MINUTES OF WG5 MEETING - DRESDEN 22 TO 26 JULY 1996

ATTENDANCE
25 delegates, 1 observer
• Convenor: Miles Ellis
• Austria: Gerhard Schmitt; David Schmitt (observer)
• Canada: Whitman Wright
• Germany: Manuela Zuern, Uwe Kuester, Wolfgang Walter, Karl-Heinz Rotthaueser, Andrea Coriand, Christian Weber, Michael Hennecke, Andrew Pitonyak
• Japan: Masayuki Takata, Minoru Tanaka
• Sweden: Lars Mossberg
• UK: Malcolm Cohen, Steve Morgan, Keng Low, David Muxworthy
• US: David Epstein, Jerrold Wagener, Kurt Hirchert, Baker Kearfott, Loren Meissner, Tom Lahey, Keith Bierman

CONVENOR'S REPORT
SC22 ballot on TC3 (Technicnal Corrigendum 3) ends 3 October. Final ballot on Fortran 95 will begin as soon as processing of TC3 is completed. Convenor appointments for this meeting:
• Secretary, Meissner
• Librarian, Hirchert
• Drafting committee, Muxworthy, Weber, Wagener, Takata, Mossberg, and G. Schmitt.

MINUTES of San Diego meeting were approved with minor typographical corrections.

NATIONAL ACTIVITY REPORTS were presented by Austria, Canada, Germany (N1202), Japan (N1204), Sweden, UK (N1201), and US (N1203).

REPORT OF THE DEVELOPMENT BODY FOR FORTRAN 2000 was presented by Wagener on behalf of X3J3.

LIAISON WITH OTHER SC22 WORKING GROUPS
Programming Language Standards: Effect of multiple character sets needs to be considered.

DEFECT MANAGEMENT
No further defect management for Fortran 90 is contemplated; further work in this area will be relative to Fortran 95. This assumes that TC3 and Fortran 95 will be approved. Procedures are being developed for accepting defect reports from individuals, from member bodies, and from WG5. Fortran 95 defect management is expected to follow substantially the same procedures as were used for Fortran 90.

VARYING STRINGS
We have a work item to modify the "informative" part to conform to Fortran 95.

INTEROPERABILITY WITH C (technical report) Hennecke
The principal technical issue remaining is "bind" vs. "map to".

DATA TYPE (ALLOCATABLE) ENHANCEMENTS (technical report) Cohen
(To regularize and extend the ALLOCATABLE attribute.) At issue is assignment of derived types that contain allocatable components.

CONDITIONAL COMPILATION Epstein
WG5 has previously suggested that a project in this area be directed toward preparation of an additional "Part 3" of the Fortran standard. The "Fortran-like" approach was presented at this point; presentation of the "fpp" approach was deferred until later in the meeting.

Straw votes:

16 prefer the "Fortran-like" approach
2 prefer the "fpp" approach to COCO
4 undecided

If and when COCO is standardized it should be ...
7 optional
9 mandatory
6 undecided

PARAMETERIZED DERIVED TYPES (possible technical report) Morgan
A technical issue involves the syntax for parameter value inquiries; two suggested approaches are "parameters as components" and "intrinsic types".

Straw votes:

3 prefer the "components" model
6 prefer the "intrinsic types" model
13 undecided

INTERVAL ARITHMETIC Kearfott
The principal question is whether this item should be processed as a Fortran 2000 requirement or as an additional "Part" of the standard.

FLOATING-POINT EXCEPTION HANDLING (technical report) Bierman
Completion at this meeting is anticipated.

CONDITIONAL COMPILATION Bierman
The "fpp" approach was presented.

ADDITONAL FORTRAN 2000 REQUIREMENTS
Zuern presented N1187; Kuester presented N1186; Wright presented N1206.

FLOATING-POINT EXCEPTION HANDLING Bierman, Weber

Straw votes:

Where IEEE leaves behavior processor-dependent, this TR should do the same.
2 yes
10 no
11 undecided

For the following straw votes, delegates were asked not to vote "undecided" so that a final draft can be prepared at this meeting.

(N1195r1 page 15): In case of integer overflow during conversion from real to integer type, the processor must signal "IEEE INVALID" (vs.: may generate a processor-dependent signal different from other exceptions)
12 yes
6 no

(N1195r1 page 16): If no value of a variable depends upon the process, whether the exception is signaling is processor-dependent
14 yes
4 no

Overflow and Divide-by-zero must be supported for non-IEEE processors. In the current TR draft, names for these exceptions always begin with "IEEE". Should this notation be retained?
10 yes
7 no

The current TR draft must be changed to recognize the following rules: A called procedure must not change the caller's halting or rounding modes. A procedure must not reset a callers exception flag (but may set it). A procedure must not use exception flags as hidden input parameters.

Straw votes:

These rules are to be enforced ...
9 automatically by the processor
6 by the programmer

These rules apply ...
13 to all procedures
5 only to PURE procedures

DATA TYPE (ALLOCATABLE) ENHANCEMENTS Cohen
It is suggested that concerns recently expressed by X3J3 be addressed by means of additional informative text (see N1197, N1212).

Straw Vote:

Revise N1196 by adding proposed text (see N1212) at end of section 3.4
20 yes
0 no

CONDITIONAL COMPILATION Epstein, Bierman

Straw Votes:

9 The approach suggested in N1192 ("Fortran-like")
6 The approach suggested in N1208 ("fpp")

Repeated with request that delegates not abstain:
13 The approach suggested in N1192 ("Fortran-like")
6 The approach suggested in N1208 ("fpp")

Proceed with Conditional Compilation project?
15 yes
5 no

Convenor states that this project will be pursued as an additional "Part" of the Standard, based on the "Fortran-like" approach.

INTEROPERABILITY WITH C (Hennecke)

Straw Votes:

Should permit Fortran module variables to access C global variables
18 yes
1 no
1 undecided

C "char *" should map to Fortran's ...
11 character array
4 derived type
7 undecided

17 retain BIND and add MAP_TO (at least for intrinsic types)
1 retain only BIND
2 provide only "MAP_TO"

PARAMETERIZED DERIVED TYPES
US position is that this project has not met the time-critical requirement for conversion to a TR. Convenor reviewed the requirements for a TR.

Straw Vote:

11 Convert this project to a TR
8 Process as a high-priority Fortran 2000 requirement
0 Do not include in Fortran
1 Undecided

Convenor states that insufficient consensus exists for SC22 processing as a technical report. This project will be given further consideration as a Fortran 2000 requirement.

INTERVAL ARITHMETIC
A straw vote at the previous WG5 meeting favored processing as an optional "Part".

Straw Votes:

11 Process within Part 1 of the Standard
8 Process as a separate "Part" of the Standard
0 Do not include in Fortran
2 Undecided

0 Process as a Technical Report
19 Process as a Fortran 2000 requirement
0 Undecided

Convenor states that this project will be processed as a possible Fortran 2000 requirement.

FORTRAN 2000 REQUIREMENTS
A set of specific requirements should be adopted. Those to which WG5 is already rather firmly committed will consume most of the available time. These are:
• Floating-point exception handling (TR)
• Data type (ALLOCATABLE) enhancements (TR)
• Interoperability with C (TR)
• Derived-type I/O
• Asynchronous I/O
• Procedure Variables or Pointers to Procedures
• Interval Arithmetic
• Parameterized Derived Types
• Minor Technical Enhancements.
Additional requirements may be added later but only with full recognition of implications for the "Strategic Plan" timetable.

Object-oriented features do not appear to be well enough in hand for firm action at this meeting.

As an experiment, WG5 will hold an extra meeting in February 1997, in conjunction with the X3J3 meeting. WG5 subgroups will be formed to report on additional requirements at that meeting.

The existing "requirements data base" will be closed and archived; further proposals will be processed via different channels. New subgroups may wish to review the existing data base to ensure that important proposals do not become lost.

Straw Votes:

4 Complete further refinement of F2000 requirements at this meeting
9 Form subgroups to complete further refinement before February 1997
10 Undecided

Should Condition Handling (beyond the Floating Point Exception Handling TR) be a high-priority F2000 requirement?
3 yes
14 no
6 undecided

The former categorization of requirements into priority groups A, B, C is replaced by two groups of requirements:
(1) firm requirements identified at this meeting
(2) additional requirements to be identified by new subgroups before February 1997

WG5 POSITION ON ISO COPYRIGHT POLICY

Straw Vote:

Retain status quo?
20 yes
1 no
0 undecided

Incorporate this issue in a Resolution?
14 yes
3 no
6 undecided

POSIX BINDING TO FORTRAN (IEEE STANDARD)
This IEEE standard will expire in 1997 unless it is extended.

Straw Vote:

Should WG5 request extension?
1 yes
4 no
(many) undecided

NEW SUBGROUPS TO IDENTIFY ADDITIONAL F2000 REQUIREMENTS
The following subgroups are established:
• Data abstraction, Zoern, editor;
• Numerical and scientific, Kearfott, editor;
• Remaining items, Weber, editor.
Each editor is charged with producing a report to be sent to the Convenor by 6 January 1977 and to be available at the February 1977 WG5 meeting.

FUTURE MEETINGS

Straw Vote:

Future meetings should be the subject of a resolution.
7 yes
3 no
9 undecided

WG5 will meet with X3J3 in February 1977. Austria has invited WG5 to meet in Vienna in 1977, probably 21 to 25 July. Sweden has issued an invitation for the summer of 1978.

RESOLUTIONS

See N1219 for the text of the resolutions. All resolutions were adopted unanimously except as follows:
D6: Negative, USA (on the grounds of the schedule, not the technical content); Abstain, Hirchert;
D8: Negative: Bierman;
D9: Negative: Bierman, Abstain: Hirchert, Wagener;
D10: Abstain: Cohen.