Date: 13 August 1998
To: J3
From: Van Snyder
Subject: Changes to polymorphic pointer assignment, argument association, and generic
           resolution

1   Rationale

Without SELECT TYPE, it was necessary to allow the declared type of a *target* in a pointer assignment to be an ancestor type of the declared type of the *pointer-object* in a pointer assignment, and wait until run-time to require that the *dynamic* type of the *target* is an extension type of the declared type of the *pointer-object*.

It was similarly necessary to do the same thing with the relation between actual and dummy arguments.

This had the unfortunate side-effect of requiring very restrictive rules for generic resolution.

This paper proposes to change the specifications of previous work concerning polymorphism to require that the *declared* type of the *target* or actual argument is an extension type of the declared type of the *pointer-object* or dummy argument, respectively. Given SELECT TYPE, this restriction does not prevent operations that would previously have been possible.

Once the restrictions on pointer assignment and argument association are sharpened, it is possible to reduce the restrictions on generic resolution.

The change has the effect of converting run-time errors that would be difficult for a Fortran program to detect into constraints, and of increasing the scope of applicability of generic procedures to extensible types.

2   Edits

Edits refer to 98-007r2. Page and line numbers are displayed in the margin. Absent other instructions, a page and line number or line number range implies all of the indicated text is to be replaced by immediately following text, while a page and line number followed by + indicates that immediately following text is to be inserted after the indicated line. Remarks for the editor are noted in the margin, or appear between [and] in the text.

Constraint: If *pointer-object* or *target* is polymorphic (5.1.1.8), the declared type of *target* shall be an extension type (4.5.3) of the declared type of *pointer-object*	[123:16-17]
[Editor: Delete.]	[123:45-46]
[Editor: Change "dynamic" to "declared".]	[225:41]
Data types are distinguishable if they are different types and, if they are extensible types, neither is an extension type of the other.	[305:33-34]