# Reinventing Two-Sided Communication in Fortran to Transmit Polymorphic Objects Between Images

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## 1  Motivation

As of the latest version of the Fortran standard ("Programming languages Fortran" 2023), there are a handful of constraints that prevent the effective use of polymorphic objects in coarrays. Specifically, it is not allowed to coindex an object which has any polymorphic components. There are reasons to want these restrictions for performance and memory management, but there are problems for which polymorphism is highly desirable. However, it is valid to use `co_broadcast` on objects with allocatable, polymorphic components. This paper describes a method of combining this feature with a novel use of the teams feature to re-derive a two-sided communication mechanism that is able to communicate polymorphic objects between images.

## References

"Programming languages Fortran." 2023. Standard. Vol. 2023. Geneva, CH: International Organization for Standardization.