

British Computer Society Fortran Specialist Group AGM 2019

Open Discussion Q&A

1. Has the committee considered specification of the array element order, such as

```
real, ROWMAJOR :: a(100,10)
```

or

```
real, ORDER(3,1,2) :: a(100,1000,10)
```

Answer: No the committee has not, though it was discussed a bit in one of the subgroups. It could be interpreted as a local declaration as for dummy arguments and may allow the user to specify an optimization that cannot be anticipated by a compiler. However, little enthusiasm for the idea was expressed in the room.

It was asked whether there was a repository of requirements. The last WG5 one was N1679 in July 2007 and it was not developed for F2015/18. Recently J3 have been discussing on their mailing list "a running list of proposed features for Fortran 202y".

2. Have unsigned integers been considered?

Answer: Yes, they were proposed by USA for Fortran 2003, see WG5 N1189, June 1996, but were not included in the final choice of features, see WG5 N1259, Feb. 1997. They have not been proposed again since then—other features were always seen as more important. Some in the room expressed interest in order to interface better with a C program that uses them. It could be done with another kind of integer.

3. Should the standard include some physical constants such as pi (π)?

Answer: Those in the room said “no”. It is easy to specify it.

4. Might a BITS data type be adopted in F202y?

Answer: Yes, it might, but probably not.

5. Might exception handling be adopted in F202y?

Answer: Yes, it might, but probably not.

6. Generic programming came top of the desirable features in the survey conducted by Steve Lionel and is mentioned several times in the FSG survey by Anton Shterenlicht. What form will it take?

Answer: J3 has been given the task of looking at the alternatives.

7. The surveys made various comments about improved character string handling. To what extent was this subject considered?

Answer: Yes, some improvements have been adopted, see the talk of Nathan Sircombe.

8. In earlier revisions great efforts were made to make programs backwards-compatible. This seems to have gone by the board. Please comment.

Answer: With respect to previous standards, backward-compatibility is still taken very seriously and the incompatibilities have been very minor. However, significant changes have been made with respect to the features described in the TSs. This has thrown the whole concept of the TS into doubt. Vendors will be reluctant to incorporate TS features into their compilers until they become part of the next standard.

9. The Shterenlicht survey (also mentioned in the Lionel survey) illustrates very clearly that users have problems because different vendors are at different stages of implementation of the standards (even going back to F2003 in some cases). Moreover, new features can be buggy until processors mature. Is the committee sympathetic to this problem?

Answer: Yes, the committee is aware that the compiler writers need time to catch up, which is why it was decided to include only small features in the next revision. It was pointed out that as Flang develops as an integral part of the LLVM project it could provide a testing environment for new features that will be available to expose deficiencies before it is too late to correct them.

10. Should mathematical libraries and GPU facilities be integrated into the standard?

Answer: Mathematical libraries are working well and there is no need to integrate them. FFTW and BLAS already provide defacto standards and most compilers make linking to these trivial. Placing them in the standard would put additional burdens on the vendors. Vendors are beginning to use GPUs to optimize some constructs, for example do parallel loops, which is a more “future-proof way” to go.

11. Interoperability with Python was requested. Is this likely to be developed? (But is it even possible when Python has no formal Standard?)

Answer: Python processors are successfully calling Fortran codes.

12. Should visualization procedures be added to the Standard?

Answer: Those in the room said “no”. It would be a huge burden on vendors.