has email confirmation by Martin O’Riordan that Ireland is satisfied based on the Saks/Miller paper.

The UK has an issues list managed by Steve Rumsby. France, represented by Valentin Bonnard, will be in touch with Vincent by phone and France’s “No” vote comes down to resolving one issue.

We also promised that countries that voted “Yes” would not be penalized for their comments/issues. These comments/issues includes Germany’s namespace std issue and Sweden’s issues list (which is a subset of the UK’s list). In addition the US has work to do to respond to public comments before ANSI will forward a US ballot on this standard. Also Canada reports all okay. Danish status is unsure at this at present.

Plum discussed future meetings. We have an invitation to meet in Ireland in 1999, however future meeting planning is postponed to the March meeting. Outcome will be determined then.

1.8 Liaison reports

John Benito explained the C committee liaison situation. The last meeting a few weeks ago was dedicated to getting a CD. The committee changed the layout of inttypes.h for better compatibility with C++.

Beman Dawes thanked the C committee for acting so promptly to concerns. There are still some issues on the quality of the draft. Date of release is uncertain. Benito explained the CD ballot period should be start in December. US public comment period will start the second week of December and will extend though the second week of March. All WG14 mailings are public, so WG21/J16 members may read them. Benito will post to the reflector the location of the CD and working papers.

1.9 New business requiring actions by the committee

No new business was raised.

2. Working Paper for Draft Proposed Standard

2.1 Changes in the Working Paper

Koenig described the facilities, welcoming everyone to Morristown. The weather is typical for this time of year. There are three breakout rooms, A and B on main level and one upstairs, “Executive Room IV", where computers and the copier are located.

Koenig indicated a discrepancy between the number of rooms booked for the hotel versus the number attending the meeting. This needs to be corrected for the food count.

Miller indicated that the document distribution table and the document sign out sheet would are in the back of the main room.

Koenig explained that all London meeting drafting changes agreed to were made and placed into the premeeting mailing. Since the mailing there have been many non-normative changes in the document. All nonnormative comments have been changed to use the same italic font and reformatted to line up. In addition, margins were set consistently through the document. Change bars are not shown for these changes, due to their large number. Koenig advised care in proofreading.

3. Organize subgroups, chapter editors, and chapter reviewers. Establish working procedures.

Clamage outlined the assignment of WG to breakout rooms: Core I will meet in Executive IV (“computer room”), Core II in “A”, Core III in “B”. The library group will meet in the main conference room.

Lajoie summarized the focus of each of the three core groups: Core I: name lookup, object model, linkage; Core II: conversions, overload resolution, access; and Core III: templates, EH, RTTI.

Dawes mentioned there are issues that overlap with Core (e.g., auto_ptr, to be dealt with at 7:30pm Monday). Also C lib and namespace std. Clamage is to coordinate that issue and get a group together. Clamage confirmed the four interested delegates are in Core III.

4. WG sessions

During these sessions, all WGs are to close all outstanding issues, and prepare complete proposals for consideration during the General Session Tuesday afternoon. Presumably, no topics will be addressed which have not been discussed in previous meetings or mailings. A “complete proposal” shows exact changes to the WP, probably in the form of diffs, and does not rely on the Project Editor to determine whether other parts of the WP might be affected by the proposal. Not later than Tuesday noon, all proposals are made available electronically and in hardcopy to the attendees.

Koenig has asked the hotel for the main conference room to be available 24 hours per day. There are three breakout rooms. Third room contains computers, including a SPARCstation, PC and a two-sided laser printer. Thursday evening will be reception in hotel, including food.

Stroustrup asked where std namespace and C lib issues would be taken up. Dawes indicated that this would be addressed Tuesday morning at 8:30am in the main conference room. Clamage confirmed this schedule.

The main session was closed at 9:30am.

Tuesday, November 11, 1:30pm - 5:30pm

6. General Session

Steve Clamage called meeting to order at 1:40pm EST, November 11, 1997. Mike Miller was vice-chair, Herb Sutter and Norm Crowfoot acting secretary in place of Sean Corfield. Clamage said that the purpose of the meeting was to complete WP changes so that they could be completed by the end of day Thursday in order to be put to vote on Thursday. Andrew Koenig said that the editing must be done by noon on Thursday to allow time for proofreading. Clamage concurred.

Mike Miller passed the attendance list and pointed out that delegates have voting rights at this meeting only if they were present at least one of the previous two meetings. Miller said he would not pass around the membership list, and that if anyone wanted to see it he would make it available afterwards.

The Core I issues were presented by Josee Lajoie.

The Ireland issue that operators new and delete should be inline static (97-0089/N1125) was rejected, with the reason that if operator new is overloaded then its signature must contain standard types (such as std::bad_alloc) and so Koenig lookup would make a new-expression ambiguous. Lajoie said that she had spoken to Martin O'Riordan of Ireland, and O'Riordan had confirmed to her that he would inform Ireland and that Ireland would still be able to vote Yes despite this objection. Tom Plum asked whether the file scope static was now officially deprecated. Lajoie confirmed that it was, including in Annex D. Plum suggested that we explain this to nonexperts by pointing out that the feature that they asked for has unfortunately become deprecated. O'Riordan confirmed to the committee that he could explain to Ireland why the request was not possible. Lajoie cut side discussion short.

Lajoie explained the problem in the issue regarding namespaces and extern "C" (core issue 922). Lajoie said that the Core WG wanted to resolve the issue by having the two extern "C" functions resolve to the same function unambiguously. Bjarne Stroustrup suggested lifting the same wording from the namespaces chapter as an easier fix without having to talk about extern "C" at all. Mike Ball said that extern "C" was what was at issue here. Mike Miller said that Stroustrup's proposal would also cover the typedef case. Stroustrup clarified that he just wanted more general wording to provide a more general solution. Lajoie then explained the analogous problem with typedefs.

Lajoie called for a vote for making the typedef work the same as extern "C". Erwin Unruh and others objected that the vote should be formal. There was an extended discussion about voting procedure.

Lajoie took a straw vote on making the proposed change for extern "C":

J16: lots in favour, 0 against, 5 abstained

WG21: 8 in favour, 0 against, 0 abstained

Lajoie took a straw vote on making this change for typedefs:

J16: 12 in favour, 6 against, 11 abstained

WG21: 4 in favour, 2 against, 1 abstained

There was more discussion about voting procedure.

Lajoie presented the issue regarding taking the address of an inline function in different translation units (core issue 745). The Core WG was divided over four possible solutions (see below). Technical questions and answers followed. An informal show of hands of compiler implementers showed that existing implementers supported only options #3 (1 or 2 implementations) and #4 (6 implementations). Stroustrup suggested to make it implementation-defined whether an implementation does #3 or #4, and this was put on the list as proposal #5.

In summary, the proposals were:

1. same in different translation units, and not a constant expression (3 votes in WG)

2. same in different translation units, all and functions not constant expressions (6 votes in WG)
3. not the same in different translation units, and constant expressions (no votes in WG)
4. same in different translation units, and constant expressions (5 votes in WG)
5. leave implementation-defined

Lajoie took a vote to determine those in favour of each proposal (J16 vote only):

#1: 0 in favour

#2: 5 in favour

#3: 3 in favour

#4: 11 in favour

#5: 5 in favour

Lajoie took a second vote to determine those in favour of or against proposal #4: 14 in favour, 8 against.

Core II issues were presented by Steve Adamczyk. Core issue 889 is that "enum_variable == enum_value" can be ambiguous. The solution options are:

1. a) Add pseudo-prototypes for enums for ==, !=, <, >, <=, >= (remove for @=).
   b) If user-declared nontemplate has same signature as builtin, builtin is hidden.
2. If there are no class operands, only candidates with an enum in the right place are considered.

Adamczyk took a straw vote on accepting this proposal:

J16: 18 in favour, 3 against, 9 abstained

WG21: 8 in favour, 0 against, 0 abstained

Adamczyk showed Core issue 903(?) about overload ambiguities. The proposed resolution was to add the concept of an ambiguous conversion sequence that is no better or worse than another, and that the problem program fragment in question should be invalid. Adamczyk took a straw vote on accepting this proposal:

J16: 22 in favour, 0 against, 5 abstained

WG21: 7 in favour, 0 against, 1 abstained

Core III issues were presented by Bill Gibbons. To satisfy the French issue regarding the template compilation model, the proposal was to move the instantiation of all non-inline templates to the end of the translation unit. Gibbons reported that the Core III WG had voted 7-2 in favour, and that the combined Core WGs had voted about 14-2 in favour.

Gibbons reported that some people were still nervous about this proposal. Stroustrup said the he was one of the people who are nervous about that. Plum confirmed that this change would respond positively to a request by France, and Gibbons said that his understanding was that this was exactly the change requested by France. Valentin Bonnard said that he had not been able to reach Vincent Lextrait, and he could not confirm whether the proposed change would be an adequate reponse for France. In response to questions, Gibbons confirmed that this change would make some code that is not inlined ill-formed if it were inlined. Gibbons confirmed that he had not polled all other national bodies.

Gibbons took a straw vote on accepting this change:

J16: 16 in favour, 0 against, 13 abstained

WG21: 2 in favour, 0 against, 6 abstained (including France)

Gibbons polled WG21 abstentions:

0 believed this was dangerous

2 were opposed on principle based on insufficient information

Glassborow clarified that he could not say what the UK technical experts who were not present would say and therefore he could not say whether accepting this proposal would affect the UK vote. Gibbons said that, since the straw vote showed some support, he would draft the wording tentatively and if there were another full session he might raise it again. Plum suggested a technical session this evening. Nicolai Jossutis objected that the abstention was based, not on technical uncertainty, but rather on the uncertainty of the consequences of the decision in terms of national body Yes/No votes.

Clamage polled the full committee to determine who would be interested in a technical session on this issue. Six persons said they would be interested. Clamage suggested a technical session at 8:00pm, and this was accepted.

Gibbons presented core issue 882 to allow the typename keyword in a template situation. He also presented core issue 765 to correct an oversight to allow the template keyword in four or five places in the grammar, where the text says it is allowed but the grammar says it is not. He also presented core issue 911 about template specialization and issue 894 on parsing angle brackets ambiguously as either template parameter lists or comparison operators. Gibbons presented core issue 890 about friends.

Gibbons presented rejected core issues: N1116 about overload resolution and partial ordering; 737 on matching dependent parts; 923 on relaxing restrictions on function template function parameter default arguments; and 914 on clarifying how typename and template keywords work in using-declarations.

Gibbons summarized 14 minor and editorial issues that Core III was recommending.

Plum asked Myers to confirm whether the library WG needed a core change for <iosfwd> and default arguments. Myers confirmed that no core change was needed.

Gibbons took a straw vote on accepting all of the proposed changes, excepting the first one on delayed template instantiation:

J16: lots in favour, 0 against, 1 abstained

WG21: 8 in favour, 0 against, 0 abstained

Gibbons confirmed that there are core issues not yet presented or resolved.

Library WG issues presented by Beman Dawes. He pointed out that the library WG differed from the Core WGs in that issues not presented now will be closed without action rather than being brought forward.

Dawes offered and no one asked for a vote on the issues grouped under “A”. Dawes mentioned that the library WG had unanimous consensus on “A”.

Dawes said that some of the “B” issues required considerable discussion in the library WG but none were controversial. Dawes offered and no one asked for a vote on the issues grouped under “B”.

Daveed Vandevoorde made three points on item “C” for fixing auto_ptr: the first two were that aspects of the auto_ptr proposal were possibly unworkable, and a third was that another aspect was unintuitive. Dawes took a straw vote on accepting item “C” for fixing auto_ptr:

J16: 22 in favour, 1 against, 4 abstained

WG21: 7 in favour, 0 against, 1 abstained

Items “D” (basic_filebuf::seekpos), “E” (sync_with_stdio) were noncontroverial in the working group. There was agreement that a vote on these two items was not needed.

Dawes took a straw vote on accepting item “F”:

J16: 24 in favour, 0 against, 6 abstained

WG21: 7 in favour, 0 against, 1 abstained

Dawes offered and no one asked for a vote on item "G".

Schwarz noted that the "Library Motions for Morristown" list being presently considered had no document number. It was assigned number 97-0098/N1136.

Dawes said that the vote within the library WG was 8 in favour and 2 opposed, but that the latter were not "over my dead body" but rather that it was a good idea but concerned about the timing. Randy Smithey and PJ Plauger confirmed that theirs were the two opposing votes and that they thought the proposal was a good idea but were concerned only about the timing. Vandevoorde asked what impact this proposal would have on performance. Abrahams said that it should be negligible. Sutter said that not accepting it would be great performance degradation on user code that was written to be strongly exception-safe. Austern said that the overhead for the library is and will be minimal. Plauger said that he experienced measurable performance hits of about 30% in current compilers with using exceptions.

Dawes took a straw vote on accepting item "H":

J16: 19 in favour, 0 against, 10 abstained

WG21: 7 in favour, 0 against, 1 abstained

Clamage presented proposal 97-0097/N1135. Unruh said that since this undoes something done in London to try to satisfy a German national comment, he could not predict the effect on the German vote. Klarer expressed that it would affect the Canadian vote for the same reason, and that Canada would vote with Germany.

Clamage took a straw vote on accepting this change:

J16: 4 in favour, 17 against, 8 abstained

WG21: 2 in favour, 3 against, 3 abstained

The proposal was rejected.

Clamage said there would be an additional regular session at 3:15pm on Wednesday afternoon. In the meantime, drafting would be done. WG chairs said that papers should be drafted by noon tomorrow.

Plum announced that AT&T press relations has arranged a press conference Friday at 1pm here. IT publications would be tied in by telephone, and Object Developer's Group members and other local users' groups would be invited to attend.

Clamage closed the meeting at 5:20pm EST.

Wednesday, November 12, 8:30am – 5:30pm

7. Document Production

Steve Clamage brought the full committee to order at 3:23pm EST, November 12, 1997. He called for any questions that should be considered by the whole committee.

Steve Adamczyk brought up a case of compliance with the C standard in the case of rounding values up or down, and proposed that the phrase “unspecified” be replaced by “implementation defined.” This will be the same working as the C standard. No objection was raised to this rewording. Adamczyk announced that the Core II proposed wording changes is on the document table. There is a change on the second part of Issue 866. The change adds more ambiguity than was there before. No questions or comments were raised.

No other issues for the whole committee were raised.

Josée Lajoie asks if there were any further word on the French situation. Valentin Bonnard indicated that there has been no word from France. Tom Plum indicated that there had been conversations at length on this issue. He believes the proper amount of effort has been made on this issue.

Beman Dawes reported that the first draft of the library chapters 17-27 has just been printed and is undergoing proofreading. This draft is being proofed against an R1 version of the paper J16-0098/N1136. Dawes solicited additional proofreaders.

A question was raised on the status of France’s template instantiation issue. Erwin Unruh stated the current situation, as no change will be proposed in template instantiation.

Steve Clamage suggested that the whole committee plan to meet again sometime Thursday, in case there might be additional items to review. Andy Koenig suggested that the whole committee meet at 1:30pm Thursday. This was confirmed. In addition, Koenig announced that a group photograph was being planned. A show of hands was taken of committee members present who had also been present at the initial meeting. There was applause. Further, Koenig suggested that Tom Plum is the only member of the original group who has been able to maintain perfect attendance at these sessions.

Mike Miller reminded everyone to deposit copies of all produced documents and papers on the printer computer, in the“WG21” folder. The documents may be PostScript, ASCII, HTML and .DOC formats.

Clamage asked whether there were additional questions. There were none.

Clamage closed the meeting at 3:37pm EST.

Thursday, November 13, 8:30am – 5:30pm

8. Proofreading of proposed FDIS

Steve Clamage brought the full committee to order at 1:34pm EST, November 13, 1997. Clamage asked whether there were any issues that should be considered by the committee.

Matt Austern presented a set of library set of typographical errors in 24.4.2 back_insert_iterator. The proposed fix is to move the const, which was accepted without discussion.

Van Winkel another library issue and proposed removal the reference from the assignment operators for complex<long double>. There were no objections to this proposal.

Matt Austern pointed out that comparison operator for reverse iterator indicates the comparison is taken in the same order as the forward iterator. It is clear that the sense needs to be reversed. No objections were raised to this proposal.

Clamage asked if any vote is required before submitting responses to US public comments. It was suggested a vote was not necessary. Clark Nelson was not sure. Mike Myers suggested there are rules on approving public comments. Steve Clamage said he would research the rules before the Friday session.

Clamage announced a reception this evening at 7:00pm, a full meeting tomorrow starts at 9:30am, and a press conference tomorrow at 1:00pm.

Jerry Schwarz indicated some London changes have not made it into the document. Tom Plum asked about the overall situation report on the project status. Rumsby indicated that the library sections have been through proof readings. Lajoie indicated that Core has only been through one proof reading.

Plum asked for an overall situation report on the WP's completeness and proofreading status. Rumsby said that the library has been through two drafts and he is incorporating final changes from second proofreading. Lajoie said that core has been through only one proofreading and that a second proofreading would start within the next half-hour. Van Winkel asked about the photograph to be taken now.

Stroustrup announced that some journalists are expected at the press conference. Plum said that advance copies of the press release would available for inspection. The release is put out by the WG21 Secretariat and written primarily by Plum and Stroustrup. Plum confirmed details of the press conference and how journalists would be patched into the conference call. The conference call will be 90 minutes from 1:00pm to 2:30pm EST.

Clamage closed the meeting at 2:00pm EST. The committee adjourned for a group photograph.

Andy Koenig updated the document status after the group picture at 2:15pm. All patches have been installed in his copy of the WP. Koenig polls for any additional patches to the source. In addition, we must vacate this room by 5:00pm to setup for the reception this evening. Saks asked whether a PDF or text form of the working paper would be available. This would possible if someone has a copy of distiller and can run FTP. It was noted that some edits approved in London did not appear in the WP text. The consensus was that since they had already been approved they did not require another vote

9. Social event Thursday evening

10. Production of proposed FDIS

Friday, November 14, 9:30am – noon

11. Review of the Meeting

Steve Clamage called the full meeting to order at 9:41am EST, November 14, 1997. Mike Miller was vice-chair, Herb Sutter and Norm Crowfoot acting secretary in place of Sean Corfield. This meeting to be as short as possible. Josée Lajoie stated “hey, we’re done!” to enthusiastic applause.

11.1 Formal Motions

Clamage introduced the formal motions. He also stated he assumed a J16 vote, not a US TAG vote, is needed to approve the “Responses to US Public Comments.” Charney moved to accept the responses as written. Seconded by Dawes.

J16: 29 in favour, 0 opposed

Motion accepted.

Koenig asked for clarification on the meaning and sequence of votes. Koenig explained the mechanical process to take place to produce the finished document. The document will have various mechanical alterations, such as removing the “draft” wording, change bars and editorial boxes, and adding a copyright notice, before the draft as approved is sent to ISO. Koenig offered to include a copy of the draft in the post-meeting mailing; lots nodded.

Clamage outlined the sequence of events should all today’s votes be positive: 1. Both J16 and WG21 will vote to accept the WP as amended. 2. Both J16 and WG21 will vote to forward the approved WP as the FDIS to ISO. 3. Member nations will vote when ISO sends out the FDIS ballot (the US TAG will advise J16 how to vote, this will be covered in US TAG meeting at the end of this meeting).

Move to accept the WP as amended: Josée Lajoie, second Andy Koenig. Beman Dawes proposed three amendments:

1. In recognition of Bjarne Stroustrup’s contribution to the C++ Standard Library, change the name of functions mem_fun1 and mem_fun1_ref to mem_fun and mem_fun_ref (4 places in 20.3 lib.function.objects and 4 places in 20.3.8 lib.member.pointer.adaptors).
2. In 21.3 lib.basic.string, correct the broken reference in the comment on the const_iterator typedef. The reference should be to 23.1.
3. In the returns clause of 24.4.1.3.13 lib.reverse.iter.op<, change “<” to “>”; in the returns clause of 24.4.1.3.15 lib.reverse.iter.op>, change “<” to “>”; in the returns clause of 24.4.1.3.16 lib.reverse.iter.iop>=, change “>=” to <=”; in the returns clause of 24.4.1.3.17 lib.reverse.iter.op<=, change “<= to “>=”.

None were opposed to the amendments. The vote to accept the amendments was taken.

J16: lots in favour, 0 opposed, 0 abstain

WG21: 8 in favour, 0 opposed, 0 abstain

Motion carried.

The vote to accept the WP as amended was taken:

J16: lots in favour, 0 opposed, 0 abstain

WG21: 8 in favour, 0 opposed, 0 abstain

Motion carried.

Dawes presented the following motion: “Move to authorize the project editor, during the preparation of the FDIS for transmission to ISO, to correct layout problems, typesetting bugs, and obvious typographical errors, and to make other changes that are required by ISO." Miller seconded the motion. Glassborow asked whether there would be a paper trail for the changes, and Koenig said yes.

J16: lots in favour, 0 opposed, 0 abstain

WG21: 7 in favour, 0 opposed, 0 abstain

Motion carried.

Dawes moved to forward the WP that was just accepted as the FDIS document. Miller seconded the motion.

J16: lots in favour, 0 opposed, 0 abstain

WG21: 8 in favour, 0 opposed, 0 abstain

There was hearty applause.

Plum said that, besides the last vote, he had received two emails and a phone call relevant to the last motion. Japan and Australia emailed that they were now satisfied with the WP to go forward. Stroustrup and Plum had a phone call with France yesterday saying the committee could record France as being in favour. These were three countries who had voted No on the last round, and these are communications of the present satisfaction of these countries.

Clamage asked for any other motions. There were none.

11.2 Review of the action items, decisions made, and documents approved by the committee

There were no other action items.

11.3 Issues delayed until Friday

No other issues raised.

12. Plans for the future

12.1 Next meeting

The next meeting is in March 1998 in Sophia Antipolis, France. Clamage indicated that there is some interest in double-booking rooms. Lajoie suggested rooming information that has already been posted on the reflector should go into the post-meeting mailing. The post-meeting mailing will include this information. Unruh noted that people are advised to rent cars for the French meeting, as they seem to be necessary. Steve Clamage suggested that ride arrangements be handled over the reflector.

Spicer asked what the committee would be doing at the next meeting. Clamage said there would be little technical, but more administrative, work to do, including dealing with the question of co-locating future meetings with those of the C committee. Koenig suggested that in 2½ years the committee might issue a mid-course correction of the standard, to produce a complete new document that incorporates all corrections found up to that time (with change bars). Plum mentioned that new project proposals would also become relevant, such as hash tables.

Plauger reminded that the defect reporting mechanism is through the national bodies or through the project editor. Clamage reminded that DRs cannot be submitted until the Standard is published. Plum asked members that, if they find problems, then if what was found seems relevant to some NB voting Yes or No to bring it forward, otherwise to hold on to it until the next meeting lest these issues influence some NB who may not completely understand the issues and might be alarmed by high volume of reflector traffic. Glassborow said we should be careful what we say outside of committee, including not mentioning possible plans for interim 2½-year versions of the standard.

The question arose as to how are errors to be handled. Minor corrections should be forwarded to Koenig. Koenig reminded that the deadline for the post-meeting mailing is two weeks from today, and suggested the -edit reflector be used for any obvious typos found. Plum suggested that if a survey of opinion is needed on a question, then not to make the change. Koenig said the -edit reflector traffic would also serve as an audit trail.

Clamage confirmed that there are approximately 27 members of ISO. The ballot will be a 30-day letter ballot. It is hoped that the balloting will be complete by the March meeting.

Myers asked when DRs would start to be accepted. Plum answered that it would be after an official ISO standard has been announced, which is hoped to be before the March meeting. Unruh said he would like to maintain the logging mechanism for the reflectors. Koenig suggested that we should keep issues lists as usual until we are told that we can submit DRs. Plum opined it would be unfortunate to maintain a huge issues list that might lead to a poorly informed ballot by some NB. Ball stressed that any noise confuses people who do not understand the issue, and people interpret silence as meaning that things are under control.

Plauger noted that our votes today were unanimous, and suggested that the next few months would not be the best time to emphasize our differences in public; we should sell what we just did. There was enthusiastic agreement. Stroustrup emphasized this was real, since he had minutes ago received a call from the Wall Street Journal.

12.2 Mailings

The next agenda item was mailings. Miller confirmed that the deadline for post-meeting mailings is two weeks from today. Mike Miller said 28 for the post meeting mailing. With the holiday, he would appreciate knowing of any mailings that will be later than Wednesday evening. The deadline for the pre-meeting mailing for the March meeting is January 27, 1998.

Miller asked which version of the WP is to be distributed in the post-mailing mailing. Koenig said that he could produce any kind of paper version of the WP/FDIS that the committee likes. Ball said since this paper is likely to exist and be recopied for many years, it being the last “free” copy, the format should be one-up with no change bars. There was more discussion about the format of the WP in the mailing. In the end it was agreed that the mailing’s FDIS format would be one-up, no change bars, no copyright notice, and still marked “draft”.

Koenig read an email from Dag Brück expressing congratulations to the committee on producing the FDIS. There was applause.

Dawes moved to thank the host, AT&T and Andrew Koenig. There was applause.

12.3 Following Meetings

Tom Plum suggested that there may not be a summer meeting, and apologized to Norm Crowfoot for the uncertainty. We will not know until the March meeting.

There was no additional business presented.

Lajoie repeated the statement: “Hey, we’re done!” There was more applause.

Ball moved to adjourn. Lajoie seconded. Clamage closed the meeting at 10:37am EST, November 14, 1997.

Minutes of US TAG Team Meeting, Held November 14, 1997

Clark Nelson calls US TAG meeting to order at 10:40am EST. Norm Crowfoot acting secretary.

Nelson explains that there are two items of business for the US TAG team.

First item of business is naming the delegation to the next few meetings. The current delegation is Clark Nelson, Steve Clamage, Andy Koenig, Bjarne Stroustrup and Beman Dawes. Jose moves to continue the same delegation members. Seconded by Mike Miller. Vote: Lots/0/0.

Second item of business: recommendation to ANSI to approval vote. Josée Lajoie moves. Beman seconds. This vote authorizes Clark that when received by ANSI he will recommend that he vote “yes”. Recommend a “Yes” vote on the FDIS. Mike Miller calls the roll of the US TAG:

AT&T	yes
Borland	yes
Charney & Day, Inc.	yes
Comeau Computing	yes
Cygnus Solutions	yes
Digital Equipment	yes
Dinkumware, Ltd.	yes
Edison Design Group	yes
HP	yes
IBM	yes
Information Management Research	not present
Intel Corporation	yes
Intrinsa	not present
Mentor Graphics	not present
MetaWare	not present
Motorola, Inc.	not present
Nations Bank	yes
Perennial, Inc	yes
Plum Hall, Inc.	yes
Rational Software Corporation	yes
Rogue Wave Software	yes
Saks & Associates	yes
SAS Institute, Inc.	yes
SCO, Inc.	yes
Silicon Graphic Computer Systems	yes
Software Emancipation Technology, Inc.	yes
Sun Microsystems, Inc.	yes
Xerox Corporation	yes
Bean Dawes	yes
Bill Gibbons	yes

25 “Yes” votes, 0 “No”, some absences.

Beman moves to adjourn. Charney seconds. Meeting closed at 10:49am EST.

J16 Attendance

This attendance list is for J16 members only; members of WG21 national delegations who are not also J16 members should not sign. If you are the voting representative of an organization with voting rights at this meeting, indicate your attendance with a "V," otherwise use an "A." (An organization must have been represented at one of the last two meetings in order to have voting rights at this meeting; see Mike Miller if you are unsure of your organization's voting status.)

Name	Organization	M	T	W	Th	F
Andrew Koenig	AT&T	V	V	V	V	V
Bjarne Stroustrup	AT&T	A	A	A	A	A
Tony Hansen	AT&T		A		A	
John Wiegley	Borland, Int'l	V	V	V	V	V
Randall Swan	C-Team, Inc.	A	A	A		A
Peter Lachner	CAD-UL	A	A	A	A	
Reg Charney	Charney & Day, Inc.	V	V	V	V	V
Herb Sutter	CNTC	V	V	V	V	V
Greg Comeau	Comeau Computing	V	V		V	
Brendan Kehoe	Cygnus Solutions	V	V	V	V	V
Judy Ward	Digital Equipment Corporation	V	V	V	V	V
P.J. Plauger	Dinkumware, Ltd.	V	V	V	V	V
Tana Plauger	Dinkumware, Ltd.	A	A	A	A	A
Pete Becker	Dinkumware, Ltd.	A	A	A	A	A
Steve Adamczyk	Edison Design Group	V	V	V	V	V
John Spicer	Edison Design Group	A	A	A	A	A
Fredrik Jonsson	Ericsson Austria	V	V	V	V	V
Gerhard Menzl	Ericsson Austria	A	A	A	A	A
David Vandevoorde	Hewlett-Packard Company	V	V	V	V	V
Robert Klarer	IBM	A	A	A	A	A
Josée Lajoie	IBM	V	V	V	V	V
Greg Colvin	IMR	V	V	V	V	V
Clark Nelson	Intel	V	V	V	V	V
Guszi Sütö	Intel	A	A		A	A
Per Andersson	Ipso Object Software	V	V	V	V	V
Max Munch	Lexhash Inc.	A	A	A	A	A
Chih-Hung Hsieh	Mentor Graphics	V	V	V	V	V
Alan Losoff	NationsBank	V	V	V	V	V

Jerry Schwarz	Oracle	A	A	A	A	A
John Benito	Perennial, Inc.	V	V	V	V	V
Tom Plum	Plum Hall	V	V	V	V	V
Michael Spencer	Programming Research	V	V	V	V	V
Thomas R. Wilcox	Rational Software Corp.	V	V	V	V	V
Aaron S. Binns	Reliable Software Technologies	A	A	A	A	A
Francis Glassborow	Richfords	V	V	V	V	V
Randy Smithey	Rogue Wave Software	V	V	V		V
Sreekumar, N	Rogue Wave Software	A	A			
Lawrence W. Jones, Jr	RWD Technologies, Inc.	A	A	A	A	A
Randy Clayton	RWD Technologies, Inc.	A	A			
Dan Saks	Saks & Associates	V	V	V	V	V
Jack Rouse	SAS Institute	V	V	V	V	V
Dave Prosser	SCO	A				
Jonathan Schilling	SCO	V	V	V	V	V
Nathan Myers	self	A	A	A	A	A
Bill Gibbons	self	V	V	V	V	V
Beman Dawes	self	V	V	V	V	V
Martin O'Riordan	self	A	A	A	A	A
Mike Stump	self		A	A	A	A
Matt Austern	SGI	V	V	V	V	V
Erwin Unruh	Siemens Nixdorf	V	V	V	V	V
William M. Miller	Software Emancipation Technology, Inc.	V	V	V	V	V
Steve Clamage	Sun	A	A	A	A	A
Michael S. Ball	Sun Microsystems	V	V	V	V	V
Neal Gafter	Sun Microsystems	A	A	A	A	A
Norm Crowfoot	Xerox	V	V	V	V	V