

Meeting of ISO/JTC1/SC22/WG5
Lund Technical University Lund, Sweden
24-28 June 1991

1. **Opening of the Meeting**

The meeting was opened on Monday, 24 June 1991 by the convenor, Jeanne Martin, who welcomed the delegates and thanked the host, Ingemar Dahlstrand.

2. **Agenda**

A provisional agenda had been circulated as N701. This had contained presentations on Internationalization by Dick Weaver and Compiler Directives by Rich Kelble. These sections will be omitted in their absence and they sent their apologies. The following papers were noted:

Possible Collateral standards:

A Standard Fortran Preprocessor? N717 Jeanne Martin

Future Fortran: add N713, N718, N722, N726.

With these changes, the agenda was adopted.

3. **Appointments**

The following appointments were made:

Jeanne Martin	Convenor
Bert Buckley	Vice Chair
	Chair for Possible Collateral standards
Mike Roth	Recording Secretary
Maureen Hoffert	Librarian
David Muxworthy	Drafting Committee
Jerry Wagener	Drafting Committee
Graham Warren	Drafting Committee
Hideo Wada	Drafting Committee
Karl-Heinz Rothhauser	Drafting Committee

4. **Progress**

It was reported that Fortran 90 became an International Standard on 3 February 1991 and will be published in the first week in August. It was confirmed that this was by unanimous vote, the Japanese vote having changed to Yes.

Jeanne Adams reported that a ballot is being held on whether this International Standard is to be adopted as the US standard. Meanwhile, Fortran 77 is an archival standard. The international name is Fortran.

5. **National Activity Reports**

The following National Activity Reports were presented:

N720	Canada	Graham Warren
N721	Germany	Karl-Heinz Rothhauser
N729	Japan	Hideo Wada
N723	UK	David Muxworthy
	USA	Ivor Philips

6. WG11 Liaison Report

Brian Meek presented overheads reproduced in N733, explaining the difference and relations between Remote Procedure Calls (N732), Common Language Independent Procedure Calling (N730 and N731), Language Compatible Arithmetic Standard (N707) and Common Language Independent Datatypes. He stressed the distinction between four levels: representational, operational, linguistic and abstract. He presented a list of datatype definitions considered by CLID, clarifying several meanings and distinctions. At first, this appeared too abstract, although Brian Meek stressed that this was at the linguistic level. The feeling of the meeting was that we need more at the operational level. In particular, Andrew Tait, while accepting that CLID is very important and that we need better liaison between WG11 and all language groups, asked 'How does this help me to pass data between languages?' It transpired that more work is required by WG11, for which it requires comments from all language groups. It requires both standards and bindings.

7. Other Standards Related to Fortran

Miles Ellis presented a report on WG20's internationalization activity. This is an ad hoc group on standards, but as yet it has had no meetings. Lawrie Schonfelder pointed out that the GKS binding is up for revision.

8. London Meeting

The minutes of the London Meeting, N704, were approved. It contained ten resolutions to which Jerry Wagener presented X3J3's responses. In fact, only the first resolution, L1, required a response. It was that X3J3 had performed the requested review of the transcription of changes into the draft document, corrected several errors and met the May 1 deadline. It was also noted that although Resolution L7 had anticipated a transfer of the SC22WG5 electronic mailing list from Gerhard Schmitt to David Muxworthy, this had not happened.

9. Varying Length Character String Module

Lawrie Schonfelder presented his latest draft, N700. A few comments have been received for this draft (eg N712) and it is being modified. The question was raised as to whether we should respond to the request from X3J3 in N699. A discussion of the long term strategy resulted in a suggestion to register a Committee Draft, being careful not to allow too hasty a progression to a Draft International Standard.

More detailed points on the string module were made in N697, presented by Jerry Wagener. Most of the points in it had already been accepted by Lawrie Schonfelder. Only two are substantive. Points 15 and 19 both concern REPLACE.

Point 19 was taken first. It proposed that the arguments of REPLACE should be (string, target, with), for example REPLACE (line, "allow", with = "allow any combination of"). In a straw vote, this was carried 19-0-0

Point 15 proposed making this procedure a function. A straw vote gave:

subroutine	0
function	17
both	1
undecided	2

This was accepted as applying to INSERT and REMOVE also.

A straw vote on whether PUTLINE should contain an underscore was carried 11-2-5. There was then a straw vote on whether to change the names of GET, PUT and PUT_LINE to READ-STRING, WRITE_STRING and WRITE_LINE. The vote gave 10-1-8 and this change was accepted.

It was also pointed out that although this module does not explicitly require garbage collection, it will obviously work more efficiently with it. Market pressure will bring this about.

10. Transition between Fortran 77 and Fortran 90

Many forums have been arranged, but no tools are available. The future plans of many implementors were presented by Tom Lahey in N727.

11. Collateral Standards

For Item 16 in the agenda, Jeanne Martin relinquished the chair to Bert Buckley so that she could present N717 on the subject of a standard Fortran preprocessor.

12. Evaluation of the Development of Fortran 90

Can the method of development be improved? There was a lack of consensus. For example, Lawrie Schonfelder commented that there is a problem in producing one American Standard under ANSI rules and an international standard under ISO rules. Bert Buckley said that we need a management plan. When it was pointed out that we had one but that people who joined in the 80s were not fully aware of it, Jerry Wagener said this will happen again. Ivor Philips suggested shortening the revision period.

13. Relations between WG5 and X3J3 Ivor Philips N734

Ivor Philips presented slides on the future evolution of Fortran
(Scribed by Andrew Tait)

Martin: Only one public review before standard, ISO process requires at least two.

Philips: OK, but the plan is rigid with necessary flexibility.

- Pollicini: If we have to integrate public review comments, will the comments be weighted according to individual and national body origin?
- Philips: Don't know how to do it, but must be considered.
- Schonfelder: Process assumes continuous revision, should we be looking at alternatives? Would prefer the latter, public reviews are not a popularity contest, we should require technical comment on the document.
- Philips: If users don't want it they shouldn't have it.
- Adams: Public review could throw away the architecture.
- Philips: Must take users into account.
- Ellis: "Flexible Rigidity" can defeat the purpose of a clearly defined project. The public review must be limited to what is presented. First 18 months defines the project and then anything else must be delayed until the next revision.
- ISO rules require country votes and individuals don't impact the standard directly.
- Meek: National member body that does the work has a special position and I'd prefer them not to have this advantage.
- The gap of four years between reviews is too great.
- Philips: If the world has moved faster than the standard we delay new features until the next revision's architecture phase.
- Is WG5 willing to commit resources to develop a standard, we've already seen people who can't come to this meeting.
- Tait: IEEE procedures are very good, J3 needs to look at them.
- Adams: Some countries don't participate and still vote whether they really understand or not.
- Buckley: No votes from non-participants or participants must be justified.
- Schonfelder: We can disagree with the justifications and reject them.
- Pollicini: If we apply this scheme to the last revision we see that the Japanese requests for national characters would have been delayed until the next revision. I like this scheme.
- Philips: New members see the project plan.
- Warren: There were several uninformed no votes.

Ellis: Must assume that the national bodies follow technical advice. I disagree with Warren.

Warren: Could we put out the architecture for the revision once we've cut off the current one?

Philips: Do we hve any statistics on how countries vote: do things slide through?

Buckley: No.

Lahey: (Pause) US has signed up for an ISO standard. ANSI and X3 must agree on what J3 should do. Need to tackle the political issues and figure out what we want them to change in order to improve relations between WG5 and X3J3.

Philips: My proposal assumes we'll do this and I'm already talking to the appropriate people: no objections so far.

Recommend that the US body should do the technical development. I type projects facilitate this.

Meek: Could you tell us what other types of projects there are in X3?

Philips/Adams: D - development of technical content of a new domestic standard
M - archival, only maintenance
I - international
L - liaison(?)
R - revision

Meek: Explain L.

Philips/Adams: Don't really know without notes.

Schonfelder: I think it tracks projects outside the US.

Meek: I think all the OSI projects are L and there are no separate national projects and what is wrong with that as the relationship between WG5 and X3J3?

Philips: C++ is an I project.

Schonfelder: Its D and SC22 has asked that it be reclassified as I.

Philips: I don't know the details so I can't comment.

Meek: I don't disagree with your proposal, but none of the work should be a national project. The bulk of the work should be done in the US although some other countries might contribute.

Philips: I just don't know.

Warren: Can we get more information?

Philips: I'll send it out.

Schonfelder: If the marriage breaks down how is the reconciliation realized?

Philips: If the difference is not reconcilable then the work would be given to another organization.

Ellis: How many I projects are there?

Adams/Meek: CLID, CLIP, LCAS at least.

Rotthausen: Who decides whether a project becomes an I project?

Philips: X3.

Rotthausen: Can we ensure it would be an I project.

Philips: Make giving it conditional on becoming an I project.

Martin: Must have only one standard and the US Fortran (90) standard has a different name to the ISO standard.

Adams: That's why Fortran can't be an I project.

Muxworthy: What does it mean that the ISO and ANSI standards are the same?

Martin: US must take the ISO standard and make it an ANSI standard.

Muxworthy: In new scheme J3's activities are circumscribed, will this reduce corporate support?

Philips: Should get adequate support.

Meek: Politics delayed the change of C++ from D to I. If a D project gets to Committee Draft its too late to change.

If there is an unreconcilable difference you can always go back to a D type project. The procedure for doing this is a barrier.

Philips: This would only happen in extreme circumstances: we are going to make it work.

Schonfelder: Request to change C++ to I was a unanimous request from SC22 but there has been no response, much to SC22's dismay. The request was made in September 1990.

Philips: We are going to start as an I project and C++ is irrelevant.

- Ellis: Past history makes us nervous. ISO will revise Fortran and ANSI Fortran 90, will this prevent us from classifying it as an I project?
- Philips: Surely the process can be made to handle this. X3 will either accept it as an I project or they won't get it.
- Schonfelder: If WG5 decided not to revise Fortran would X3 institute a D project which it would push as a new ISO project?
- Adams: SPARC requires interpretations of US Fortran 90 and ISO Fortran to be the same.
- Schonfelder: This could be a disaster if, for example, some other country gets to maintain ISO Fortran and X3 maintains Fortran 90.
- Philips: We've made a sincere proposal to develop a revised standard.

14. **Procedures for handling clarifications, interpretations, corrections.**
(scribed by Miles Ellis)

There are two requests for clarification: N711 and N716.

- Philips: The US TAG believes that the same body should maintain Fortran 90 and develop the next standard.
- Schonfelder: ISO maintenance is by corrigenda. The U.S. does not do this - it only makes interpretations.
- Martin: C Does not follow this approach. The rules have changed.
- Adams: X3 rules allow Addenda.
- Schonfelder: SPARC have refused to allow maintenance of the U.S. Fortran 90 to be an I project. SC22 should be asked to strongly urge that the U.S. take on the responsibility for maintenance by producing a *single* document under ISO rules - which could also be published as a U.S. document as necessary.
- Philips: I agree. It must be done as a single ISO project.
- Martin: Some requests will go to X3J3, others will go to WG5. Mechanisms must be established to ensure that all requests are forwarded to a single body.
- Schonfelder: There could be other routes as well - BSI, AFNOR, DIN, etc.
- Lahey: We should ask Ivor [Philips] to liaise with X3 to attempt to resolve these difficulties.
- Wagener: SC22 should ask X3 to make maintenance an I project.

- Philips: We should try diplomatic means first. I will speak to the Boeing representative on X3.
- Schonfelder: We have established that the text of the two documents is identical, after the initial roman numbered pages. Therefore a single corrigendum is possible.
- Straw Vote 1: Do you support the concept that the expertise of X3J3 does the clarifications, interpretations and corrections? 16-0-3
- Lahey: Delegation must mean delegation - not ping-pong!
- Meek: I agree. However, I suggest that X3J3 appoints a subcommittee to deal with maintenance. This would report to X3J3 for review and then to WG5.
- Ellis: If we delegate the work to X3J3 we should not then tell them how to do it.
- Sraw Vote 2: Do you agree with the concept that WG5 delegate the responsibility for clarifications, interpretations and corrections to the US National Body? 18-1-2
- Adams: I voted NO because X3J3 voted not to accept maintenance without also having the responsibility for revision.
- Philips: Since there is no revision process yet this is OK. If in the future the revision process was not delegated to the U.S. then the U.S. would feel that the maintenance should also go to the revising body.
- Martin: There is an International Standard, but there is no U.S. standard at this time. WG5 has received requests for interpretation, and we must do something.
- Lahey: **I will take on the responsibility of acknowledging requests and passing them on to X3J3 - at least for the period until the next WG5 meeting.**
- Martin: Thank you.
- Philips: I offered to talk to X3/SPARC. Does WG5 still want me to do so and to attempt to get them to change their procedures so that X3J3 can be responsible for corrections, etc., to the International Fortran Standard.
- Tait: What were the procedures for Fortran 77?
- Martin: There weren't any.
- Buckley: So there were only interpretations, etc., for the U.S. Standard?
- Martin: Yes.

- Meek: I am against all this. If it goes near SPARC it will lead to problems. I believe that the whole maintenance problem (for all languages) will be discussed at length at the SC22 Plenary in September. I am happy to delegate Tom [Lahey], or to a named sub-committee such as all the members of X3J3, but I am against delegating to any body responsible to X3.
- Wagener: I am unhappy about asking X3 and SPARC to change their rules and procedures. I would prefer the straw vote to be concerned with how to do what we what.
- Lahey: I understood Ivor [Philips] to suggest a very informal approach.
- Philips: Yes.
- Straw Vote 3: Does this committee wish Ivor to contact X3/SPARC and attempt to persuade them to change their procedures so that X3J3 can be responsible for clarifications, interpretations and corrections of the Fortran standard? 5-8-8
- Straw vote 4: Accept Tom's offer to be responsible for collecting clarifications, interpretations and corrections until the next WG5 meeting? 18-1-1

15. **Possible new work items or collateral standards**

A straw vote was held: WG5 should not start a revision of technical work 21-0-0

What we are doing is maintaining Fortran90 and this is covered by the existing Work Item. There are a few specific technical items that could be written as modules in an addendum.

16. **Standards for Standards Brian Meek N610, N665**

Brian Meek presented a paper on Guidelines for the preparation of conformity clauses in programming language standards. He stressed that we should use references to language independent standards, such as the Language Compatible Arithmetic Standard (LCAS) and WG12 Technical Reports.

17. **Language Architecture Jeanne Adams**
(Scribed by Maureen Hoffert)

Jeanne Adams: Thinks some issues should be revisited such as core + modules; event handling; and obsolescent features

Andrew Tait: Asked what precisely does language architecture mean? Was this defined for Fortran 90? Was it well received? He is not enthusiastic about revisiting unsuccessful architectures.

Jerry Wagener: Ther is a potential problem: he drew an analogy: We think of a computer not as a single device, but instead as a network. Some ways this is similar to Fortran. It is a network of Fortran language standards which is like an organism that comprises Fortran but is more than just that standard. This network of standards is growing quite quickly. Can we bring order out of chaos? When we think of architecture, we must think of a Fortran related world outside of the single Fortran standard. We could consider how to have a directory of standards available; how to do bindings. Architecture is more that just the Fortran standard, it is more extended.

Lawrie Schonfelder: Already we have the core + modules but NOT the same as what the earlier architecture was. (The old architecture was rejected because it was not portable.) We have many bindings such as GKS, SQL, Phigs, etc. so anarchy is not too great. The nature of computing is changing quickly. Fortran 66 and FORTRAN 77 had the nature of the machine built into the language quite strongly. No longer is there only the model of a single CPU or processor with linear memory. With the ISO string module there is a new model which gives us the seeds of building a new paradigm into languages. We need to be longer term in our thinking.

Aurelio Pollicinni: There is a list of topics for the future evolution that can classified in terms of what is in the language issues; what is out of the language issues, such as inter-language communication, of the definition of the environment. The term "architecture" should investigate other language issues, such as features for distributed applications.

Graham Warren: Jerry's paper could be a framework for a management plan. We have interesting discussions without an end result. What is a tangible end result of such discussions?

Bert Buckley: When would Jerry like to discuss his paper (N710)?

Andrew Tait: We are in "violent" agreement that we need a mangement plan and we need to develop one now!!

Bert Buckley: Let us put on the agenda a new item "Management Plan"

(Discussion was disbanded in favour of discussion Jerry's management plan.)

18. **Management Plan N710 Jerry Wagener**
(Scribed by David Muxworthy)

Wagener: The intent is to overview previous papers and concentrate minds on future development, looking at the middle level structure. The high level is 'why?', the low level is 'how?'. The model is to have

two collaborating committees, WG5 and X3J3 and to aim to control the work better than was done in the past. There is no specific time frame. WG5 should do the planning, X3J3 the development, in the style of 1984-88 when WG5 was not involved in technical details. We need to formalize the relationship between the committees by having resolutions and responses in both directions.

- Lahey: What is different from now?
- Wagener: Not much, except there is a more formal division between what and how. X3J3 should have strong representation on WG5.
- Schonfelder: Should not the formal framework be established via SC22?
- Wagener: I don't know. There would have to be generally understood and accepted rules.
- Schonfelder: The X3J3 representation on WG5 - would that be a subcommittee of WG5?
- Wagener: I envisage a group of three people acting as a subcommittee.
- Pollicini: (to Lahey) There would be almost no difference from now except that there would be a formal status from the beginning.
- Rotthaeuser: Would X3J3 work under the control of WG5? Could it work on items not specified by WG5?
- Wagener: The model is that there should be an International Standard and every national standard is a pointer to the international standard. X3J3 would develop the details.
- Tait: The purpose of the management plan is that if the plan is executed, we will have a standard. What is not addressed is the administration of the plan. WG5 does not have sufficient authority for this so the plan must be in the work item proposal. Then if the work is delegated to X3J3, X3 cannot interfere. Similarly, WG5 cannot change the rules, all the constituent organizations (SC22, WG5, X3, X3J3) have to accept this.
- As for X3J3 representation on WG5, people may have difficulty getting permission to participate. Funding for X3J3 will be relatively easy to obtain, but not for WG5. That should be clearly understood.
- Muxworthy: I am unhappy about paragraph 4.1. We have to be clear that input from the US is on the same basis as that from other countries.
- Adams: If X3J3 is going to accept this we have to be cooperative, not adversarial over the details of the delegation.

- Hoffert: This is a good plan. I suggest we take it as the starting point and ask national bodies to revise it for a meeting to be held in March 1992.
- Martin: Jerry said WG5 should not do any editing work. But WG5 is required to answer ballot comments. Would this be delegated to X3J3? There is a problem here.
- There is a resolution to WG5 from X3J3 in paper WG5/N699 so the two-way resolution mechanism is already in existence.
- Buckley: I would like to ask Andrew about the commitment of X3J3 people to this plan.
- Tait: I am not sure that the funding organizations will support attendance at WG5.
- On Maureen's proposal: we should get a subcommittee of X3J3 to do this. I don't like the idea of a meeting in March 1992. Canada wanted this work to start at the London meeting in March 1991.
- Lahey: The liaison between WG5 and X3J3 needs clarification. If the work is delegated, I don't see the need for X3J3 delegates to WG5. Why do they need to be special? WG5 needs one individual to liaise with X3J3.
- Schonfelder: The key issue is the what/how division and if the formal arrangements can be made to hold. For example in Paris WG5 defined the content of the standard exactly and X3J3 added to it. In future X3J3 cannot add or subtract unilaterally, it must ask permission. It must accept that it is working on an international standard.
- Ellis: Jerry's paper is a good framework. Any commercial organization provides a good model for project planning and implementation. The what/how, WG5/X3J3 relationship must be accepted all round if it is going to work. X3J3 has a good mix of management and technical people.
- I don't like the idea of a March 1992 meeting and twelve months is a long time to wait. We have to set up a mechanism to proceed faster. I like the idea of a subcommittee.
- Meek: I am unhappy at the paper. It assumes the next Fortran will be developed in basically the same way as before. I disagree with the statement that X3J3 should have strong representation on WG5. X3J3 has always been well represented on WG5 in the past and it clearly did not work: things only started coming together when WG5 began getting strongly represented on X3J3, and that's the way it should be here.

X3 I-type projects do not work in the way envisaged in this paper. In the US, CLID was changed to an I-type project and all that happened was that the editor, instead of having to maintain two versions of the document, now only has to maintain one. As a result, the work is not delegated to X3T2, the decisions are made by WG11. X3T2 discusses the document but acts as a WG11 TAG.

There is the possibility of smaller projects or a full revision. Smaller projects do not need to be done in the way outlined in the paper. We have not yet realized what a profound change of attitude is needed in the US for an I-type project. We should not delegate the entire project, but should delegate certain duties. It has to be understood that people on X3J3 would be there as WG5 workers, not as US members. Can we do this if we use the model in N710?

WG5 has never met in the USA. WG11 has sometimes met alongside X3T2, most recently in Monterey. Each met separately for some of the time, and there were also joint technical sessions. This worked extremely well. There should be two WG5 meetings a year, including a joint WG5/X3J3 meeting.

- Lahey: I endorse the Hoffert-Buckley-Ellis plan. The main question is how the liaison is organized. I would like a straw vote on whether we can set up a subcommittee to develop N710 into an acceptable plan.
- Martin: We need a resolution on N710 and a subcommittee to meet and produce a firm proposal for the July 1992 meeting. Jerry proposes not having an X3J3 meeting in February or March so the subgroup could meet then, for financial reasons. That could be put in the resolution.
- Wagener: I envisage that the X3J3 representation on WG5, for instance the X3J3 chair and vice-chair, would not be considered part of the US delegation and so not be required to support the US position.
- Philips: That could be against X3 rules.
- Schonfelder: If it is, X3 is in breach of ISO rules. All members of working groups are individual experts.
- Ellis: I am not happy with all of N710, but it is a start. I support Jeanne (M)'s proposal. We need to have a plan to review at the next meeting.
- Schonfelder: A vote for the paper should not necessarily imply a major revision. We should regard the paper as a starting point for formalizing the relationship between WG5 and any national body, and it should therefore be independent of country. For this reason I am for the subcommittee but against the detail of N710.

- Tait: Brian raises an interesting point. WG5 could delegate to members who are members of one national body. We could think about that, and also think about delegating to more than one national body. We should not plunge headlong into the plan as it stands.
- Lahey: The straw vote is not an endorsement of N710, but of the use of it as a starting point.
- Straw Vote: Can we seek people to move N710 forward to the next step?: 16-1-3.
- Buckley: The subcommittee must be small and give world-wide representation. Who is willing to participate in this committee? The following raised their hands: Buckley, Ellis, Hoffert, Lahey, Martin, Muxworthy, Philips, Rotthaeuser, Schonfelder, Tait, Wagener.

19. **Resolutions N736a David Muxworthy**

The resolutions in N736a were discussed one at a time, making minor corrections. In response to a suggestion to add the words 'relating to IS 1539' to Resolution D8, after 'national Fortran Standards', there was a straw vote to leave D8 as is 18-2-2

While discussing D12, there was a straw vote that we should not have D12 and D13, separately or together, as resolutions 6-3-12. Brian Meek expressed his dissatisfaction with this result. After further discussion, there was another straw vote to replace the two bullets in D12 with 'WG5 notes that these standardization activities could affect Fortran standardization and would welcome comments from WG5 members and SC22 member bodies regarding the effects of these activities on Fortran.' and relace D13 with D3 14-0-5

20. **The string module revisited - the replace function.**

Straw vote: Should the replace function have the optional logical arguments all and back? 17-0-0

This allows this function to replace every occurrence of a given string and also to search backwards.

21. **Resolutions N736b David Muxworthy**

Straw vote: Are you in favour of D4 13-1-5

There was some discussion of Resolution D11, prompting several straw votes:

1. Do we delete 'with ... membership' from the first bullet? 9-6-5
2. Change it to 'with as broad representation from the WG5 membership as possible' 10-3-6
3. Add 'if necessary' in bullet 4 after 'meet' 10-1-7
4. Repeat of 2. 12-4-3

5. D11 with both these items changed 20-0-0

A straw vote on D15 gave 3-16-0

The standard set of appreciation resolutions are also to be added.

22. **Parallelism Ivor Philips N737**

Ivor Philips presented a comparison between the parallel proposals X3H5, Linda and the Force, with mention also of Schedule, Strand, and Refined Fortran.

23. **Management Plan N710**

There was continued discussion on how to progress based on N710. It was suggested that this would be mostly by e-mail. Ivor Philips offered to set up a mailbox for this purpose. Discussion continued on how to reduce the size of the subcommittee, for example to one representative from each member country. Each country then went into caucus to select a representative as follows:

Jeanne Martin	chair
Bert Buckley	Canada
Karl-Heinz Rothhauser	Germany
Hideo Wada	Japan
Lawrie Schonfelder	UK
Ivor Philips	USA
Jerry Wagener	X3J3

24. **Object Oriented Functionality Jerry Wagener N738**

Jerry Wagener presented his paper on Object Oriented Functionality. He said that Data Abstraction is the most important subset of Object Oriented Functionality, and that Fortran 90 provides full Data Abstraction even if it does not provide full Object Oriented Functionality.

25. **Future meetings**

27-31 July 1992 Victoria, Canada
perhaps 1993 Berlin, Germany

26. **Resolutions N736d**

There was continued discussion of L1, objecting to the method of confirming the position of the convenor.

Do we need another resolution to deal with a wish list? Straw Vote: Add to L11: To start this process, WG5 requests National Member Bodies to provide 'starter' lists of requirements for consideration at the July 1992 WG5 meeting 10-5-4. As a result of further discussion, this was withdrawn. Straw Vote: In L11, change 'provisions' to 'position' 3-10-5

27. Adoption of Resolutions

The official votes were:	Country	Individual
L1	5-0-1	19-0-3
L2	5-0-1	21-0-1
L3	6-0-0	22-0-0
L4	6-0-0	22-0-0
L5	6-0-0	22-0-0
L6	6-0-0	22-0-0
L7	6-0-0	21-0-1
L8	6-0-0	21-1-0
L9	6-0-0	21-1-0
L10	6-0-0	20-0-1
L11	6-0-0	21-1-0
L12	6-0-0	21-1-0
L13-15 Unanimous		

28. Mechanisms for removing features

Straw vote: Establish a level of conformance for Fortran 90 that does not include obsolescent features 11-4-3

Straw vote: Should we begin working on a significant list of decremental features 14-3-0

29. Interlanguage communication

There was concern expressed about our relationship with WG11. Currently, the liaison is through Brian Meek, who represents WG11 at WG5. Mike Roth suggested we should also have a representative of WG5 at WG11.

30. Lund Resolutions

L1 **WG5 Convenorship**

That WG5 appreciates the leadership of Jeanne Martin as convenor of the Working Group and expresses its wish to SC22 and to the US member body that she be reappointed for a further term.

L2. **Working Group Convenorships**

That WG5 requests SC22 to review the procedures for appointing convenors of its working groups and requests that these procedures allow for the inclusion of recommendations from the working groups.

L3 **Fortran 90 Publicity**

That WG5 urges all its members and member body Fortran committees and their parent committees to publicize further the content and use of the International Fortran Standard in their countries now that the standard has been approved.

L4 Language Independent Standards Review

That WG5 requests its members, and member body Fortran committees, to review as a matter of urgency the documents on Common Language Independent Data Types, Common Language Independent Procedure Calling Mechanisms and Language Compatible Arithmetic Standard, referenced in WG5/N733, with regard to their relationship to Fortran and to comment on them to national programming language committees, WG11 or SC22 secretariat as appropriate.

L5 Maintenance of the International Fortran Standard

That WG5 recommends that X3J3 be requested to accept the responsibility for maintaining, i.e. producing corrigenda for, the International Fortran Standard and requests SC22 to make the appropriate arrangements with the US member body.

Further that the WG5 convenor should appoint an individual member to serve as liaison between WG5 and X3J3, to record and acknowledge any requests for clarification, interpretation or correction of the International Fortran Standard, to forward them to X3J3 for processing, to record corresponding responses and to report them to WG5.

WG5 expresses its appreciation to Tom Lahey for volunteering to accept this responsibility until July 31, 1992.

L6 Maintenance of National Fortran Standards

That WG5 recommends to SC22 and all its member bodies that national Fortran standards be maintained solely via maintenance of the International Fortran Standard.

L7 Bindings to Fortran

That WG5 proposes to produce guidelines for other standards groups on bindings to the Fortran 90 language, assigns responsibility to the UK member body, appoints David Muxworthy as editor and requests that a first draft be provided to the convenor for circulation to WG5 by November 30, 1991.

L8 Varying String Module Processing

That WG5 requests Lawrie Schonfelder as 22.02.02 project editor to submit by September 30, 1991 a revised version of WG5/N700 to the WG5 convenor for circulation to WG5 with a letter ballot to authorize its submission to the SC22 secretariat for registration as a CD, the timing to be such that comments on the CD be available at the WG5 meeting to be held on July 27-31, 1992.

L9 Varying String Module Rationale

That WG5 requests the German member body, in collaboration with the project editor, to prepare the rationale for the varying string module requested in WG5/N699 and to forward it to the WG5 convenor by September 30, 1991. The convenor is to circulate the document to WG5.

L10 Technical Reports on Guidelines

That WG5 draws the attention of its members, and members of Fortran standard groups in national bodies, to the following technical reports:

- TR 10034 Guidelines for the preparation of conformity clauses in programming language standards (WG5/N610).
- TR10176 Guidelines for preparation of programming language standards (when published).
- TR 10182 Guidelines for language bindings (when published).

Further that WG5 would welcome reviews in relation to the future needs of Fortran development and discussion documents, position papers or proposals relating to the adoption of relevant guidelines in future Fortran standards activities.

L11 Study for Future Evolution

That WG5 records its intent to proceed with a study to determine the requirements for future evolution of Fortran standardization with the object of developing proposals for possible new work items on this topic by the July 1992, or the following, WG5 meeting. The study will take the provisions of JTC1/N1381 (WG5/N719) into account.

L12 Procedures for Future Development

That WG5, in order to progress discussion on the future evolution of Fortran prior to the WG5 meeting in July 1992, establishes the following procedures and schedule:

- a subgroup is appointed, consisting of the following members: Bert Buckley, Jeanne Martin (chair), Ivor Philips, Karl-Heinz Rotthausser, Lawrie Schonfelder, Hideo Wada and Jerry Wagener,
- to facilitate communication, Ivor Philips will establish an e-mail network for the subgroup,
- the subgroup is to develop, starting from WG5/N710 and taking into account other relevant WG5 papers, a management plan and procedures for the future evolution of Fortran standards, including procedures both for the development of the content of new work item proposals and the execution of the work item(s),
- members of WG5 are encouraged to make written contributions to the subgroup,
- the subgroup should meet if necessary before April 1992 to produce a draft plan,
- the draft plan should be circulated by the convenor for letter ballot by WG5 members so that the results are available at the July 1992 WG5 meeting.

L13 Appreciation of X3J3

That WG5 expresses its most sincere appreciation to X3J3 and its editor for completing the Fortran 90 document so that it could be forwarded to ISO Central Secretariat on the schedule established by WG5 resolution L1 of March 1991.

L14 Vote of Thanks for Support

That WG5 thanks the Swedish member body, Asea Brown Voveri AB and the University of Lund for generously supporting the meeting.

L15 Vote of Thanks

That WG5 wishes to express its appreciation to the Convenor (Jeanne Martin), the vice chair (Bert Buckley), the secretary (Mike Roth), the librarian (Maureen Hoffert), the drafting committee and the host (the Department of Computer Science of the Technical University of Lund) for their contributions to the success of the meeting.

Further that WG5 wishes especially to thank Ingemar Dahlstrand and Lena Dahlquist for their highly successful organization of the local arrangements and social events.

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4 December 1991