WG5 Business Plan and Convener's Report to ISO/IEC JTC1/SC22 1997 Plenary

PERIOD COVERED BY THIS REPORT: August 1996 – July 1997

SUBMITTED BY: Convener of ISO/IEC JTC1/SC22/WG5
(Dr. Miles Ellis, Director: Educational Technology Resources Centre, University of Oxford, 37 Wellington Square, Oxford OX1 2JF, England. Phone: +44 1865 270528, Fax: +44 1865 270527, Email: Miles.Ellis@etrc.ox.ac.uk)

1 MANAGEMENT SUMMARY

1.1 JTC1/SC22/WG5 Statement of Scope

The development and maintenance of ISO/IEC Fortran programming language standards.

1.2 Project Report

Additional information concerning WG5's current projects is annexed as WG5 N1286.

1.2.1 Completed Projects

22.02.01.01 Programming Language Fortran – Part 1: Base Language
The DIS ballot for this Standard ended in February 1997. There were several minor comments accompanying YES votes, and a NO vote from France on the grounds that the French title (created by ITTF) was incorrect. This issue has been resolved and the final text was submitted to ITTF for publication in June 1997.

1.2.2 Projects Underway

22.02.01.02 Type 2 TR on Floating Point Exception Handling in Fortran
The concurrent Registration and PDTR Approval ballots for this project ended in March 1997. Despite the unanimous approval an error was subsequently discovered which slightly delayed subsequent progress. The draft DTR was submitted to SC22 for its DTR ballot in July 1997.

22.02.01.03 Type 2 TR on Interoperability between Fortran and C
This has proved more complex than anticipated. However a draft PDTR was submitted for concurrent Registration and Approval ballots in April 1997; the ballots will end on September 11, 1997.

22.02.01.04 Type 2 TR on Enhanced Data Type Facilities in Fortran
The concurrent Registration and PDTR Approval ballots for this project ended in March 1997. There were a number of minor comments which have now been processed. The draft DTR was submitted to SC22 for its DTR ballot in July 1997.

22.02.02 Programming Language Fortran – Part 2: Varying length character strings
The non-normative annexe of this Standard is being revised to take advantage of the facilities of Fortran 95. However, work on the revision has identified certain difficulties which are currently being resolved. It is hoped to have a draft CD ready for balloting later this year.

22.02.03 Programming Language Fortran – Part 3: Conditional Compilation
A draft CD will be submitted for combined Registration and Approval ballots later this year.

1.2.3 Cancelled Projects

None

1.2.4 Cooperation and Competition

WG5 cooperates closely with the ANSI NCITS/J3 Fortran Technical Committee, to whom it has delegated the technical development of Fortran 2000 as well as the maintenance of Fortran 95 (IS 1539-1:1997). There is also close contact with the industry-driven High Performance Fortran Consortium, with many members of the HPF Consortium also being members of J3 and/or WG5. Many of those responsible for the development of commercial Fortran compilers are members of J3 and/or WG5.

Other important liaisons are those with IFIP WG2.5 (Numerical Software) and ISO/IEC JTC1/SC22/WG20 (Internationalization).

There are no competitive activities.

2 PERIOD REVIEW

2.1 Market Requirements

Fortran is still the language of choice for the majority of scientific and technological programming, although the damage caused by the long delay between Fortran 77 and Fortran 90 has still not been reversed. However there are now signs of growing use of Fortran 90, and the recent introduction of two commercial subsets designed for educational use (F from Imagine, Inc and Elf90 from Lahey Computing Systems, Inc) is generating increased interest in Fortran from the higher education sector.

This growth in interest, however, means that it is important that the development of the language can react quickly to market requirements, while still ensuring that the safeguards of

full international review are maintained. (Fortran is used by a community which expects that today's programs will still be running in 25 years' time, and there are unlikely to be any deletions from the language in the foreseeable future; any deletions that are proposed are subject, therefore, to extensive review and consultation.) In order to react effectively to new requirements without causing unacceptable delay to the processing of the main Standard, WG5 decided in 1995 to process certain high priority new features which were too late to be included in the Fortran 95 revision as Type 2 Technical Reports, with a guarantee that the feature would be incorporated unaltered in the next revision of the base Standard unless experience in implementation or use showed that a modification was necessary. The intent of this procedure was to encourage implementors to add these features to their compilers without waiting for the next revision of the main language Standard. Two such TRs, covering floating point exception handling and enhanced data types are about to be submitted for their final DTR approval ballots, while a third, concerning interoperability between Fortran and C, is currently in the process of being balloted for PDTR approval.

Another perceived market requirement is for a form of conditional compilation to simplify the transfer of programs between many platforms. This is being processed as an additional Part of the Fortran Standard, as it is not currently intended that it should be a requirement for all Standard-conforming compilers. It is expected that the draft CD will be submitted for its first approval ballot later this year.

WG5 has developed a database of requirements for future versions of Fortran during the last five years since the publication of Fortran 90, and this formed the basis of a year-long analysis of the features which should be added to the base language in the next revision, informally known as Fortran 2000.

Finally, it is worth noting that over 50% of the code in the widely used SPEC benchmark suite is written in Fortran.

2.2 Achievements

The latest revision of the base Fortran Standard has been approved and is currently awaiting publication.

At a joint meeting with ANSI NCITS/J3 in Las Vegas in February 1997, the proposed content of the next revision (Fortran 2000) was finalised.

2.3 Resources

As elsewhere in the Standardization world, it is becoming increasingly difficult to persuade employers to provide the necessary funding for Standards activity. Nevertheless, this has been a good year for WG5 with 38 people from seven countries attending the joint meeting with J3 in Las Vegas in February, and 25 people from seven countries attending WG5's regular meeting in Vienna in July. In addition members from other countries, notably France and Russia, are active in email discussions although unable to attend meetings.

3 FOCUS FOR NEXT WORK PERIOD

3.1 Deliverables

It is anticipated that the TRs on Floating point exception handling (PDTR 15580) and enhanced data types (PDTR 15581) will be approved by the end of 1997 or very shortly thereafter, while the TR on interoperability between Fortran and C (PDTR 15815) and the new part 3 of the Standard (Conditional Compilation) will, hopefully, be approved by the summer of 1998.

It is expected that the revision of IS 1539-2 (Varying length character strings) will proceed to Final CD stage during the next year.

3.2 Strategies

WG5 operates under a strategic plan described in WG5 Standing Document 4, whose latest revision is annexed to this report as WG5 N1287. In particular, the revision of the base Standard, IS 1539-1, is delegated to ANSI NCITS/J3 operating as WG5's Primary Development Body, while the other projects for which WG5 is responsible are handled by other Development Bodies which liaise with the Primary development Body as required.

3.2.1 Risks

As far as possible, WG5 tries to anticipate technical comments during international ballots by holding informal ballots of its members before any documents are submitted for ballot. Nevertheless, unexpected technical comments can always delay the planned schedule.

3.2.2 Opportunities

WG5 has made extensive use of email for over a decade to speed up technical development. Since 1995 most documents have been distributed via an official file server in the UK, with two mirror sites in the USA. A web site is also used to provide static and non-technical information. This system is currently being revised in accordance with the latest JTC1 guidelines.

In addition to speeding up the distribution of documents, the use of electronic distribution and communication systems also provides many other benefits, such as the ability to rapidly carry out informal ballots of the members for various reasons.

3.3 Work Program Priorities

Publication of the two TRs on Floating point exception handling (PDTR 15580) and enhanced data types (PDTR 15581) is our top priority for 1997-98.

Second priority is the publication of the third TR on interoperability between Fortran and C.

Third priority is the progression of Part 3 of the Standard (Conditional Compilation to Final CD stage.

4 OTHER ITEMS

4.1 Action Requested at Forthcoming SC22 Plenary

4.1.1 Project Editor for the Revision of ISO/IEC IS 1539-1:1997

WG5 requests SC22 to appoint Richard Maine (USA) as Project Editor for the revision of the base Fortran Standard – ISO/IEC IS 1539-1:1997. [Richard Maine was the Project Editor for the revision which produced the text of ISO/IEC IS 1539-1:1997]

4.1.2 Extension of Scope of Project 22.02.02

WG5 currently has approval to revise the non-normative annexe to ISO/IEC IS 1539-2:1994, which contains an example Fortran 90 module which could be used to implement the normative part of the Standard. During the preliminary work on this revision it has become apparent that it would be useful to make some minor revisions to the normative text of the Standard, and WG5 therefore requests SC22 to extend the scope of the project to allow revision of the normative text in addition to the non-normative text.

4.1.3 Simultaneous CD Registration and CD Approval Ballots for Revision of ISO/IEC IS 1539-2:1994

WG5 requests the approval of SC22 to carry out simultaneous registration and approval ballots for the forthcoming CD of the revised Part 2 of the Fortran Standard (ISO/IEC IS 1539-2)

4.2 Electronic Document Distribution

As noted above, WG5 plans to move to exclusive electronic distribution of all documents later in 1997, having been distributing in this form to almost all members since 1995.

In accordance with the recommendations of the JTC1 Ad Hoc Group on the Implementation of IT, WG5 will, at the same time, reorganise its document database so that documents can be accessed directly from the WG5 web pages, as well as directly from the ftp server. Appropriate access control mechanisms will also be introduced where necessary.

Subject to confirmation, the WG5 www and ftp servers will also move from their present locations to a new site – which also hosts the www and ftp servers for WG5's Primary Development Body (ANSI NCITS/J3).

4.3 Recent Meetings

1997/2/10-14	Las Vegas, USA	This was a joint meeting with ANSI NCITS/J3.
1997/7/21-25	Vienna, Austria	

4.4 Future Meetings

(Note that WG5 normally meets annually, with extra meetings being held as/when necessary to process ballot comments or other high priority activities which do not accord with the regular meeting schedule. WG5's Primary Development Body, ANSI NCITS/J3, meets quarterly. Other work is carried out via email.)

1998/6/8-12	Trollhättan, Sweden
1999	France or UK
2000	Finland
2001	UK (unless the UK hosts the 1999 meeting)

4.5 Annexed Documents

WG5 N1286 SC22 Project Information (WG5 Standing Document 3)

WG5 N1287 Strategic Plan for Fortran Standardization (WG5 Standing Document 4)