Document Number: JTC1/SC22/WG14/N375, X3J11/94-060
Date: 1994-08-19
Subject: Minutes of Tokyo Meeting

ISO JTC1/SC22/WG14 Meeting
Dates: 1994-07-27/1994-07-29
Location: Kikai-Shinko Kaikan Bldg., Tokyo, Japan
Hosted by ITSCJ (Information Technology Standard Commission
of Japan)

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AGENDA 1.1: Selection of Chair

JONES is chair for this meeting.

FARANCE is secretary for this meeting.

AGENDA 1.2: Approval of Minutes

JAESCHKE: No comments from X3J11.

PLAUGER: Reminder: Delegates must be noted in advance.

AGENDA 1.3: Review of Action Items

KELD SIMONSEN: Comparison of POSIX and C local. Not done.

CLIVE FEATHER: Document on "sizeof". Not done.

DOUG GWYN: Write up changes from Kona meeting. Done.

JAESCHKE: LIA review. Done.

PLUM: Investigate availability of X3J16 machine readable.
Done.

JAESCHKE: Review SC21/WG3 ISO 10728. Not done.

FARANCE: Status of Model Electronic Document. FARANCE will
be meeting at CBEMA on 1994-08-16/1994-08-17. FARANCE will
investigate conversion of C standard to SGML.

PLAUGER: Two mailings after Kona. Done. PLAUGER thanks
FEATHER and GWYN, the review committee, for a "good job
done".

KEATON: Take responsibility for Designated Initializers.
Done.

MEISSNER and MACDONALD: Reconcile reflectors. Done.

BENITO: Verify Convex is hosting next meeting. Done.

JAESCHKE: Investigate joint SC22/WG14 and X3J11 meeting.
Done. Officially, the meetings are "co-located".

PLUM: WG14 and X3J11 should each follow their own
procedures. We are doing this now.

CORDSEN: Denmark will host meeting. Dates are not yet firm.

MACDONALD: WG14 mailing. Done. Much thanks to MACDONALD
and Cray for continuing to do the mailings.

FARANCE: Investigate electronic distribution of documents.
Done.

FEATHER: Investigation of "isprint" issues. Done.

GWYN: Write exact wording from Kona meeting. Done.

AGENDA 1.4: Procedures for this meeting.

Reviewed previous resolutions in Kona.

AGENDA 1.7: Approval of Agenda

Add 1.10, Spirit C.

AGENDA 1.8: Distribution of New Documents.

N367/94-052, Francis Glassborow, "Future Directions For C".

N368/94-053, Derek Jones, "Why both C and C++ standards are necessary."

N369/94-054, Andy Pepperdine, "ISO C Proposed Defect Report".

N370/94-055, Kohmei Kuroda, "Spirit C".

N371/94-056, Keld Simonsen, "Internationalization in C and POSIX Standards".

N372/94-057, Frank Farance, "X3J11 Response to CBEMA RFI" (not distributed at meeting).

N373/94-058, Makoto Noda, "Preliminary minutes from WG20 Oxford Meeting".

AGNEDA 1.9: Information on Next Meeting

Information is in latest mailing.

> Dates: 1994-12-05/1994-12-09
> Location: Dallas, TX, US.
> Host: Convex.

AGENDA 1.10: Spirit C (N370)

Presentation from KURODA.

Service Providers Integrated Requirements for Information Technology

Goal is to produce common set of specifications for general purpose computing for telecom industry.

Phase 1, interoperability, documents already delivered.

Phase 2, specification, documents in progress.

SPIRIT committee wished to contribute document as features for next standard.

SPIRIT would like Extended Integer Range proposal completed as soon as possible because they need 64-bit integers.

PLUM: Referring to table. What are MIA requirements for external identifiers (MIA is NTT specification)?

KURODA: Will inform, via E-mail, how to get MIA NTT specification.

JONES: What is the purpose of SPIRIT?

PLAUGER: Richer set of C specification based upon ISO C.

JONES: The POSC group has specifications for the oil industry. Does SPIRITI have plans to do format testing? Branding?

KURODA: Branding will be discussed in phase 3 in 1994-09.

JONES: How do we join and get further info?

KURODA: It is possible that you can join SPIRIT, but it is difficult for SPIRIT to join WG14, thus, SPIRIT would like to contribute the document.

PLAUGER: Pleased to see features of SPIRIT based on ISO C extensions. The changes SPIRIT proposed will be seriously considered for future extensions to C.

AGENDA 2:   Liaison Activities

AGENDA 2.1:   X3J11

BENITO: X3J11 met in San Jose, CA, US on 1994-06-06/1994-06-10. Worked on defect reports. Voted on US position on DAM (Yes). Vote was 14-1-0-4 (Yes, No, Abstain, Not Present). BENITO and JAESCHKE volunteered to maintain rationale.

Discussion of rotation of meetings in the US and outside of the US.

AGENDA 2.2:   X3J16/WG21

Presentation by PLUM:

Reporting from meeting two weeks ago. Decided to forward current working paper for CD registration. Vote was 6-3.

Much was added to standard C++ library. Strings and streams incorporated into template classes.

Added numerical array classes. Provides one-dimensional adjustable array will numeric operations.

Continuing discussions on foundations. What is the representation of an "int". What is an object?

Reported to X3J16:

        - Discussion of "fp.h".

- Both groups should consider syntax for overloading functions.
- "fp.h" says functions (e.g., "abs") are overloaded without suggesting a mechanism.
- Plum suggested: extern "C;absf" [Note that AFNOR had requested that WG14 adopt the basic extern "C" syntax.]
- Responded to BOB JERVIS' issue: don't use name mangling.

Discussion:

JONES: Danish proposal produces incompatibility with C++ standard.

PLAUGER: There is a style which you can write C and C++ that is compatible. That style is a large subset of C.

PLUM: Incompatible with respect to handful of reserved words. Subtle incompatibility with respect to stringize of these names. Dependence on "iso646.h".

JONES: Issue comes up with removal of C preprocessor.

PLUM: Class libraries must assume "iso646.h" is included.

PLAUGER: Which problem are we addressing?

PLUM: WG21 compatibility group needs to look at *all* incompatibilities.

Extended discussion on compatibility issues.

PLUM: CD registration is an attempt to satisfy functionality. Next 4-8 months are the best time to respond. Critical question is does WG14 have any concern with functional features? Can we assist in clarity and precision?

WG14 should develop liaison report to WG21 for review in Dallas. PLAUGER will be focal point and prepare first draft for pre-Dallas mailing.

ACTION ITEM: PLAUGER will prepare liaison report.

ACTION ITEM: PLUM will let people know how to send their comments on C++.

CORDSEN: What about C++ incompatibility with digraph proposal?

PLUM: PLUM has resolved this issue.

AGENDA 2.3: POSIX/WG15 ISO 9945-X

FARANCE: Reviewing of POSIX.4 - realtime extensions.

PLAUGER: POSIX has new work item to specify locale.

AGENDA 2.4: WG20 - Internationalization

NODA: Framework is already done. Cultural convention sets registry. Noda is co-editor. Work is in progress.

JONES: MILES ELLIS is resigning as convener. Not clear if UK is participating in WG20.

PLAUGER: Highly appropriate for WG20 to produce framework document.

JAESCHKE: Some of WG20 minutes are confusing with respect to WG14 status.

AGENDA 2.5: Other Liaison Activity

PLAUGER: SC22 needs a secretariat.

JAESCHKE: Unicode - ISO 10646 meeting in 1994-09.

PLAUGER:

    - Unicode has 16 or 31 bit codes.
    - ISO 9899 already conforms.
    - FSS UTF proposed by X/Open are likely to succeed.
    - No open issues between Unicode and SC22.

AGENDA 3: Normative Addendum

JONES: Voting No with comments.

PLUM: What is the name of document?

CORDSEN: ISO 9899-DAM1

NODA and FUKUTOMI: Recommend that Japan vote Yes without comments.

BENITO: Still Yes.

CORDSEN: Yes without comments.

JONES: Thanks to Bill Plauger and Dave Prosser for significant editorial help. Thanks to Japan delegation for editorial help on MSE.

AGENDA 4: Defect Reports.

AGENDA 4.1: Review of Proposed Responses.

JAESCHKE: X3J11 reanswered almost all responses at SJC meeting. Got to review Kona responses.

BENITO: 16 DR's have not been addressed.

PLAUGER: As convener, high priority should be given to get agreement on revised charter documents.

Discussion of work items this week and coordinating with national member bodies for 1994-12 meeting.

JAESCHKE: Defect reports that need to be addressed: 84, 91, 96, 99, 101, 103(?), 104(?), 106, 111, 114, 116.

PLUM: C++ committee was happy to hear about object representation issues.

PLAUGER: We should review response to DR#69 to make sure it is resolved.

Discussion postponed.

AGENDA 5: Revision of ISO/IEC 9899:1990

AGENDA 5.1: Review Charter for Revision (N363/94-048)

JAESCHKE: BENITO offered keeping rationale to keep track of discussion.

JONES: C should stay small and not merge with C++. "Spirit of C" is okay. The world has changed. JERVIS paper is not desired - keep language small.

PLAUGER: Best features of C in past 10 years is function prototypes. JERVIS "classes" is small and cheap.

JONES: People are moving to C++. What is C's market?
    - Embedded systems.
    - High level assembler.
    - Supercomputing.

PLAUGER: The first reason is name space. The class structure without implicit constructors/destructors addresses this issue.

PLUM: Should focus on charter rather than specific issues.

FARANCE: Fortran has adopted new features over the past 30 years. We should adopt the latest in computing technology.

CORDSEN: C and C++ have special relationship.

PLAUGER: DENNIS RITCHIE believes C needs to be revised to get it up to date. RITCHIE is afraid that the "kitchen sink" will get thrown in. RITCHIE is willing to participate in this process to put the brakes on too much invention.

JONES: Who will use C9X?

PLAUGER: C is a success. People are waiting for us to do the obvious, to extend C. C got twice as big from K+R. No one complained. People go to C++ for a small set of features C doesn't have. Pick the best that have been proven.

FARANCE: C is a success because this is the foundation for many standards.

PLUM: Recent article in Byte, inheritance and polymorphism, interaction is hard to predict.

PLAUGER: We need to maintain control of the language that is most used for new code.

JONES: Objections to JAESCHKE'S "6" points of "The Spirit of C"?

PLAUGER: Should have section 5, some recommendations as point #7 in "Spirit of C" (i.e., not have new inventions).

CORDSEN: Would like to add to list.

- Internationalization.
- Concurrency.
- New technology.

JONES: Should be a way for accessing features of parallel machines.

PLAUGER: Add "prior art".

PLUM: The world is full of validated C computers so it changes the focus. Point #6c should be "small, clear, and simple".

First cut:

- Add only new features that have been proven in existing practices to addresses on evident deficiency.
- Support "international" programming as fully as possible.
- Support new technology, such as concurrent processing.
- Maintain the largest possible common subset with C90.
- Maintain the largest possible common subset with C++.
- Maintain conceptual simplicity.

Discussion of points:

"Maintain conceptual simplicity"

JAESCHKE: If you can't understand it, you can't teach it.

PLAUGER: Example: ALGOL-68 has a one-page diagram that explains coersion. It takes 10 pages of standards language to explain it.

Keep phrase for now.

"Maintain the largest possible common subset with C++"

PLUM: Wording is not exactly right.

PLAUGER: Different forces push C and C++ in different directions.

JONES: How about "Avoid gratuitous incompatibilities with C++ and C"?

Changed to:
        "Minimize incompatibilities with C90".
        "Minimize incompatibilities with C++".

"Support new technology, e.g., concurrent processing".

JONES: Should be "allow the programmer to get close to the machine".

FARANCE: Should strike this because it can be covered by "prior art".

"Support international programming as fully as possible".

JONES: Should be just "support international programming".

JAESCHKE: Should be "continue to support...".

Changed to: "Support international programming".

"Add only new features that have been proven in existing practice to address an evident deficiency".

PLUM: Would the phrase mean someone must actually implement this? Yes.

FARANCE: Goals - this is what we want:
        - Standards efficiency.
        - Reduce dead-ends.

- Widespread desire.

PLUM: "Unambiguous Implementability". Otherwise we have problems: either too expensive or other subtle problems.

JAESCHKE: Need to revise standard in 2-3 years.

Changed to: "Codify existing practice to address an evident deficiency".

Section 3, item #1: Agree
Section 3, item #2: Agree
Section 3, item #3: Agree
Section 3, item #4: Agree
Section 3, item #5: Agree
Section 3, item #6:

PLAUGER: C++ is the big language. C should not do everything that C++ does.

Section 3, item #7: Strike

Review Section 4.
Sections 1-5 are statutory.
Sections 6-7 are semi-statutory.

VOTE (JAESCHKE/CORDSEN): Propose BENITO maintains rationale.

4 Yes, 0 No, 0 Abstain.

Technical Editor: FARANCE & PLUM volunteered.

Discussion of technical editor. Will resolve at 1994-12 meeting.

JAESCHKE: TC and Normative Addendum must be folded in.

JAESCHKE: Is it reasonable to have front-line filtering?

ACTION ITEM: JAESCHKE will draft revision proposal and guidelines document.

JAESCHKE: Submissions should find a sponsor (e.g. national body).

PLAUGER: Can send DR's to PLAUGER. PLAUGER has the right not to sponsor them.

PLAUGER: Maintaining mailings and defect report.

PLAUGER: Need statement of timetable. First goal should be to determine the shape of the new language. Major new

features go in soon.

PLUM: Take two years before CD registration. One year CD ballot. One year more for DIS ballot.

PLAUGER: 1996-12 is when we freeze.

JAESCHKE: Will revise N363/94-048

Agenda 4.1: Review of Proposed Responses

PLAUGER: Review of status of existing DR's.

PLUM: Would anyone object to new policy of having national bodies perform "triage", i.e., must be sponsored by a national body?

JONES: I think we agreed to this policy in Kona.

PLAUGER: Split into two groups.

(The remainder of this discussion is notes on selected defect reports.)

Extended discussion on:

- Should integer types have invalid values?
- Can "char" have invalid values or value collapse:

$$(\sim'\backslash 0') == ('\backslash 0')$$

on one's complement machine.

Users should be aware that:

```
while ( *p )
        *p++ = *q++;
```

is only guaranteed to work for "unsigned char". "char" may have value collapse.

Given:

```
f()
{
        struct s { char a[10]; };
        struct s buf,t;

        strcpy(buf.a,"x");
        /*
         * Can the following cause a
         * trap because of copying
         * uninitialized data, e.g.,
         * copying NAN's with floats?
```

```
                         */
                    t = buf;
            }
```

PLAUGER: Should aument DR#69 response, subsection E, to
observe that arbitrary "int" types can have holes, but a
"char" cannot. Copy doesn't have precise semantics except
when copy functions "fread", "strcpy", etc., the copy occurs
without value collapse.

PLAUGER: Can represent an arbitrary multibyte datum with no
holes.

JONES: Should define what a hole is.

PLAUGER: If an "int" has a hole, a "char" pointer mught be
used to examine this hole. Characters don't have holes.
Library functions that copy characters (fread, strcpy, etc.)
don't have value collapse.

JAESCHKE: "realloc" must be able to copy without trapping.

DR#107: Discussion of whether "assert" macro requires "int"
type, i.e., is a diagnostic issues. If library functions
are redefined as macros, argument type checking may not be
done any no diagnostic issued. See footnote at beginning of
library section.

ACTION ITEM: JONES will provide wording for DR#109.

With respect to FEATHER proposed defect reports, WG14 has
not chosen to include them in the DR log now. We encourage
FEATHER to submit them to the UK C panel for potential BSI
sponsorship.

DR#84

Discussion of when "size" is required. What about
incomplete types?

"We require size when we require size."

```
        foo ( int x, int y[sizeof x])
```

PLUM: I've heard that there is widespread practice to have
function prototypes with incomplete structures and pointers
to incomplete structures. Needed for techniques of
information hiding.

PLAUGER: Long tradition to be as tolerant as possible.

Thus, if size is not required and size is not known, then don't complain.

DR#103:

Discussion of:

```
typedef int AT[];

void f1(int x1[]);
void f2(AT x2);
```

Are these incomplete types? Complete types are specified in section 6.7.1.

DR#85:

PLAUGER: We don't need to specify that "auto" variables in "main" go away after "main" returns. This already exists in the standard: "auto"s go away after function return.

Discussion: Footnote would be acceptable, but this is still a TC.

DR#139

First translation unit:

```
struct tag;
int f ( struct  tag *p ) { ... }
struct tag { int i;} ; /* line C */
```

Second translation unit:

```
struct tag { int i ; } s;

int main()
{
        f(&s);
        return 0;
}
```

What happens when line C is removed? Not defined in standard but there is no need to define it now. Conclusion: Undefined behavior.

PLAUGER: DOUG GWYN has done an excellent job in summarizing the DR issue at SJC and helping streamline the work at this

meeting.

DR#138

ACTION ITEM: JONES will provide wording on "heap".

PLUM: Very nervous about adding "heap" unless we
investigate all other uses of "lifetime".

ACTION ITEM: FARANCE will locate all references to
"lifetime".

DR#140

Discussion of failure modes of "setvbuf". In portable code,
it is not possible to count on action by "setvbuf" because
it has vacuous semantics.

Discussion of what "performed" means.

PLUM will provide wording.

AGENDA 5.2: Additional Proposals

Technical discussion deferred to 1994-12 for:

N298/93-044
N346/94-031, Plauger, "Revising Standard C"
N367/94-052, Francis Glassborow, "Future Directions For C".
N368/94-053, Derek Jones, "Why both C and C++ standards are
necessary."

JAESCHKE: Need to formalize process soon since people want
to get started soon.

PLAUGER: We should have something in the post-Tokyo
mailing.

ACTION ITEM: JONES will send template to JAESCHKE by
1994-08-05.

ACTION ITME: JAESCHKE will produce standard cover letter
(guidelines for submission).

AGENDA 6: X3J11.1 Technical Contribution

        N334 - Aliasing
        N364 - Floating Point Extensions
        N356 - Extended Initializers
        N347 - Compund Literals

Given that we have deferred technical proposals, we defer

discussion.

Cray VLA proposal (N317) is a VLA proposal.

DPCE - David Keaton now chairs this group. Guy Steele now represents Thinking Machines.

Extended Integers: Header file now. No satisfactory answer on specifying the number of bits.

Complex: Issues are whether there is an imaginary type.

JONES: Not consistent high-level design or style across the papers.

JAESCHKE: Many NCEG groups expect the work to be forwarded to the revision, but not all will be accepted in the new standard.

Four groups frozen and review widely.

Other four groups may be included and have another review cycle.

Wait until 1994-12 to decide.

JAESCHKE: Timing for publishing: earliest next year, latest another year.

Chairs of four frozen groups should give an overview presentation in 1994-12.

PLUM: No one is actively advising WG14 on LIA.

PLAUGER: Observations: WG14 was invited to comment on X3J11 but has not yet formed a committee opinion.

X3J11 urges member nations to review and provide feedback in advance and prepare for technical review in 1994-12.

AGENDA 7: Other Business

N374/94-059 Revised Revision Document
N375/94-060 Minutes of Tokyo Meeting

Discussion on on agenda.

CORDSEN: Internationalization should be seriously considered for revision.

JONES: UK C panel will have a new convener: NEIL MARTIN as of 1994-09.

AGENDA 8: Future Meetings

AGENDA 8.1: Future Meeting Schedule

WG14 and X3J11 are co-located for all meetings.

1994-12-05/1994-12-09 Dallas, TX, US.   Convex
1995-06-12/1995-06-23 Copenhagen, DK.   Danish Standards
1995-10-16/1995-10-20 Boston, MA, US.   Thinking Machines
1996-02-05/1996-02-09 Irvine, CA, US.   Unisys

Suggested:

1996-06-17/1996-06-21 Toronto, London, or Amsterdam

ACTION ITEM: JAESCHKE will as ED KEISER about hosting 1996-06
meeting.

1996-10-21/1996-10-25 Unknown location or host, probably in
US.

AGENDA 8.2: Future Agenda Items

      - X3J11 needs one day of deliberation for close of
      subgroups.
      - Document distribution and SGML issues.
      - Rationale.
      - Submission procedures.
      - Technical editor.

PLAUGER: WG14 committee intends to work on the basis that
technical issues must make the pre-meeting mailing so
members have adequate preparation time.

VOTE (JAESCHKE/NODA): Support convener on enforcing adequate
preparation time.

        4 Yes, 0 No, 0 Abstain.

PLUM: Whem we say "two week" rule, that means mailing the
documents three weeks prior to the meeting.

AGENDA 8.3: Future Mailings

1994-08-19 Post-Tokyo mailing.
1994-10-28 Pre-Dallas mailing.
1995-01-06 Post-Dallas mailing.
1995-04-28 Pre-Copenhagen mailing.

ACTION ITEM: PLUM will send E-mail to the reflector on new
mailing dates.

PLAUGER: Thanks Cray Research for doing the WG14 mailings.

IMPORTANT: PLAUGER requests that you send him one sided
masters.

Documents in plain text are much more useful than in

Postscript.

AGENDA 9:   Resolutions

AGENDA 9.1:   Review of Decisions Reached

VOTE (JAESCHKE/CORDSEN): Propose BENITO maintains rationale.

> 4 Yes, 0 No, 0 Abstain.

VOTE (JAESCHKE/NODA): Support convener on enforcing adequate preparation time.

> 4 Yes, 0 No, 0 Abstain.

VOTE (BENITO/JONES): Move we accept additions and amendments to responses to defect reports #60 to #140 this meeting subject to final approval at 1994-12 meeting.

> 3 Yes, 0 No, 1 Abstain.

VOTE (JONES/BENITO): Move we endorse the revision charter and empower the review committee to make suitable edits and submit for SC22 plenary.

> 4 Yes, 0 No, 0 Abstain.

Thank Noda-san for hosting meeting. WG14 thanks Ms. Sachiko Minezaki for excellent clerical support this meeting.

Review of Action Items:

PLAUGER will prepare liaison statement on C++ draft for CD registration for pre-Dallas mailing (1994-10-28).

JAESCHKE will work on review committee for liaison statement.

PLUM will post comment template and receive all C++ comments.

JAESCHKE will revise N363/94-048.

PLUM will produce revies wording for DR#69.

PLAUGER will draft wording for DR#88.

JONES will provide wording on "heap" for DR#68.

FARANCE will local all references to "lifetime" for DR#168.

PLUM will provide wording for DR#140.

JONES will send coversheet template to JAESCHKE by 1994-08-08.

JAESCHKE will produce standard cover letter "Guidelines for Submission".

JAESCHKE will ask Ed Keiser and UK about hosting 1996-06 meeting. JAESCHKE will decline IBM's offer to host this meeting.

FARANCE will provide schedule on combined document.

FARANCE will investigate straw poll (ballot) over E-mail reflector prior to 1994-12 meeting.

Send all C++ comments to "plum@plumhall.com".

Discussion of upcoming SC22 plenary.

Working discussion on revision of C. The following are "bullet" items (alphabetical order):

Array Syntax
Byte Ordering
C++ Compatibility
char/wchar_t
Clarity
Data Parallel
Debug Support
Dignity
Embedded
errno
extern "fortran"
FIPS
I18N
Incorporate MSE
Interchange
Layout/Distributed Data
Limits
long long
Mainstream
Numerical
Restraint
restrict
Simplicity
Subsets
Tighten "Undefined"
Wacky Thursdays
X3J11.1

Motion to adjourn died for lack of a second (?!).

After further discussion.

JAESCHKE/PLUM move we adjourn.

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X.400 ADRESSE: C = DK; A = DK400;
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