NAG Numerical Routines

Quality, flexibility, robustness and correctness

These are the fundamental qualities of the NAG Library which make it globally renowned as the world's largest and most trusted numerical algorithm library available today.

It is inherently flexible and portable making it the one-stop solution for solving complex calculations or adding sophisticated mathematical and statistical functionality to applications.

With over 1,600 routines the NAG Library covers a wide range of mathematical and statistical areas including:

- Optimization – both local and global optimizers
- Linear, quadratic, integer and nonlinear programming and least squares problems
- Ordinary and partial differential equations, and mesh generation
- Curve and surface fitting and interpolation
- Solution of dense, banded and sparse linear equations and eigenvalue problems
- Random number generation
- Correlation and regression analysis
- Time series analysis

NAG Library products

- NAG C Library
- NAG Fortran Library
- NAG Library for SMP & multicore
- NAG Parallel Library
- NAG Toolbox for MATLAB
- Maple-NAG Connector

Prototype NAG Libraries

- NAG Library for .NET
- NAG Numerical Routines for GPUs

NAG Library is callable from:

C++/C#, Microsoft Excel, Java, Python, Labview, Octave, R, Visual Basic, VB .NET, Scilab

The NAG Engine

Underpinning each NAG Library product is the NAG Engine – an "algorithmic repository" which contains the kernel routines upon which the different NAG Library products are founded. Developing particular versions of the Library using the NAG Engine enables speedier development time and allows for bug fixes to be applied to the Library quickly and efficiently.

Key features

Mathematical and statistical functionality

NAG's collection of world-class numerical functions are organised into 47 Chapters, each devoted to a mathematical or statistical area. This makes algorithmic selection extremely easy.

Detailed documentation

Each function is accompanied by comprehensive documentation along with advice on selection of the best algorithm for your purposes and interpretation of the results returned.

Every function has an example program

Each NAG function has an example program to demonstrate how to access it by solving a sample problem. This template can then be easily adapted to reflect your specific problem and help you manage and analyse your data.

Quality assured

The validity of each function is tested on each of the machine ranges for which the Library is available. Only when an implementation satisfies our stringent accuracy requirements is it released. As a result you can rely on the proven correctness and reliability of the functions to give you the right answers.

nag® Results Matter. Trust NAG.

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↘ **Why should I use NAG Numerical Routines?**

Increased productivity

NAG Library functions, written by experts in their field, are renowned for correctness, reliability and robustness making them the perfect choice to solve your problem.

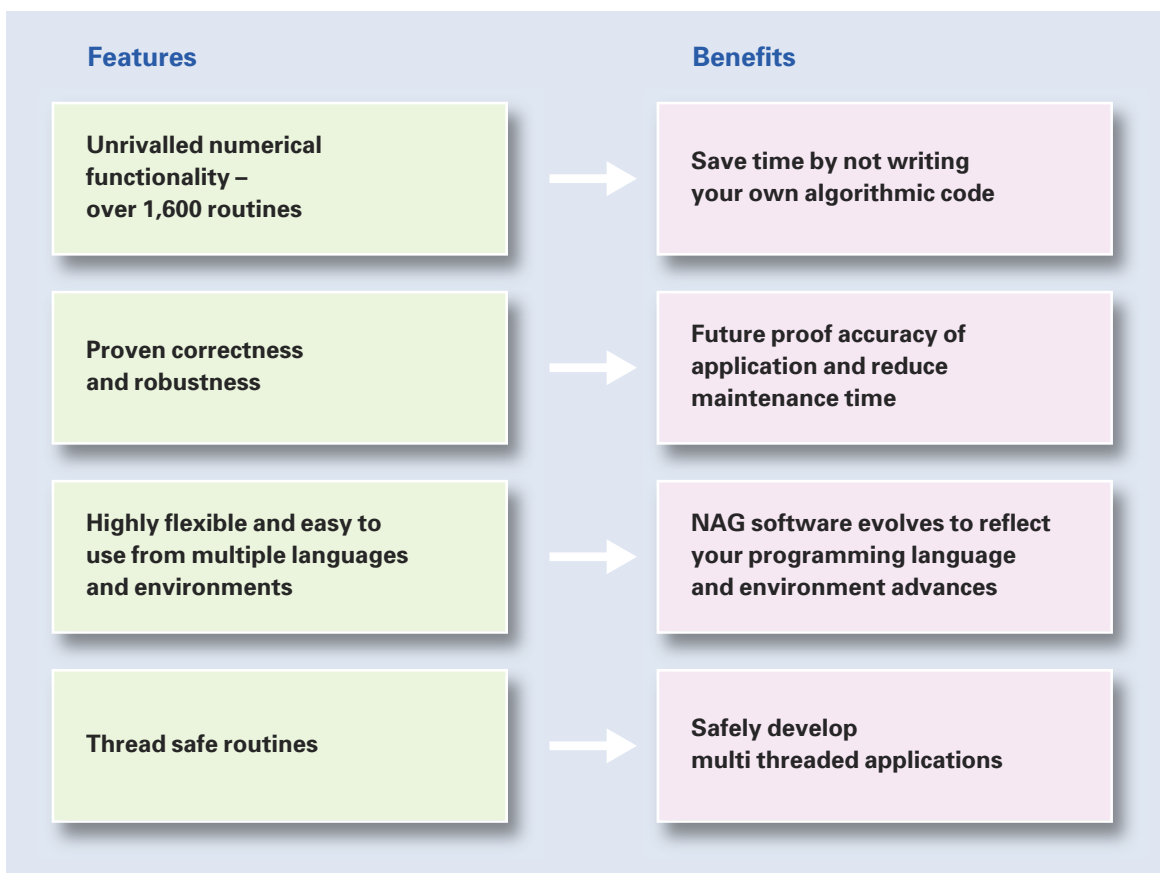### Safeguard and future-proof your application/work

By using NAG Library algorithms you cut key person dependency inherent if you choose to write your own code. The NAG Library is continually being updated and improved.

Detailed documentation

NAG's documentation is renowned for its detail. Included in each NAG Library function document is an example program giving users a template for adaptation to their own problems.

NAG's expert support service

By subscribing to NAG's dedicated in-house Customer Support Service not only will you receive product updates which includes new and improved algorithmic functionality, but you can contact NAG experts who will assist with your technical queries or difficulties.

Features	Benefits
Unrivalled numerical functionality – over 1,600 routines	→	**Save time by not writing your own algorithmic code**
Proven correctness and robustness	→	**Future proof accuracy of application and reduce maintenance time**
Highly flexible and easy to use from multiple languages and environments	→	**NAG software evolves to reflect your programming language and environment advances**
Thread safe routines	→	**Safely develop multi threaded applications**

↘ **Contact us**

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↘ **Product availability**

The NAG Library is available for: Linux, Microsoft Windows, Mac OS and many more, and is callable from multiple software packages, programming languages and development environments.

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