

Minutes of Meeting 105

X3J3 Fortran

10 to 14 August 1987

Liverpool, England

X3J3/211

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1 Summary of issues

Meeting 105 was primarily concerned with considering the resolutions of the ISO Fortran working group (WG5) that met in the previous week and preparing for the processing of comments from the public review. The WG5 resolution that was given most committee time was a proposal from Japan that there should be facilities for very large character sets (for example, Kanji) and it was decided that a detailed proposal should be written for the next meeting. The WG5 resolution in favour of pointers will be addressed by a detailed proposal based on ALLOCATE and ALIAS at the next meeting.

Some editorial changes were approved for eventual incorporation into the standard, the glossary was reconsidered at the request of X3K5, and an audit was commenced to check that the whole of Fortran 77 has been included in Fortran 8x.

The following formal votes were taken:

	Vote	Pass or Fail	Page
X3J3 organization			
Call all the groups 'subgroups'	19-0	P	11
Editorial changes			
The edits in MBM-1, omitting 8(c) and 11, should initiate the list of approved edits	15-0	P	26
Edit 11 of MBM-1	4-12	F	27

2 Opening business

Discussion leader: Adams

Scribe: Wagener

2.1 Remarks from the chair

I am very pleased to announce that the compliance review by SPARC indicated that Fortran was in compliance. See JCA-23. The X3 ballot authorizing a public review is currently in progress. The dates are July 20-August 20. See JCA-25.

JCA-24 contains the transmittal of three PRE-PUBLIC REVIEW comments. These are sent to us for information. These issues should be discussed at this meeting if possible, so that we are prepared with answers, in future. I would like to assign the Convex comment to SG15, the Boeing comment to SG17. The letter from John Reid is duly noted, but no response is needed here. I plan to answer these comments informally as soon as possible. There will be a new S document (S11) to contain these "pre-public review" comments. I would also like to assign the responsibility for this document to Carl Burch, as well as the "public review" comments document which will be S12. This will be the last version of S9. Jim Matheny will prepare an S9 Evaluation Report.

I was hopeful that X3 would pass a resolution allowing concurrent public review with the X3 ballot. This motion was tabled at X3's most recent meeting. When the results of the ballot are in, (August 20), Gwendy will send me the X3 negative comments for response. Should there be negative votes, this will be the priority item for the November meeting. I will try to get this material to voting members as soon as possible, after I receive the results.

S8 AUDIT

Each subgroup is assigned an audit of their sections to check that everything in FORTRAN 77 is in the draft Fortran (S8). Please report out each section separately so that we can check on progress and completion. On each morning, I will ask for progress reports. If there is an omission, prepare a proposal for the Editorial Committee for the "Editorial Document".

KANJI

I have received a communication from T. Kan, chairman of the Japanese Fortran WG that a delegation will attend this meeting to discuss Kanji. The materials sent me are available on the table, and a discussion will take place on Wednesday this week. Some of the material is in JCA-15. This is assigned to SG16. We welcome this group to our discussions.

REORGANIZATION

I have prepared a reorganization and renumbering of the sub-groups and working groups. The plan is JCA-26. This plan is to be implemented at the beginning of the next meeting. I feel that the section assignments should be nearly the same, so that comments would be written by persons most familiar with the various sections.

Some of the major changes are:

1. The Steering Committee concept has been changed, so that the emphasis is on administrative duties assigned to individuals as "Officers", who have an advisory role to the chair.
2. There will be more active participation in planning by the sub-group heads and assistants. This group is to meet twice a week, usually on Monday and Thursday. I would like to meet with the present heads at 4 pm today, to review the Organization Plan I am proposing. Following that, to go over the plan in subgroup.
3. Move Section 13 to go with Section 11 and 12.
4. Create a third Standing Working Group on Public Review.
5. Eliminate one technical subgroup, and renumber.

There will be four new standing documents:

- S11--Official Prepublication Comments and Acknowledgements
- S12--Public Review Comments and Acknowledgements
- S13--Formal Public Review Comment Responses
- S14--Annual WG5 Resolutions and X3J3 Resulting Actions (Liverpool)

If a public review is announced, there are special telephone numbers that may be used to request a review package from Global Engineering Documents, Inc.

LETTER BALLOT ON DATABASE BINDING--X3H2

Preliminary results were placed in JCA-18 of the pre-meeting distribution. Since then, I have received no additional ballots.

INTERNATIONAL REPRESENTATIVE

Andrew Johnson has been appointed IR. See JCA-12. Congratulations, Andy.

FORUMS THIS WEEK

There are no forums planned in connection with this meeting.

FORTRAN FORUMS

CERN	April 12	Geneva, Switzerland
EG&G	August 8	Idaho Falls, Idaho
Colorado State U	August 13	Fort Collins, Colorado
MIT	October 9	Cambridge, Massachusetts
SLAC, Stanford	October 17	Menlo Park, California
Educomp	November 8	San Jose, California
Modcomp	November 14	Fort Lauderdale, Florida
Hewlett Packard	February 12	San Jose, California
SHARE	February 1985	Los Angeles, California
ACM Long Island	January 1985	Long Island, New York
DECUS	May 1985	New Orleans, La
UNiv. of Bonn	July 1985	Bonn, Germany
BCS	July 1985	London, England
National ACM	October 1985	Denver, Co
DECUS	December 1985	Anaheim
Univ. of Dalhousie	August 1986	Halifax, Nova Scotia
Hewlett Packard	November 1986	Albuquerque, NM
Boeing	May 1987	Seattle, WA

STANDING DOCUMENTS OF X3

JCA-6 is an order form for the Revised Master Plan SD-1, May 1987. It is not reproduced here.

Distributed this time are:

Revision 1 to the SD-2

Note that there is also Revision 2, with Revision 3 on the way.

These are drafts not yet approved, and should not be inserted in your SD-2.

June 1987 Projects Manual, SD-4

June 1987 Membership and Officers, SD-6

REVIEWS

JCA-22 is a draft document on "Test Methods for Language Processors". It is proposed as an ISO Technical Report. Andy as IR voted, since the ballot is due August 6. However, he will be going to the SC22 meeting, and I would like him to hear some of our comments. This is assigned to Subgroup 14/18 for a verbal report tomorrow morning. JCA-27 is the original US comment on N275.

X3 DOCUMENTS

X3/CBEMA

The C binding to GKS passed in the final tally and is forwarded to the BSR for public review. See JCA-7, the news release.

The Programmer's Hierarchical Interactive Graphics System has been transmitted to X3 for its third public review.

A new subgroup for graphics is being formed in TC97. See JCA-17.

A new work item on LISP has been transmitted for ballot.

A new work item on extended APL is being processed for recommendation.

Advance transmittal of a new work item on PROLOG. Contact Bob Follett of SC22 TAG. This is "logic programming". It was developed in France. Is there interest?

POSIX is the System Software Interface and Related Matters being considered for a new work item in SC22/TC97. Material on this work has been placed on the table if you are interested.

NEW FEES

Notice that there are increments to the X3 fee schedule. See JCA-14.

STANDARDS APPROVED

ANSI X3.156-1987 8-inch Rigid Disk Removable Cartridge (200/63.5mm)

ANSI X3.157-1987 Recorded Magnetic Tape for Information Interchange
3200 CPI (126 CPMM) P. E.

ANSI X3.158-1987 Serial Recorded Magnetic Tape Cassette .150 Inch
8000 bpi Group Code Recording

STANDARDS REAFFIRMED

ANSI X3.79-1981 Determination of Performance of Data Communication
Systems that use Bit-oriented Control Procedures

ANSI X3.86-1980 Optical Character Recognition , Inks June 15, 1987

2.2 Membership

I have had communications from Murray and Werner concerning their absences. I have granted each of them excused absences. Both of them have assured me that they will be at the Florida meeting. However, they will not be able to vote in Florida. Murray has agreed to continue as liaison to the Data Base Group.

No new member(s) were appointed. There is 1 on provisional status at this meeting. There are 26 members during the 105th Meeting, 26 of whom are eligible to vote. A quorum is 12. Of the 35 members eligible to vote, 9 are absent, 26 are present. 3 alternates are present and voting; 2 are present and not voting. In addition, 13 observers were welcomed. Total attendance is 41.

2.3 Agenda for meeting 105

The agenda was approved after the following modifications:

Add Review of Test Methods, the Glossary, Exponent Letter, and the S8 Audits to the agenda.

2.4 Reports

International Representative Report Andy Johnson

The SC22 meeting is to be held the first week of September. X3J3 should expect a request for a Fortran binding to POSIX. There is a formal description techniques meeting in October at ANSI.

Convener of Working Group 5 Report Jeanne Martin

WG5 met last week and passed 26 Resolutions. S8 was forwarded to SC22, WG5 concurred with this action. Resolutions will not be carried over from a previous year, any topic still current and appropriate will have a new resolution. The next meeting of WG5 will be in Paris, September 19-23, 1988.

Public Review Response Documentation Report

S9 Report Neldon Marshall

The last version is on the table.

IFIPS Report John Reid

IFIP WG 2.5 organized a 2-hour mini-symposium at the International Conference on Industrial and Applied Mathematics (ICIAM) in Paris in June. Each speaker (myself, Metcalf, Schonfelder, Feldman) was given a quarter of the time and together we summarized the language. We had a good audience (about 200) in spite of there being about a dozen other sessions in parallel and there was a great deal of interest. Mike Metcalf received nearly a hundred requests for his summary.

3 ISO/TC97/SC22/WG5 Liverpool resolutions

Discussion leader: J. Martin

Scribe: Ellis

Reference: ISO standardization process, Martin (X3J3/213, p. 431).

Martin: Gave an overview of the standardisation process used by ISO. This consists of seven stages. A copy of S8/104 has now been forwarded to the ISO secretariat for registration as a Draft Proposal (DP).

Marusak: How can the document be revised?
Is this only possible at stage 4?

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- Ans: Every time it reverts to Stage 2 it may (will?) need changing. Changes can only be made by WG5, and WG5 have delegated this work to X3J3.
- Philips: What is the minimum time for the whole process?
- Ans: If all stages took the minimum possible time then the process would take about 12 months. In practise the minimum time is around 2 years.
- Ellis: What happens if SC22 and TC97 all vote YES? Will it go ahead as an International Standard regardless of any comments produced in response to the X3 public review?
- Adams: ISO would surely take account of the WG5 and X3J3 view before passing it for further processing.
- Schonfelder: Why should they? WG5 has already passed the document forward.
- Harris: What is the position of the United States at SC22?
- Ans: The US representative has indicated that he will vote NO. I shall, however, advise him to vote YES.
- Paul: Does all this mean that we could have two standards?
- Adams: Yes it does. But we all want to work together on this. I am sure that we will.
- Martin: You must remember that the SC22 Secretariat and (if necessary) the Central ISO Secretariat do not base their decisions purely on numerical voting but also on the views of those who have a substantial interest in the subject. They are well aware of the potential problems and will ensure that a sensible policy is pursued.

4 Minutes of meetings 103 and 104

Discussion leader: Adams

References: 105(*)JKR-1 (X3J3/212, p. 263)

105(*)JKR-3 (X3J3/213, p. 346)

Addendum to minutes of 103rd X3J3 meeting, Philips (X3J3/213, p. 442)

The minutes of meeting 103 were approved nem con, subject to the amendments of Ivor Philips in document 54. The minutes of meeting 104 were approved nem con, together with the additional scribe notes in JKR-1 and JKR-3, and subject to amending 'X3X3' to 'X3J3' at the bottom of the title page.

5 Standing document on membership

Discussion leader: Wagener

Reference: 105(*)JLW-1 (X3J3/212, p. 273)

The attention of the Committee was drawn to the document summarizing membership policies and procedures. The fees for members and observers have been raised to \$200 and \$150, respectively. It will become Standing Document S15.

6 Report on test methods for programming language processors

Discussion leader: Johnson

Scribe: Hendrickson

References: 105(*)JCA-22 (X3J3/213, p. 362)

105(*)JCA-27 (X3J3/213, p. 384)

Johnson: This is a letter ballot for DTR 9547, Test Methods for Programming Language processors - Guidelines for their Development and Acceptability. The guidelines were reviewed by SG 14/18. The SG had few comments. The purpose of the guidelines was not clear, we would prefer a more detailed rationale. There is a phrase "Patents . . . should have been resolved" which is unclear. Does "resolved" mean in the public domain, available under license, ISO collects fees, etc.?

The guidelines are intended to be guidelines. Terms like "overflow" and "precision" are not defined. "Configuration" is not defined and could be ambiguous if compiler options are invoked.

Andy will discuss these comments at the SC22 meeting in September.

7 Glossary

Discussion leader: Metcalf

Scribe: Hoover

References: 105(*)JCA-4 (X3J3/212, p. 177)

105(*)JKR-4 (X3J3/213, p. 349)

Straw vote: Eliminate Appendix F from the final Standard (17-4-11).

Straw vote: Establish discussion document (24-6-6).

The scribe notes did not arrive in time for inclusion here, but will be placed with the documents for the next meeting (X3J3/216 or X3J3/217).

8 Tutorial on pointers

Discussion leader: Burch

Scribe: Paul

Reference: 105(*)CDB-3 (X3J3/212, p. 243)

- Adams Have you considered defining a new attribute, 'pointer', for example?
- Burch Yes, but I am not ready to go to that level of detail yet. We first need to define the requirements for pointers in FORTRAN.
- Reid When you declare a root, do you assume that it is unallocated?
- Burch Yes.
- Adams I would like the committee to first decide if we need a pointer data type with pointer arithmetic, etc., or a facility such as you propose.
- Schonfelder The question of whether you want to do pointer arithmetic is very serious. Previous straw votes have indicated that the committee favours strongly typed pointers without the facility to do pointer arithmetic.
- Hirchert Comments similar to and supporting Schonfelder.
- Marusak The kind of facility proposed here would go a long way to obviating the need for a strongly-typed pointer facility, but I am skeptical that the committee can accept the necessary relaxation on the restrictions applied to IDENTIFY. I would also like to see an example which requires both the ALIAS and ALLOCATABLE attributes.
- Reid So would I.
- Hirchert I would also like to see such an example.
- Adams I have the feeling that whatever we provide must be spelled 'pointer'.

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- Marusak Whatever is done must be able to cross data types - pointing to reals in one instance and to integers at some latter time, etc.
- Harris One of the advantages of this proposal is that it removes one of the problems found in pointer facilities of other languages. That is, you must declare a limited set of objects to which the pointer may point.
- Adams The need for pointers was heavily favoured in the WG5 resolutions.
- Hirchert I would also like to point out that WG5 felt that their votes on the resolutions were conservative. That is, they restrained themselves from giving specific directions to X3J3. Alex (Marusak), you should also note that you can use the TRANSFER function to cross data types.
- Hendrickson I don't see why NIL won't work.
- Marusak In response to Kurt (Hirchert), TRANSFER when applied directly is useful in 1% of the cases. When used indirectly is useful in perhaps 1% of 1% of the cases.
- Schonfelder ALLOCATE is not necessary in this proposal. We need a means to detect if the object is aliased.
- Reid Presumably you can have a user-defined type with an allocatable component. This would in turn allow 'ragged arrays'.
- Wagener As one that has never been convinced that we need pointers, I believe that this is a good start. I like it because I believe that we get 95% or more of what we need, simply by relaxing restrictions on facilities that we have.
- Harris We need recursive data structures. I have a library of algorithms frequently used in Computer Science. Almost all of these algorithms require recursive data structures. This is the greatest single defect in FORTRAN 8x.
- Ellis I would like to support Kevin's (Harris) statement. In the Cad-Cam algorithms that I work with, we need the type of data structures that this will provide.
- Schonfelder I want to raise the question of recursive data types without pointers.

- Paul I would like to support Alex Marusak's comment that the facility must be able to cross data types, and to say that I have the same skepticisms regarding the ability to committee to remove the current restrictions on IDENTIFY.
- Marusak This brings us full circle to what we originally wanted on the DOE language Working Group committee, but it is probably too late. Still, we do need a typeless IDENTIFY.
- Hirchert Some of the applications which require pointers are sparse-matrix algorithms and graphics. What Alex (Marasak) wants is not untyped pointers, but the use of untyped arrays in IDENTIFY.
- Marusak Yes
- Hirchert One need for weakly-typed pointers is polymorphic programming. We will also need to greatly enlarge the section notes to demonstrate the use of pointers.
- Johnson One of the greatest inhibitors of optimization is pointers. We must be very careful in this area.
- Straw vote: Want a complete and detailed proposal in the next pre-meeting distribution (23-1-9).
- Straw vote: Prefer ALIAS and ALLOCATABLE as separate attributes (4), merge them into VIRTUAL (2), three attributes ALIAS, ALLOCATABLE, and POINTER (7), undecided (18).
- Straw vote: Prefer a data type called POINTER to the Burch proposal (11-18-5).

9 X3J3 organisation

Discussion leader: Adams

Reference: Section 29 of these minutes.

Motion: Call the groups 'subgroups' (Hendrickson, Schonfelder).

Formal vote: 19-0. Passed.

10 Very large character sets

Discussion leader: Harris

Scribe: Matheny

Reference: 105(*)KH-1 (X3J3/213, p. 460)

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- Harris: This was a tutorial on the current situation re Kanji support. Kanji characters are words, rather than sounds. The language has subsets, and combinations of subsets, in its written form. "100,000,000 people cannot be wrong." Therefore the language needs a larger address space. Currently this is 16-bit characters.
- Weaver: One set is the Japanese Standard JIS. Harris: This is encoding. Each vendor has a coding.
- Harris: JIS numbers the set from 0. Vendors offset to get by control characters, and each by a different offset. There is an ISO standard, 2-octet, being worked on by the French.
- Wada: This covers Japanese and Korean.
- Weaver: IBM APL has a 4 byte character set.
- Harris: Mixing Ascii and Kanji -- most vendors have it. Uses a shift sequence, so scanning a string is necessary.
- Wada: Integers get in the way.
- Weaver: Some vendors have a schema for a record. COBOL does this. Otherwise shift codes are used.
- Harris: If interpreted wrong, gibberish results.
- Pollicini: What about delimiters in Kanji. Ans: ASCII or EBCDIC as delimiters for Fortran et al.
- Harris: With the ASCII set (IBMPC), one can see how a character sits on a line, so it is nicer.
- Gridley: Is this limited to two bytes? Ans: No.
- Harris: So what do you put in the Fortran language? Not in source (yet). Is in Fortran, COBOL, C. Kanji in source is a big step, but with big incentives. Wanted are literals, comments, variable names, but not keywords.
- Adams: About overhead? Ans: Mixed codes are no real cost. Schonfelder: A compiler directive? Wada: Only Kanji or ASCII. Constants are one or the other. Marusak: If mixed, then one must be prepared to handle it, ie. overhead.
- Harris: In source, there are very fixed places where you allow it. It is not that much extra work. If used once [in a program] then checking is generally necessary.
- Harris: X3J3 options are: But first look at ISO 2-octet, Just now in the TC.
- A. Do nothing. Rely on vendor's extensions. Delay for the ISO Standard (source only?)
 - B. A Kanji module. From the vendor's standpoint, this option is not competitive.
 - C. Standardize on NCHARACTER, ie. JIS. This is not the Japanese proposal.
 - D. The Japanese proposal to X3J3 and ISO WG5. This doesn't include literals. Incomplete. Need general rules about character codes in source. Wagener and others: It's OK, Fortran 8X does it.

General: Argument about parsers. Hendrickson: A problem, but no more than other character representations. Rolison: Listing generator doesn't have to be sensitive. No translation.

Burch: Low level syntax is on a byte-oriented file system. The New-line character, for example, does something. The system must search for bad guys.

Harris: We could do more. Literals, comments, variable names, data -- better.

Wagener: Re IIC8. NCHARACTER is 2-bytes, so can encode ASCII. Is this T4? ASCII in the set, so the user keeps track. So paragraph IB3b?

Schonfelder: This is all overhead for Latin languages. And non-portable between terminal devices as well as machines. I'm apprehensive. Wada: The same is true for EBCDIC.

Burch: The cost of implementing an intrinsic data type is 2-3 man-months for a separate data type.

Marusak, Wagener, Paul: The cost is storage, and transmission.

11 Very large character sets (cont)

Discussion leader: Ohwada

Scribe: Matheny

References: Japan's response to 'KANJI derived type' (X3J3/213, p. 402)

Japan's proposal to Fortran 8x (X3J3/213, p. 406)

Programming language FORTRAN with extended character type (X3J3/213, p. 455)

Ohwada: Presented #49, the Japanese Proposal: Extensions of CHARACTER Type for National Character Handling.

Ohwada: Presented #47, Japan's response to the derived type paper #25, 105(16)JHM-2, the first attempt to write a derived type module addressing the multi-byte character problem. Reference was made to the later paper on this topic -- #55, 105(16)CDB-5.

The derived type solution [as presented at the WG5 meeting] is impossible. Concatenation may be OK. Substring is impossible left of the equal. Editing -- format is impossible. A solution needs a variety of input. Derived type cannot be specified in IDENTIFY. There may be other problems. Derived type DATA is bad. Efficiency is impossible. Therefore, only an intrinsic type will be satisfactory.

Adams: The second page of #47 is interesting. [Examples.]

Marusak: I agree with the arguments of #47. It cannot be efficient. There is no provision for constants -- derived type constructors, and no private/public.
Wada: It is not a complete proposal. (Ref to # 49.) We would like to develop, for Fort Lauderdale, a complete proposal.

12 Unbuffered I/O

Discussion leader: Burch

Scribe: Matheny

Reference: 105(*)CDB-4 (X3J3/212, p. 247)

Burch: We would like a way to get bits in or out of a Fortran processor --I/O.
Matheny: We want to revisit and bury the topic.
Marshall: With unformatted I/O, we must worry about green words. With UNIX, we must consider record bounds.
Hirchert: We want raw I/O. We must ignore inter-record gap.
Metcalf: RT=U does it for unformatted I/O [in some systems]. Or it should be solved outside of Fortran -- a device problem.
Weaver: What is the requirement?
Hirchert: Raw I/O should read a record of indeterminate length.
Williams: Requirement is not a high priority item. Nice.
Tait: There is a need for an asynchronous buffer capability, like CDC. We have always had bit but no format bit I/O. If BUFFERIN etc., leave it asynchronous.
Marshall: We use it, but not for bit data type -- for foreign data.
Adams: We used it a lot, but must have the whole machine.
Marusak: We need a rough guess of words coming in. Binary read and write would work. Assumption?
Wagener: Yes. For the request, a documented requirement is needed. We have large seismic data files. Games played are OK with some computers, but a disaster with many. There is a need for handling compacted data.
Hirchert: There is a need to handle arbitrary length. The I/O part is all buffering overhead. We need asynchrony.
Marusak: We need unformatted I/O with the ability to stop at strange places.
Straw Vote: Pursue. 12-7-13. A proposal should be available at Fort Lauderdale.

13 Very large character sets (cont)

Discussion leader: Burch

Scribe: Matheny

Reference: Comments on Fortran 8x Kanji proposal, Larmouth (X3J3/213, p. 468)

General: Attention is drawn to the ISO efforts to resolve the problem in a general way. Cited are ISO 8832, ISO 2375, ISO 8824. Ellis, Williams will get these documents for the next meeting of X3J3. There is a negative letter -- the ISO committee is resolving this.

Matheny: But in Fortran we are talking containers, not character sets.

14 Very large character sets (cont)

Discussion leader: Burch

Scribe: Matheny

References: 105(16)CDB-5 (X3J3/213, p. 443)

Burch slides on Kanji proposal (X3J3/213, p. 469)

Burch: It is possible to provide [in a derived type] the semantics of the perceived requirements. Much of the syntax of the JIS NCHARACTER can be provided -- over one half, but not all. Problems:

1. Substrings -- the colon operator is not overloadable, so a function call SUBSTR is suggested.
2. The module creates a constant by overloading the equals. Thus it can't be private.
3. The parameter and data constructors can't hack it. So the module is weak in simulating syntax.

Going down the module: Not now in the module is mixing Kanji and Ascii -- we are still learning. It doesn't provide double width and single in a column. Harris covered levels of activity. Source capability is constants, comments. But this module does not address this level. The module write of NCHARACTER*5 outputs 16 bytes. The I/O library adds escape codes. I believe the Nw edit descriptor is not necessary, but maybe it is better. The positional descriptors, such as TL, operate on [8-bit] bytes.

Rolison: Why? Ans: This is what NCHARACTER does. Rolison: We have Kanji tools.

Wada: Re JIS. It is vendor-definable for tabbing. One vendor supports nX, and one doesn't.

Burch: NCHARACTER is used here as a specification. In a comparison of an intrinsic type vs. a module, the intrinsic can do more by definition. KIND=2 is a

language extension. Portability is a possibility. Porting from Japan to the west can be a module, or compiler directive. But constants won't work.

Re performance:

1. In Fortran, any character type is not important compared to floating point.
2. The use of an intrinsic type is no guarantee of [good] performance.

Wada: There is a potential for an intrinsic type to be efficient.

Burch: We can make a module intrinsic. The vendor can take USE as a compiler directive. For this problem, this can result in good performance. This is not true for bit. Who "standardizes" a module?

Kanji I/O. I/O "intrinsic" in a module. Escape codes are in the module to go to or from a record -- not in fields in any order per Fortran 8X. (per Wagener)

Smith: We "have to print in order", so this is no problem.

Schonfelder: Implementation may run into word boundary storage restrictions.

Reid: Output format is only A -- this is desirable. List directed and Namelist data formatted the same, by data type. Escape codes thrown out or retrieved.

Lakwara: Are delimiters in Kanji: Wada: yes.

Burch: Left out of the module is assignment to NCHARACTER on the left of the equals. [Code was written on the fly to fill this hole.]

Weaver: Why go through the module in full committee?

Matheny: X3J3 hasn't taken a direction yet.

Hendrickson: Examples of use would be better.

Adams: We should compare KIND= with the module, and the JIS standard with the current Japanese proposal. We need examples of use of the module.

Reid: Why quote, Kanji, quote? Ans: Wagener's suggestion is a string of one item.

Hendrickson: 'x' is several characters longer. How much longer?

Harris: The example is misleading, it assumes the acceptance of Kanji in source.

Burch: The module may be something the vendor does. Jerry's scheme is better. We must clean things up.

Weaver: This is an example of a system that uses escape sequences. We need to discuss source, and about the escape sequence in Kanji constants. The source file needs more escape codes than shown.

Burch: The module should be delivered by the vendor so that it will work with source.

Hirchert: We should hide the underlying escape sequences so that programs work the same -- portability. We need a caveat about tricks.

Hendrickson: Consider a single Kanji character between quotes. It doesn't matter that there are escape codes.

- Hirschert: This is an argument for an intrinsic type. The processor has no knowledge about a module. If it does know about this, it might as well be intrinsic.
- Burch: The representation in source is separable from data. Hardware must understand escape characters. The processor must, at least, leave them alone. In the Fortran 8X source, Any characters representable in the processor...
- Ellis: Re a Kanji constant, what about a continue within a constant? Harris: have to shift out first. Different with different vendors. Weaver: What about Kanji in other programs, say a lister? There are substantial problems -- records and so on. Harris: Kanji in source poses lexical problems.
- Burch: The module works like PC coding.
- Hendrickson: What does 'Kanji' deliver?
- Weaver: Escape codes go only to files that mix ASCII and KANJI. So a file attribute? An OPEN specifier.
- Burch: How do we do it now? Writing two-byte codes?
- Hirschert: What of a compiler that doesn't understand Kanji? Or an editor writing the file. So 'kanji' has escape sequence. Burch: It is very practical to accept Kanji in source, but this is not NCHARACTER.
- Marusak: This is analogous to COMPLEX. To mix, the processor has to understand that there are two types.
- Paul: KIND= handles many languages. Which is a vendor choice -- a business decision.
- Harris: What comes first? [Big argument.] UNIVAC has a separate Kanji quote.
- Weaver: This is a compiler option, a requirement. Level of support is immaterial.
- Harris: A module is not a competitive implementation.
- Burch: Left out of this module is assignment to a substring left of the equals, and procedure call syntax.
- [Second slide]
- Wagener: Re escape sequences. They are explicit in a module. What of the KIND=2, 2'Kanji '? Ohwada: They are not seen by the users. Wagener: Are they part of the construct? Ans: Yes and No. The compiler puts in escape sequences to I/O as necessary.
- General discussion of the whole problem.
- Ellis: This is all amazing. It is clear that MODULE is not the way to go.
- Hendrickson: Derived type adds nothing but clarity.
- Hirschert: Many points:
1. Strategic. Are the Japanese asking for a solution to this problem for everyone, or for processors that choose to address the problem? Ohwada: All should have this facility. Adams: Kanji? Ans: No,

- general facility. To have Kanji or not is a business decision. A general facility is required.
2. What are the advantages of an ISO Standard over a Japanese Standard?
 3. The problems with the module approach were laid out. the intrinsic KIND= approach is better. Fortran 8X would need an abstract I/O process, and a abstraction of string-like types.
 4. An intrinsic feature, re character set, needs to focus on three areas -- (1) the data type, (2) formatted I/O, and (3) source form. The Japanese haven't asked to mix Kanji with Ascii, or with Korean. But we must mix computational data types in a program. Maybe we need a big, big set of characters, with subsets.
 5. The KIND= proposal is not complete. Constants are not portable. What about KIND=2 in Korea? Of course these could be hidden with PARAMETER.
 6. A keyword other than KIND may be better -- say CLASS, or SET. We should generalize, so what of KIND=*. Then we have proliferation, as in passed on precision. An alternative is a separate data type, NCHARACTER or something. Commentary can be used for compiler options.
 7. I/O has two representations, the external record and internal files. Are these ASCII? How is it represented?
 8. The discussion of the Kanji character set is a red herring. We're standardizing Fortran, and can't mention ASCII hardly, let alone EBCDIC.
 9. I agree that NCHARACTER or KIND= is cheap to do. But:
 - a. SCAN and VERIFY build a table for 256 characters. What about thousands.
 - b. There are two spaces for Kanji, and one for Latin. What about variable pitch devices?
 - c. Consider the weak Fortran 8X definition of lower case.
 10. Spaces to store a character value are irrelevant.

If this is the wrong problem, we may need new keywords in I/O.

Straw vote: The committee should deal with very large character sets now (17-11-8; voting members: 10-5-5).

Scribe: Burch

Rolison: The module approach is wrong. What if the Japanese had invented Fortran? This should be an intrinsic data type.

Williams: I'm worried about the committee's workload. You should separate the character code and the Fortran data problem. ISO should be contacted for the correct character code solution. In terms of language support for multi-byte codes, a module is not the solution. Comparing NCHARACTER versus KIND=2, the latter implies that not all processors would have to implement it. Shouldn't this be put off until the next revision?

- Wagener: Does Kurt have a recommendation?
- Hirchert: I'm leaning toward a generalized CHARACTER type and undecided whether it should be done by a parameterized attribute or a compiler directive.
- Harris: Kurt specified three places characters are used in Fortran : NCHARACTER is a pure T2 type, I/O and source use mixed codes (T1/T2) - why not have a mixed code data type as well?
- Wada: FORTRAN 77 has the CHARACTER type; NCHARACTER parallels it. To mix one and two byte characters would be too big an extension. Current experience is that NCHARACTER is sufficient.
- Harris: Let me state the Digital position for the record : X3J3 should clarify the proposal with regard to Kanji in source code and complete it in I/O and other places. This is in X3J3, what vendors will probably do is NCHARACTER. Current practice has overcome the F&x schedule. This is an example of why Digital voted No on the standard - X3J3 should standardize NCHARACTER. With my X3J3 hat on, I'd vote for the Japanese proposal, ignoring existing practice. Digital is not against supersets and subsets.
- Reid: The module approach has not been fully explored, it needs to be honed. We have seen it in some detail, which we have not for KIND=2. I estimate 2000 lines of change in the document.
- Wada: We intend to bring a complete proposal to the next meeting. If NCHARACTER is chosen, the change from KIND=2 is largely mechanical.
- Reid: There would be a very large number of changes.
- Weaver: It is not 2000 lines - that is 50 pages. I've been highlighting CHARACTER references, there aren't that many.
- Reid: Adding another CHARACTER data type will make the standard much harder to read.
- Hirchert: (1) Any variable-length type is too expensive, I didn't mean to imply that before.
(2) We can extend modules, but they still won't handle the Kanji source problem. If that is done, we might as well go on to an intrinsic type. A Kanji preprocessor could probably be written, but it probably wouldn't be adequate.
(3) KIND=* would imply a lot more lines of change in the document than Weaver counted.
- Reid: The problem is defining it in the standard - which is one of the advantages of a module.
- Ellis: NCHARACTER is Japanese only, we would end up with KIND=n anyway after each language comes in with their request.
- Metcalfe: I'd like the Japanese delegation to provide all the edits needed in the pre-meeting distribution for the next meeting. That would resolve the number of edits needed. It's my feeling that the Japanese request came too late in the process.
- Hoover: I appreciate the amount of editing involved. Don't use a module just because of the amount of editing necessary - it won't do the job. Mike is right, they came several years too late.

- Paul: Certainly adding a new data type is more editing work. Generalizing CHARACTER in this way is analogous to generalized REAL, but we should do it.
- Ellis: If we are going to ask the Japanese to come with a proposal we should give them some guidance.
- Straw Vote: Is this request best solved by the module approach? (1-27-5)
Is this request best solved by the KIND=n solution? (20-4-10)
Is this request best solved by the NCHARACTER solution already on various Japanese computers? (4-17-12)
- Wagener: I was intrigued by Kurt's suggestion that this could be done in I/O attributes. It seems simple. Could it be done?
- Moss: Do any Japanese vendors plan to implement KIND=n?
- Wada: Only if it is in Fortran 8x.

15 Remarks from the chair

Discussion leader: Wagener

Reference: 105(*)JCA-24 (X3J3/213, p. 377)

Wagener: Jeanne Adams will send acknowledgement letters to the three people who sent comments to X3 prior to the public comment period (see JCA-24).

Suggested editorial changes should be sent to the editor and placed in the pre-meeting distribution. A list of approved edits will be maintained (see item 17 of these minutes). The following editorial re-writes have been suggested by the editorial subgroup: Source form (General Concepts Subgroup), Identify (Data Concepts Subgroup), DO construct (separate description of obsolescent features, Moss), Interface blocks (examples, Metcalf; extra text, Moss).

16 Public Review

Discussion leader: Burch

Scribe: Philips

Straw vote: It is important that all members get a copy of all comments, either on paper or on microfiche (24-0-7).

The scribe notes did not arrive in time for inclusion here, but will be placed with the documents for the next meeting (X3J3/216 or X3J3/217).

17 WG5 resolution on significant blanks

Discussion leader: Marusak

Scribe: Hendrickson

Reference: Liverpool Resolution 12, Significant blanks

Marusak: The Liverpool resolution asks X3J3 to reconsider its decision to remove significant blanks from 8X. Subgroup 14/18 would like to get the sense of the committee on this. Should we bring a proposal at the next meeting along the lines of: "Move significant blanks from Appendix F back into the discussion of free form source in chapter 3"? Is this an acceptable proposal? If not, we have an alternate. If it passed the subgroup would then do the hard work of getting page and line numbers, etc., for the February meeting.

Burch: This is at the same level of detail of all of the "in principle" proposals.

Moss: We should defer the vote. Wait and see what the public comments say. We should not consider reversing ourselves until we get strong public comment.

Ellis: I disagree with Moss. By February we should know what the public comments are and we can decide "in principle". What is the alternate proposal?

Marusak: "Blanks are insignificant in Fortran 8X unless otherwise stated." This would be a positive reaffirmation of the current S8.

Wagener: WG5 would not like that form of response, it's too terse. They would prefer something like "X3J3 considered and debated the issue, we reaffirm the current status because 1)..., 2)..., 3)...."

Marusak: That's why subgroup 14/18 prefers the original proposal.

Paul: I agree with Moss; keep an open mind until after public comment. Also, we will need a detailed study of where

significant blanks will be used. They are not useful until they are used. We need the substance of the proposal.

Marusak: Subgroup disagrees. We should vote on whether we want to reconsider.

Weaver: The proposal should include arguments both pro and con so WG5 can see what we did and why.

Matheny: I did this several meetings ago.

Harris: If we add significant blanks then we should delete "Fortran" from the title of the document.

All: Laugh, groan.

Marusak: The original proposal, in effect, asks whether subgroup should do the hard work of putting back significant blanks. We want the sense of the committee.

J. Martin: This isn't our decision now. Wait for public comment.

Schonfelder: Aren't WG5 resolutions "public comment"?

J. Martin: Public comment hasn't started yet. The resolutions will go to ANSI. The WG5 comments should have heavy weight within X3J3.

Matheny: Public comment is biased by what's there. People won't comment adversely on something that isn't there.

Straw vote: "Should we wait for the public comments before voting on significant blanks?"

16 - 7 - 4

18 WG5 resolution on bits

Discussion leader: Smith

Scribe: Marusak

BIT PROCESSING

REQUIREMENTS:

- provide efficient masking for array operations
- provide bit array processing

OPTIONS:

- reinstate the BIT data type from appendix F
- parameterize LOGICAL to allow single bit objects
- provide a BIT module (not discussed here)
- other (e.g., a true bit string data type)

I. REINSTATE BIT DATA TYPE

ADVANTAGES:

- facility is well defined; details already worked out
- extensible to a bit string facility (e.g., analogous to CHAR)
- allows comparisons (< or .LT., > or .GT., etc.)

DISADVANTAGES:

- some work to integrate into SB (e.g., BIT not allowed in DATA statement)
- functionality is essentially redundant to LOGICAL
- LOGICAL operators duplicated with different spellings
- LOGICAL/BIT has same paradigm as REAL/DOUBLEPRECISION and CHARACTER/NCHARACTER

II. PARAMETERIZE LOGICAL

ADVANTAGES:

- minimizes undesirable redundancy
- provides all of the required functionality
- very easy to integrate into SB:
 - 7 changes in Section 13
 - 15 changes in rest of SB
- same paradigm as REAL with specified precision and as CHARACTER with specified KIND

DISADVANTAGES:

- comparisons (< or .LT., > or .GT.), if needed, must be defined
- multiple type parameter values may be "overkill"

III. PRINCIPAL FEATURES OF PARAMETERIZED LOGICAL

1. LOGICAL [kind-selector]
 - default LOGICAL

- logical with specified type parameter

Example: LOGICAL (1) B1, B2

2. LOGICAL with specified type parameter is non-storage-associated, with processor-dependant storage units (may be 1 bit) - only default logical may appear in a storage association context.
3. Processor must support default logical and at least specified type parameter of 1.
4. Logical objects having different type parameter values may be arbitrarily mixed in assignments and expressions.
5. Value 'true' is denoted by .TRUE., B'1', B"1"
Value 'false' is denoted by .FALSE., B'0', B"0"

.TRUE., .FALSE. have default logical type parameter value B'1', B'0' (and B"1", B"0") have type parameter value 1

Example: B3 = .FALSE.
B3(K,:) = B2 .AND. B'1'

6. Disallow * type parameter value (this restriction could be removed in the future if there is need)
7. Input/output uses the L edit descriptor:
 - allowed on input: T, F, .TRUE., .FALSE., 1, 0, B'1', B'0', B"1", B"0"
 - output generated: T or F for default logical
1 or 0 for logical with specified type *parameter*

8. Intrinsic functions:

LOGICAL (L,MOLD)	convert between logicals (like LBIT and BITL)
INTEGER_TO_LOGICAL (I,SIZE,RL)	convert integer to logical array (like BITLR and BITRL)
LOGICAL_TO_INTEGER (L,RL)	convert logical array to integer (like IBITLR and IBITRL)
KIND(L)	type-parameter-value inquiry
MAXLOGICALS(I)	maximum logical array length for conversion (like MAXBITS)

IV. COMMENTARY

Ivor Phillips: a) the functionality needed is more than that provided by this extension of LOGICAL; b) there is no BIT stream facility in the proposal; c) we need a BIT string facility; and d) we need facilities for base 2, 4, 8, and 16 input/output.

Kurt Hirchert: I don't like the 'L' descriptor giving T/F or 1/0, depending on KIND = 1 (or KIND = not 1). Also, what does the KIND intrinsic inquiry return for default (old style) LOGICAL? Anything

but 1?

Len Moss: a) I don't see why we should parameterize LOGICAL; it's not necessary. b) I believe this is isomorphic to Appendix F (as does Kurt Hirschert). c) Efficiency can be gotten no matter what the syntax is, whether LOGICAL or BIT. d) We also need Octal and Hexadecimal output and input.

John Reid: a) I prefer this approach to BIT; this is better than BIT for control bit maps. b) How much work is involved in making necessary changes to the other INTRINSICS in Chapter 13? Is it massive? Answer (B. Smith): This will require detailed work; it may be somewhat automatic.

Kevin Harris: This is the best treatment of the actual usages of BIT that anyone in this committee has yet provided. I think it would meet our users' needs.

Lawrie Schonfelder: I am bothered by the KIND=1 usage; this method could, however, be extended to strings.

Alex Marusak: I am opposed to this proposal because a real need, BIT strings, is not addressed. This is a good implementation of compact LOGICAL; benefits to BIT processing are a coincidence. The treatment in Appendix F, which I proposed be put back into BX proper, also does not treat BIT strings; but at least it doesn't get in the way of BIT string extensions (which we would probably have to implement). If the BIT facility is included in Fortran BX as a nonstring LOGICAL, as proposed here, the linkage to the old-style LOGICAL may interfere with BIT-string extensions.

Mike Metcalf: I am in substantial agreement with Alex.

George Paul: I definitely want (KIND=1) LOGICAL to mean 1 BIT. I would like to see PACKED_LOGICAL and BIT strings.

Carl Burch: I like this treatment, as it ties up loose ends in our treatments.

Len Moss: On "common practice" -- KIND=1 would normally mean 'BYTE', not 'BIT'. There are already implementations of KIND=1 meaning 'BYTE'.

Ivor Phillips: Under this method, the bit string '101' would have to be written '1', '0', '1' (or B'1', B'0', B'1'), which is inefficient in keystrokes.

Jerry Wagoner: This method allows one to get all the usages defined in Appendix F, and to introduce a BIT string facility when that becomes available and necessary.

Straw vote (8/14/87, 11:47am): Should parameterized LOGICAL appear as a proposal at the next meeting? (6 yes, 7 no, 14 undecided)

George Paul: I would like to see another straw vote as above, but with KIND=1 being tied to one BIT.

Carl Burch: I read this as meaning we should provide a storage associated BIT.

Len Moss: There should be a statement stating that it is intended that there be an efficient packing of bits.

Mike Metcalf: One can get what one wants by using the word BIT as in Appendix F.

Dick Hendrickson: There is no way in the Standard to force a particular implementation.

Straw vote (8/14/87, 11:58am): Should a parameterized LOGICAL appear as a proposal at the next meeting, explicitly tying KIND=1 (or some other KIND=) to one BIT? (6 yes, 14 no, 8 undecided)

19 Editorial actions

Discussion leader: Metcalf

Scribe: Marshall

References: 105(*)MBM-1 (X3J3/213, p. 464)

Section 26 of these minutes.

Metcalf: Amend the proposal as follows:

Item 3: Change 'on' to 'in the middle of'.

Item 7a: Change "Delete." to "Replace 'PRECISION' by 'EFFECTIVE_PRECISION(Y)'."

Item 7b: Change "Delete." to "Replace 'EXPONENT_RANGE' by 'EFFECTIVE_EXPONENT_RANGE(Y)'."

Item 8a: Change '8-1 1' to '8-1 2'.

Item 8b: Change 'may' to 'may be'.

Item 10b: Add "8-8 25 Add 'body' after 'the loop'."

In addition to the suggested edits to page 7-8, lines 24-26 and lines 31-32, it is necessary to adjust sentence capitalization to make it correct.

The changes suggested for page 8-1, line 3 and for page 8-8 line 47 to page 8-9 line 13 were controversial and were, therefore, separated from the rest of the proposal for special discussion and vote.

Motion: The edits in MBM-1, omitting 8(c) and 11, should initiate the list of approved edits (Metcalf, J. Martin).

Formal vote: 15-0. Passed.

Discussion on Page 8-1, line 3

J. Matheny - this is almost the definition of normal execution sequence from Fortran 77.

L. Moss -- I agree with Matheny

C. Burch -- This suggested change is wrong.

J. Martin -- Execution sequence is defined in 2.3.4

Suggested change page 8-1, line 3 was withdrawn.

Discussion for suggestion to change the text page 8-8, line 47 to page 8-9, line 13 to obsolescent font.

These are examples of DO loops which are obsolescent on two accounts: They do not terminate with a CONTINUE statement, and there are two nested DO loops terminating with the same statement.

- M. Ellis - We should only put the terminating statement in obsolescent font.
- J. Martin - I disagree. We left these examples in to demonstrate the obsolescent feature. It is proper for the whole example to be in an obsolescent font.
- L. Moss - I agree. These are carried over from Fortran 77.
- K. Hirschert - These seem to be the only examples of obsolescent features.
- R. Hendrickson - We should leave it in and put them in obsolescent font. We should surround them with text explaining why they are left in. People are surprized to find out these examples work this way.
- C. Burch - Rather than change the font, we should insert a note that this usage is obsolescent.
- L. Moss - I have agreed to rewrite the DO loop test. I will take this discussion as input and prepare new text.

Motion: Edit 11 of MBM-1 (Metcalf, J. Martin).

Formal vote: 4-12. Failed.

20 Glossary (cont)

Discussion leader: Metcalf

Scribe: Marshall

The editorial committee has been looking at the suggested changes to the glossary suggested by John Wood, chairman ASC X3K5. In general, Mr. Woods suggestions look very good and some will be incorporated into a new glossary. John Reid has the glossary on his word processor and will prepare a new replacement glossary for the next meeting based upon this week's work of the editorial committee.

- L. Moss - We should include Fortran 77 terms as well.
- M. Metcalf - The editorial committee felt these were past history and not worthy of our time at present. We will, however, point out when meanings have changed and distinguish between the Fortran 77 definitions and the F8x definitions.
- L. Moss - I'm not sure this is good enough. Sometimes terms become obsolete. We need to carry them along.
- M. Metcalf - this is a major effort.
- L. Moss - We should think about it.
- M. Metcalf - The editorial committee decided not to do it at this time.

21 Derived type I/O

Discussion leader: Matheny

Scribe: Burch

Reference: 105(16)JHM-1 (X3J3/212, p. 255)

- Matheny: Presented proposal.
- Hendrickson: Can I use the embedded function to print the character part of a variable length string?
- Matheny: No.
- Moss: That would take a major project. It would take several overloaded functions to provide the right functionality. In the general case, we would need stream I/O to handle line length problems.
As an aside, I feel that derived types are for users, not for X3J3 to use in place of new intrinsic types.
- Schonfelder: I/O formatting does implicitly what is implied here - for intrinsic types. We shouldn't feel too bad as all other recent languages punted on I/O.
- Hendrickson: Kevin Harris said yesterday that his company has had a similar mechanism for several years and have never received a request for formatted I/O.
The abstract data type module writer would provide the I/O facilities.
- Hirchert: Putting the character functions in would require keeping a symbol table around at runtime.
Part of the idea behind abstract data types is to abstract out the non-intrinsic parts of a facility - I/O is intrinsic, doesn't fit the model.
What is the unit of transmission? It is well-defined for intrinsic types, not for abstract types.
We could define a means of user-defined format descriptors. We would also need to be able to define what existing descriptors do when used with derived types - like overloading the F format descriptor.
- Schonfelder: DEC's aggregation mechanism seems to be primarily for compatibility with COBOL and Pascal, not for data structuring in Fortran.
- Burch: The proposal mixes the general Fortran language and the special language inside format strings.
- Straw: Should Jim Matheny pursue this further? (2-11-7)

22 Module for variable-length strings

Discussion leader: Wagener

Scribe: Morgan

Reference: 105.JLW-4 (X3J3/213, p. 396)

Wagener introduced the contents of the reference. The module allows:

- (i) type string and type character to be concatenated
- (ii) extends character intrinsics to type string

Half the code is devoted to overloading. Remaining provides transfer functions and substrings.

There are three main deficiencies:

- (i) No colon notation for substrings
(use substring functions and concatenation)
- (ii) Awkward I/O (especially input) but not as bad as the general case for derived types
- (iii) How to handle constants

Wagener concluded that the module approach was viable and was only mildly awkward in some cases.

Discussion:

Schonfelder: [Expressed view that the deficiencies were real and arose out of the current limitations of derived types. The module requirements stretched derived types to the limit]

Moss: [Felt that module was probably better than nothing at all. Did not like need for transfer functions]

Matheny: [Will be submitting proposal for intrinsic varying length string]

Burch: [Had met the same problem in trying to develop a module for the Kanji case. Problem may have been overspecified. Syntax of character had been done. Problems were constants, DATA statements, I/O lists etc, substrings on left-hand-side of assignments. Fell over badly on input]

Schonfelder: [Substring on left-hand-side is a red herring. If we had pointers in full we could do this a lot better, but not I/O unless we had stream I/O]

Wagener: [Did not wish to propose anything. Felt that module (with errors fixed) was closet to a string facility using derived type. Intended to fix the errors and add comments and put in distribution for next meeting as an information document. It could be taken up later if the committee wished]

Paul: [Perhaps the Kanji problem could be solved with strings with KIND=]

Burch: [There might be some way to enhance derived type constructors. There would be a need to specify defaults for constructors]

Wagener: [There is a difficulty with the PARAMETER statement]

23 Exponent letter statement

Discussion leader: Burch

Scribe: Paul

References: 105(*)RCA/CDB-1 (X3J3/212, p. 239)

Usage of exponent letter, ter Haar (X3J3/213, p. 466)

- Hirchert I dislike the idea that something on the left-hand side of the double colon is defining an attribute. In the first proposal we could place an appropriate constant in the list.
- Hendrickson If we follow Kurt's comment, then it would seem to imply that we should specify all constants of that type in the declaration.
- Moss Are we simply objecting because EXPONENT LETTER is a separate statement?
- Reid I believe that Stu Feldman would not like any of these solutions. He believes that we should be able to specify any constant in terms of our intrinsic types. I prefer to leave this as it is.
- Marusak Must at least one variable be included?
- Burch This is an error in the proposal, since current syntax implies that the list must not be empty.
- Marusak What happens if you want to include the SAVE attribute? Further, these proposals even if awkward give a more suggestive means of how to create an exponent letter.
- Hirchert There is a precedence in some Fortran extensions of an untyped type which when encountering a normally typed variable assume that type. We could do this with real constants assumed to have no precision attribute.
- Schönfelder That would violate a FORTRAN 77 rule.
- Tait There is a problem of what happens when this is an actual argument or item in I/O list. In our (CDC) experience we also found that we were evaluating certain expressions in the wrong precision.
- Marshall I would prefer leaving this as it is now, since it is a unique case.
- Hopper Could use a syntax of the form:
A=1.0 '10,50'.

Moss After laughing at Kurt's suggestion regarding the wild-card notation, I believe that it might work. I also like ter Harr's suggestion.

Hirchert It appears that this may not be a unique case since we are discussing kind in CHARACTER, etc.

Straw vote Is this a problem as it is? (6-8-4)

Burch ter Harr's proposal appears to me to only add another level of indirection.

24 Keyed access

Discussion leader: Matheny

References: 105(16)JHM-03 (X3J3/213, p. 351)

Matheny: I will bring a fresh proposal to the next meeting.

25 Closing business

Straw vote: Switch to distributing the minutes on microfiche (5-9-6).

25.1 Future meetings

meeting 106: November 9-13, 1987

host: David Phillimore
Gould Inc.
6901 W. Sunrise Blvd.
P.O. Box 9148
Ft. Lauderdale, FL 33310
(305) 587-2900

lodging: Royce Resort Hotel
4060 Galt Ocean Drive
Ft. Lauderdale, FL 33308
(305) 565-6611 or 1-800-23-ROYCE
\$52.00 + 7% tax
please make reservations by Sept 21

meeting site: Royce Resort Hotel
meeting registration: \$70.00

Distribution: Send documents to arrive by 5 October to

Richard A. Hendrickson
Cray Research Incorporated,
1345 Northland Drive,
Mendota Heights,
MN 55120

X3J3/211 – Minutes of meeting 105

(612) 681-5804

Please mail copy flat (not folded), and leave adequate margins at top and bottom of the page. If possible limit all copy (including headings and page numbers) to a 7 x 9.5 inch (18 x 24 cm) rectangle.

meeting 107: February 8-12, 1988

host: Jerry Wagener
Amoco Production Research
P.O. Box 3385
Tulsa, OK 74102
(918) 660-3978

lodging: Monteleone Hotel
214 Royal St.
New Orleans, LA 70140
\$68.00 single, \$78.00 double
return reservation card by Jan 15

meeting site: Monteleone Hotel
meeting registration: \$70.00

distribution deadline: January 4, 1988

meeting 108: May 9-13, 1988

host: Kurt Hirschert
University of Illinois
Urbana, IL
(217) 333-8093

lodging:

meeting site: University of Illinois

distribution deadline: April 4, 1988

meeting 109: August 8-12, 1988

host: Neldon Marshall
EG&G Idaho Inc.
P.O. Box 1625
Idaho Falls, ID 83415
(208) 526-9342

lodging:

meeting site: Jackson, WY

distribution deadline: July 4, 1988

The 1988 WG5 meeting will be in Paris, 19 to 23 September.

25.2 Membership

At the end of the meeting there are 37 principal members, of whom 5 (Freeman, Schenk, Swift, Thompson, and Wilson) are on provisional status.

25.3 Adjournment

The Committee thanked the hosts Lawrie Schonfelder and Steve Morgan for the very satisfactory local arrangements, including excellent copying and secretarial support. The meeting adjourned at 4.30 p.m. on Friday August 14, 1987.

26 Approved editorial changes to X3J3/S8.104

1. Page ii, lines 32-33. Delete sentence beginning on line 32.
2. Page 5-1, line 39. Set 'char-length' in italics.
3. Page 6-2, lines 11-12. Delete sentence beginning in the middle of line 11.
4. Page 6-2, line 27+. Add: 'Constraint: If *parent-structure* is an array, the component must not be an array.'
5. Page 6-2, line 35. Delete ', but not both'.
6. Page 6-10, line 20. Delete 'or arrays'; change 'the' to 'a'.
7. Page 7-8, lines 24-26. Move the words 'a scalar integer expression whose primaries are' to appear after '(1)' and adjust the sentence capitalization.
8. Page 7-8, lines 31-32. Move the words 'a scalar integer expression whose primaries are' to appear after '(1)' and adjust the sentence capitalization.
9. Page 7-8, line 46. Replace 'PRECISION' by 'EFFECTIVE_PRECISION(Y)'.
.
10. Page 7-9, line 6. Replace 'EXPONENT_RANGE' by 'EFFECTIVE_EXPONENT_RANGE(Y)'.
.
11. Page 8-1, line 2. Replace 'include' by 'are'.
12. Page 8-1, line 6. Replace 'may be' by 'are'.
13. Page 8-5, line 32. Delete second 'default'.
14. Page 8-5, line 35. Delete 'default'.
15. Page 8-8, line 24. Add 'body' after 'The loop'.
16. Page 8-8, line 25. Add 'body' after 'the loop'.
17. Page 12-2, line 38. Replace '.' by '(functions only)'.

27 Attachment required by SPARC/79 – 171

Committee projects – SD-4 Report Input

Project No. 67

Revision of X3.9-1978 (R)

ANSI completion date (estimated) 1987

Project No. 318, CODASYL Fortran Data Base Facility, has been withdrawn.

28 Documents list

28.1 Standing documents

- X3J3/S1 Fortran 77 issues, 12 Feb 1982, updated 10 Feb 1983.
- X3J3/S5 General procedures for X3J3 task groups, 11 Jan 1980.
- X3J3/S6.86 Proposals approved for Fortran 8X, May 1983.
- X3J3/S7.91 Fortran 8X, Aug 1984.
- X3J3/S8.104 Fortran 8X, June 1987.
- X3J3/S9 Comments on Fortran 8X, Feb 1985, Mar 1985, July 1985, Nov 1985, Jan 1986, Apr 1986, Jun 1986, Aug 1986, Nov 1986, Feb 1987, May 1987, August 1987 (cumulative document).
- X3J3/S10 Presentation of Fortran 8X historical documents – Architecture and core, May 1985.
- X3J3/S11 Official prepublication comments and acknowledgements, August 1987.
- X3J3/S12 Public review comments and acknowledgements (cumulative document, to appear).
- X3J3/S13 Formal public review comment responses (to appear).
- X3J3/S14 Annual ISO/TC97/SC22/WG5 resolutions and X3J3 resulting actions, August 1987.
- X3J3/S15 Summary of X3J3 membership policies and procedures, August 1987.

28.2 Working documents

- X3J3/200 Minutes of meeting 102, Nov 1986.
- X3J3/201 Supplement to minutes of meeting 102 (part 1).
- X3J3/202 Supplement to minutes of meeting 102 (part 2).

- X3J3/203 Second X3J3 letter ballot, (Dec 1 1986 – Jan 5 1987)

- X3J3/204 Minutes of meeting 103, Feb and Mar 1987.
- X3J3/205 Supplement to minutes of meeting 103 (part 1).
- X3J3/206 Supplement to minutes of meeting 103 (part 2).

- X3J3/208 Minutes of meeting 104, May 1987.

X3J3/211 – Minutes of meeting 105

- X3J3/209 Supplement to minutes of meeting 104 (part 1).
X3J3/210 Supplement to minutes of meeting 104 (part 2).
- X3J3/211 Minutes of meeting 105, August 1987.
X3J3/212 Supplement to minutes of meeting 105 (part 1).
X3J3/213 Supplement to minutes of meeting 105 (part 2).
- X3J3/214 Minutes of ISO/TC97/SC22/WG5 meeting, Liverpool (forthcoming).

29 Committee organization

Officers (Required by SD-2)

Appointed by SMC

Chair: Jeanne Adams

Vice Chair: Jerry Wagener

International Representative: Andrew Johnson

Appointed by Chair

Secretary: John Reid

Vocabulary: Kurt Hirschert

Officers (Designated by Chair)

Technical Work and Language Integration: Walt Brainerd

Editor: Lloyd Campbell

Librarian: Neldon Marshall

Appointed by ANSI

Convenor, ISO/TC97/SC22/WG5: Jeanne Martin

Standing Assignments

Public Review--Data Base Coordinator: Ivor Phillips

Public Review--Standing Documents--Pre-review and Review: Carl Burch

News, Information, Meetings, Conferences: Brian Smith

Public Relations, Consultant: Loren Meissner

Liaison Assignments

Graphics: Jerry Wagener

ACM--SIGNUM: Brian Smith

ACM: Jeanne Adams, Jerry Wagener

Dept of Energy Language Working Group: Alex Marusak

X3T5 Open Systems: Carl Burch

Data Base: Murray Freeman

BCS Fortran Group: Miles Ellis

Array Processing, Consultant: George Paul

Standing Subgroups

Subgroup 12 Fortran 77 Issues and Interpretations

Johnson (Chair), Harris (Asst. Chair), Hirschert, Matheny, Campbell

Subgroup 13 Editorial

Campbell (Chair), Metcalf (Asst. Chair), Brainerd, Hoover, Marshall, Reid

Subgroup 14 Public Review Processing

Burch(Chair), Phillips (Asst. Chair), Adams, Schenk, Smith,
Wagener, J. Martin

Technical Subgroups

Subgroup 20 General Concepts

Sections 1, 2, 3, 7, 14, Appendices A, B, C, F

Hendrickson (Chair), Smith (Asst. Chair), Adamczyk, Anderson, Crowley,
Lakhwara, Marusak, Johnson

Subgroup 21 Data Concepts

Sections 4, 5, 6 Appendices C, F

Ragan (Chair), Schonfelder (Asst. Chair), Moss, Millard, Gridley,
Sund, Paul, Rolison, Weaver

Subgroup 22 Control Structures and I/O

Sections 8, 9, 10 Appendices C, F

Matheny (Chair), Freeman (Asst. Chair), Allison, Bowe, B. Martin,
Lauson, Swift, Tait.

Subgroup 23 Procedures and Program Units

Sections 11, 12, 13 Appendices C, F

Hirschert (Chair), Wilson (Asst. Chair), Harris, Ellis, Phillimore,
Thompson, Wearing, Weaver.

30 Assignments for the November meeting

S8 Audit

Subgroup 20	Fortran 77 Sections 1, 2, 3, 6, 7, 17, 18
Subgroup 21	Fortran 77 Sections 4, 5, 8, 9, 10
Subgroup 22	Fortran 77 Sections 12, 13
Subgroup 23	Fortran 77 Sections 11, 14, 15, 16

Assignments made by Subgroup Heads in Subgroup Meetings

Special Assignments

Provide input on ISO 2375, 8824, and 8825	Miles Ellis, Mike Metcalf
Evaluate and Review the Organization and Titles in the Section Notes	Tracy Hoover
Evaluate the input from S9	Jim Matheny

Assignments for Distributions

Preparation and Pre-meeting Distribution Continuing Assignment beginning in 1980	Dick Hendrickson, Cray Research
Preparation and Distribution of Minutes Continuing Assignment as Secretary, 1980-1986	Jeanne Martin, LLL
Preparation of Minutes Assignment as Secretary, beginning 1987	John Reid, Harwell
Distribution of the May Minutes	Jeanne Martin, LLL
Distribution of the August Minutes	Jeanne Martin, LLL
Distribution of the November Minutes	Ivor Phillips, Boeing

Note: Distribution of Minutes will be rotated among the members. A suggested order will be placed in the November Distribution.

31 Membership information

X3J3 Meeting Attendance			Meeting #	99	00	01	02	03	04	05
X3J3 Principal Members			Location	PA	NY	NS	NM	CA	WA	UK
Name	Affiliation	Phone	Date	04	06	08	11	02	05	08
-----	-----	-----		86	86	86	86	87	87	87
Adamczyk, J. S.	Adv. Comp. Tech.	(201) 549-7788		P	V	A	V	V	V	A
Adams, J. C.	NCAR	(303) 497-1275		V	V	V	V	V	V	V
Allison, R.	Harris	(305) 974-1700					V	V	V	A
Bowe, V.	Unisys	(215) 648-4088			V	V	V	V	V	R
Brainerd, W. S.	Univ. New Mexico	(505) 275-0800		A	V	X	V	V	1	V
Burch, C. D.	Hewlett Packard	(408) 447-5783		R	V	V	V	V	V	V
Campbell, L. W.		(301) 272-3771		V	V	V	V	V	V	A
Crowley, T. R.	CSP Inc.	(617) 272-6020		V	V	V	A	V	A*	A2
Ellis, T. M. R.	Oxford	44 865 249808				P	V	V	V	V
Freeman, M. F.	Bell Comm.	(201) 699-2272		V	V	V	V	A	A*	X*
Gridley, C.	Masscomp	(617) 692-6200						P	V	V
Harris, K. W.	DEC	(603) 881-2039		V	V	V	V	V	V	V
Hendrickson, R. A.	Cray	(612) 681-5804		V	V	A	V	V	V	V
Hirschert, K. W.	Univ. Illinois	(217) 333-8093		V	V	V	V	V	V	V
Hoover, T. A.	Data General	(617) 870-6257			P	V	V	V	V	V
Johnson, E. A.	Prime	(617) 879-2960	x4045	V	V	R	V	V	V	V
Lakhwara, A. K.	Peritus	(408) 725-0882		V	V	A	V	V	A	V
Marshall, N. H.	EG&G	(208) 526-9342		V	A	V	V	V	V	V
Martin, B. A.	Grumman	(516) 753-1426		R	V	V	V	R	V	A
Martin, J. T.	Livermore	(415) 422-3753		V	V	V	V	V	V	V
Marusak, A.	Los Alamos	(505) 667-6440		A	V	V	V	V	V	V
Matheny, J. H.	CSC	(213) 375-5940		V	V	V	V	V	V	V
Metcalfe, M.	Carn	41 22 83 4427		V	V	V	V	V	V	V
Millard, G. E.	Edinburgh	44 31 225 6262		V	A	V	R	A	V	R
Moss, L. J.	SLAC	(415) 854-3300	x3370	V	R	V	R	V	R	V
Phillips, I. R.	Boeing	(206) 865-3522		V	V	V	V	V	V	V
Phillimore, D.	Gould	(305) 587-2900							V	A
Ragan, R. R.	CDC	(408) 744-5833							V	V
Reid, J. K.	Harwell	011 44 235 24141	x2320	V	V	V	V	V	V	V
Schenk, W.		(716) 385-8500		A	V	V	A	V	A*	X*
Schonfelder, J. L.	Liverpool	44 51 709 6022	x2954	V	A	V	V	V	R	V
Smith, B. T.	Argonne	(312) 972-7232		V	V	V	V	V	V	V
Swift, R. C.	Alliant	(617) 486-4950		P	V	V	V	A	V	A*
Thompson, B. L.	Concurrent	(201) 758-7289		V	V	V	V	A	V	A*
Wagener, J. L.	Share/Amoco	(918) 660-3978		V	V	V	V	V	V	V
Wearing, A.	NCC							P	V	A
Weaver, R. W.	IBM	(408) 463-2956/3088		V	V	V	V	V	V	V
Wilson, A.	ICL	44 1 788 7272	x3025	V	V	V	V	V	A	A*

V present and voting
 R absent but represented
 A absent and not represented
 P present but not voting
 X excused absence
 * on provisional status at end of meeting
 1 present at 103.5 only
 2 membership terminated at end of meeting

X3J3/211 - Minutes of meeting 105

X3J3 Meeting Attendance			Meeting #	99	00	01	02	03	04	05
X3J3 Alternate Members			Location	PA	NY	NS	NM	CA	WA	UK
			Date	04	06	08	11	02	05	08
				86	86	86	86	87	87	87
Name	Principal Member	Phone								
----	-----	-----								
Anderson, S.L.	Phillips, I.R.	(206) 865-3595								P
Bagwell, J.T.	Matheny, J.H.									
Bircher, C.	Burch, C.D.				V					
Blevins, J.	Lakhwara, A.K.									
Boike, P.	Hendrickson, R.A.				P					
Brutman, N.	Thompson, B.L.	(201) 870-5844				P				
Bungarner, L.	Ragan, R.R.	(408) 744-5622			V			V		
Ciminski, D.M.	Bowe, V. G.	(612) 635-2094								
Drake, M.	Adams, J.C.	(303) 491-7017								
Engle, J.T.	Martin, J.T.									
Fasel, J.	Marusak, A.	(505) 667-7158								
Flanders, P.	Wilson, A.									
Herington, D.A.	Hoover, T.A.	(919) 549-8421								
Horowitz, S.	Johnson, E.A.				V			P		
Ivey, J.L.	Marshall, N.H.									
Kirby, P.	Reid, J.K.									
Kraieski, M.	Phillimore, D.									
Lagassa, D.A.	Harris, K.W.									P
Lang, D.E.	Weaver, R.W.	(914) 463-0350								
Lauson, H.S.	Brainerd, W.S.							P	P	P
Leonard, W.	Allison, R.									V
Libassi, P.C.	Martin, B.A.				V				V	
Matthews, S.D.	Marshall, N.H.							P		
Morgan, J.S.	Schonfelder, J.L.									V
Muxworthy, D.T.	Millard, G.E.	44 31 667 1011 x4203				P	V			P
Olson, J.P.	Crowley, T.									V
Page, R.L.	Wagener, J.L.							P		
Rollson, L. R.	Bowe, V.	(612) 635-2293						P	P	P
Spicer, J.	Adamczyk, J.S.				P					V
Sund, S.	Moss, L.J.					V			V	
Surdi, M.	Weaver, R.W.									
Turner, P.K.	Johnson, E.A.				P					
Wallace, A.	Weaver, R.W.					V				
Williams, D.	Metcalf, M.				P					P

X3J3/211 - Minutes of meeting 105

X3J3 Ex-officio, Other

Name

Ampt, C.G.F.	consultant	Netherlands Standards Institute	
Clark, P.A.	consultant	British Computer Society	
Bourstin, C.	liaison	AFNOR	
Buckley, A.	liaison	ISO/WG5 (Canada)	hosted meeting #101
Dahlstrand, I.	liaison	ISO/WG5 (Sweden)	
Deucht, D.	liaison	ANSI X3H2 Database	
Ellis, D.	liaison	ISO/WG1 - PLIP	attended meeting #101
Feldman, S.I.	consultant	Bell Labs	attended meeting #100
Greenfield, M.N.	consultant	Honeywell	attended meeting #100
Holberton, F.E.	consultant		
Janko, K.	liaison	ISO/WG5 (Hungary)	
Kachurik, C.		X3 Secretariat	
Kan, T.	liaison	ISO/WG5 (Japan)	
Koblitz, W.	liaison	EWICS	
Kranendonk, A.	liaison	ISO/WG5 (Netherlands)	
La Plante, W.	liaison	ANSI X3 SPARC	
Lauer, J.E.	consultant		
Lauri, L.			
Mas, C.J.	liaison	ISO/WG5 (France)	
Meissner, L.P.	consultant	Univ. San Francisco	
Munchhausen, M.	liaison	ISO/WG5 (ECMA)	
Muxworthy, D.T.	liaison	ISO/WG5 (United Kingdom)	
Paul, G.	consultant	IBM	attended meetings 100, 101, 102, 103, 105
Phillips, G.		X3 Secretariat	
Pollicini, A.	liaison	ISO/WG5 (CEC)	
Rinehuls, W.		SPARC	
Rottauser, K-H	liaison	ISO/WG5 (West Germany)	
Schmitt, G.	liaison	ISO/WG5 (Austria)	
Schoenhut, J.			
Sparks, M. R.	liaison	ANSI X3H3 Graphics	
Snoek, J.A.N.	liaison	Netherlands	
Vickers, M.		National Bureau of Standards	
Weekly, G.	consultant		
Wilson, J.D.	liaison	British Comp. Soc.	attended meeting #101
Wu, Q-b	liaison	ISO/WG5 (China)	

visitors at meeting #105

Appleford, K.
 Galloway, P.
 Hatton, L.
 Kuroda, K.
 Ohwada, A.
 Pollicini, A.
 Tait, A.
 Ree, G.
 ter Haar, L.
 Tilbury, J.
 Wada, H.
 Webster, T.
 Yamamoto, K.

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X3J3/211 - Minutes of meeting 105

X3J3 Ex-officio, Other

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Ampt, C.G.F.	consultant	Netherlands Standards Institute	
Clark, P.A.	consultant	British Computer Society	
Bourstin, C.	liaison	AFNOR	
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Daucht, D.	liaison	ANSI X3H2 Database	
Ellis, D.	liaison	ISO/WG1 - PLIP	attended meeting #101
Feldman, S.I.	consultant	Bell Labs	attended meeting #100
Greenfield, M.N.	consultant	Honeywell	attended meeting #100
Holberton, F.E.	consultant		
Janko, K.	liaison	ISO/WG5 (Hungary)	
Kachurik, C.		X3 Secretariat	
Kan, T.	liaison	ISO/WG5 (Japan)	
Koblitz, W.	liaison	EWICS	
Kranendonk, A.	liaison	ISO/WG5 (Netherlands)	
La Plante, W.	liaison	ANSI X3 SPARC	
Lauer, J.E.	consultant		
Lauri, L.			
Mas, C.J.	liaison	ISO/WG5 (France)	
Meissner, L.P.	consultant	Univ. San Francisco	
Munchhausen, M.	liaison	ISO/WG5 (ECMA)	
Muxworthy, D.T.	liaison	ISO/WG5 (United Kingdom)	
Paul, G.	consultant	IBM	attended meetings 100, 101, 102, 103, 105
Phillips, G.		X3 Secretariat	
Pollicini, A.	liaison	ISO/WG5 (CEC)	
Rinehuls, W.		SPARC	
Rottauser, K-H	liaison	ISO/WG5 (West Germany)	
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Schoenhut, J.			
Sparks, M. R.	liaison	ANSI X3H3 Graphics	
Snoek, J.A.N.	liaison	Netherlands	
Vickers, M.		National Bureau of Standards	
Weekly, G.	consultant		
Wilson, J.D.	liaison	British Comp. Soc.	attended meeting #101
Wu, Q-b	liaison	ISO/WG5 (China)	

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