Future Plans for the NAG Parallel Library

This document gives an indication of the future directions that the NAG Parallel Library is likely to take in forthcoming releases. No definite commitment to the plans should be assumed. Feedback from users on the plans would be most welcome.

1 Contents

The following additional areas will be covered in future releases of the NAG Parallel Library:

Summation of Series	–	Fast Fourier transform (FFT)
Partial Differential Equations	–	elliptic, parabolic, mesh-partitioning, mesh-generation
Surface Fitting	–	bicubic splines
Sparse Linear Algebra	–	eigenvalue problems, preconditioners

The coverage of existing chapters will also be extended, with priority being given to the inclusion of more ScaLAPACK routines, in particular for handling band and tridiagonal matrices, Black Box routines based upon ScaLAPACK and sparse matrix routines. There will also be utility routines which will assist users to dynamically load-balance the distribution of their data.

2 Design

The current release of the Library only allows one grid of logical processors to execute Library routines at any one time using the Library utility routines, but we aim to remove this restriction in the next release in order to allow the support of multigridding.

All 'global' input arguments must have the same values on each logical processor on entry to a library routine. Checking for these arguments involves some inter-processor communication overheads. To minimize such overheads, we plan to provide a mechanism which will allow the users to optionally disable the global argument checking.