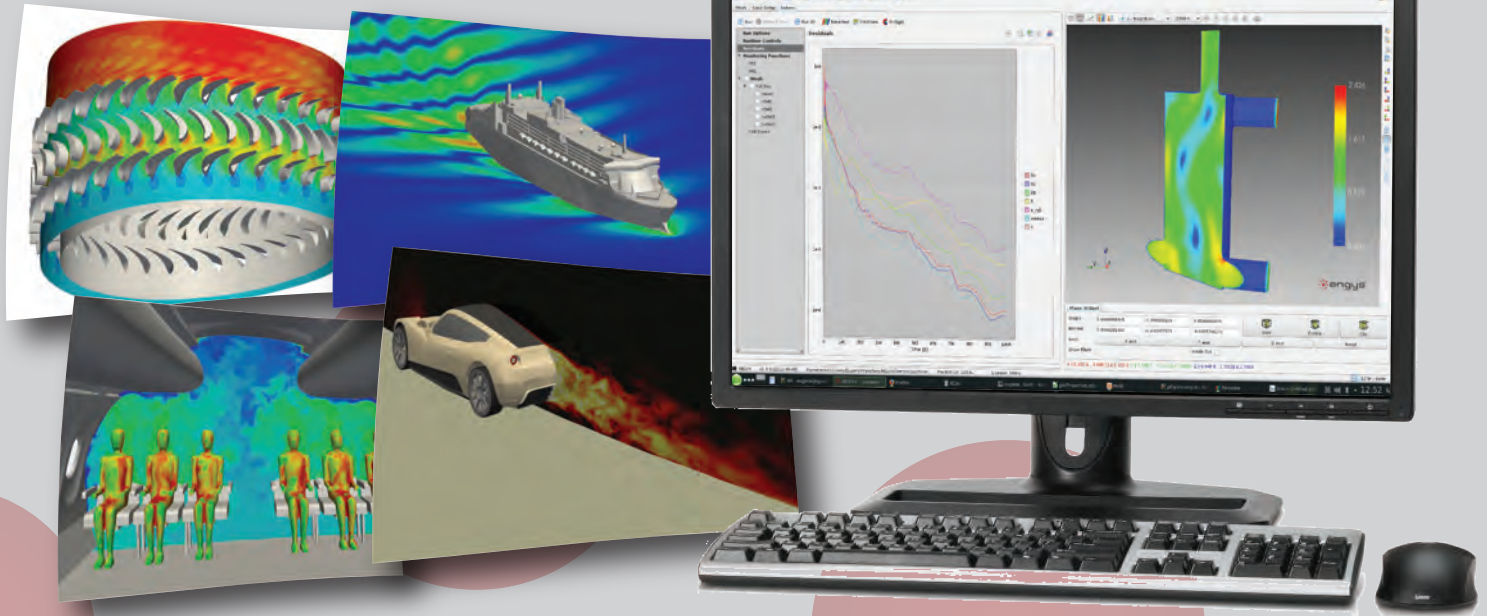


**Helyx**®

**Open-Source CFD  
for Professionals**



## What's in the Box?

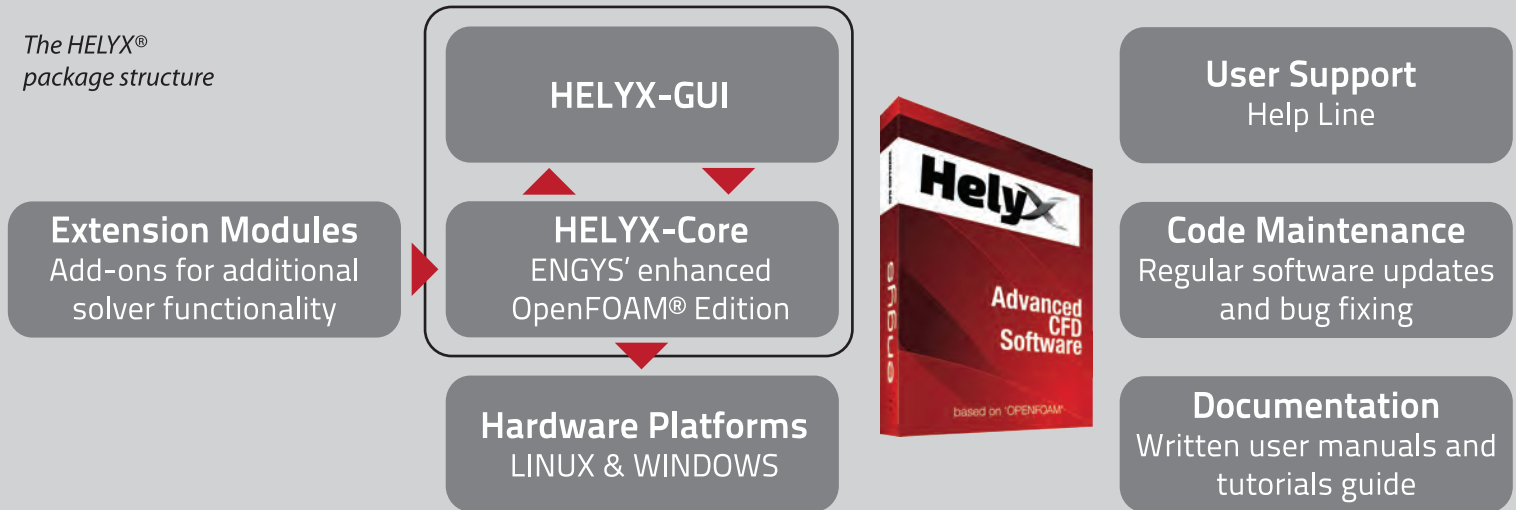
HELYX® is a comprehensive CFD package delivered on a per user basis, including the following components:

- **HELYX-GUI:** our native Graphical User Interface designed to simplify CFD meshing, case setup and solving
- **HELYX-Core:** our own enhanced and fully-validated version of the open-source CFD library OpenFOAM®
- **First-class Support:** help line for technical questions and installation queries
- **Code Maintenance:** dealing with all bugs and regular software updates
- **HELYX-Documentation:** comprehensive written user manual and tutorials

## Why choose HELYX®?

- **Cost-effective:** pay only for the number of CFD users, not for the number of solver executions or CPU usage
- **Highly scalable:** make the most of your hardware with our GPL utilities and solvers (no HPC license restrictions)
- **Easy to use and learn** with our dedicated Graphical User Interface
- Available in both **Windows and Linux**
- **Best-in-class support** for GUI and all open-source utilities and solvers
- **Maintained by experts** developing FOAM / OpenFOAM® since 1999
- **Flexible and customisable** via add-on modules (e.g coupled solvers, adjoint)

The HELYX®  
package structure



**“HELIX® combines the best of both worlds: the proven capabilities, support and reliability of commercial CFD tools with the inherent advantages of cost effective, scalable open-source solutions”**

The HELIX® package incorporates as standard the following software components for LINUX and WINDOWS platforms in one single installation file:

- **HELIX-GUI:** our Graphical User Interface
- **HELIX-Core:** our enhanced version of the open-source CFD library OpenFOAM®, including the visualisation tool ParaView

The software is complemented by a comprehensive set of support services to facilitate the deployment and usage of the tool in the working environment, including:

- **First-class Support:** help line for technical questions and installation queries
- **Code Maintenance:** dealing with all bugs and regular software updates
- **HELIX-Documentation:** comprehensive written user manuals and tutorials guide

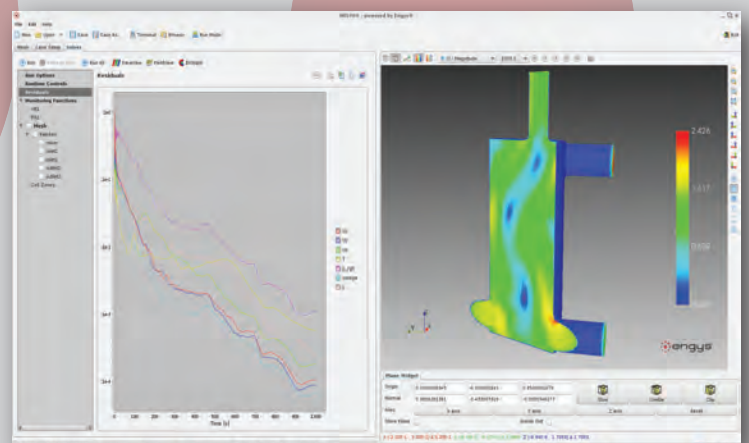
The open modular nature of HELIX® enables the collaboration with other experts around the world to bring additional solver capabilities through the addition of **Add-on Modules**. Some examples of specialised solvers available as extensions include: coupled solvers, adjoint optimization, ship hull hydrodynamic, advanced multi-phase, waves, etc.

## HELIX-GUI

HELIX-GUI has been developed in Java/VTK to provide a powerful graphical user interface to control the open-source CFD utilities and solvers delivered as part of HELIX-Core.

The GUI reads/writes the solver input files directly, meaning that no third-party files are used to save any data. All manual changes to the native text files are reflected back in the user interface when an existing case is loaded in the GUI.

The user can load an existing geometry, create a mesh, set up the case, execute the solver and monitor the solution in serial or parallel, all within an intuitive and easy-to-use fully interactive environment.



## HELIX-Core

HELIX-Core is ENGYS's own improved version of the open-source library OpenFOAM®. All our modifications and additions to the code are GPL and remain open-source for the benefit of the end-user.

ENGYS's enhancements to the OpenFOAM® code delivered as part of HELIX® comprise, but are not limited to:

- **LINUX and WINDOWS binaries** for simple out-of-the-box installation
- **Hex-dominant Meshing:** better parallel efficiency; fully-implicit capturing of feature edges; improved robustness and mesh quality; extended extrusion layer addition controls and quality; crack detection and automatic surface wapping; etc
- **Automatic Case Setup Utility:** single file text user interface (TUI) for case definition and scripting in both serial or parallel
- **Solvers:** improved robustness and accuracy; additional physical modelling (e.g. solar radiation, passive scalar transport, humidity transport, etc); native Infiniband support for efficient HPC execution
- **Turbulence:** new and improved models; additional near-wall treatments
- **Boundary Conditions:** over 50 new and improved boundary conditions
- **Function Objects:** over 20 new and improved function objects for execution at runtime; better solution monitoring and post-processing (e.g. data export, force analysis, human comfort , etc)
- **Parallel mapping** of solution fields between different mesh domains
- **Advanced add-on functionalities:** block coupled solver; continuous adjoint optimization; ship hull hydrodynamics; etc
- **Extensively tested and validated** across a wide range of application fields

## Support and Code Maintenance

HELIX® support is designed to provide first-class technical assistance for both HELIX-GUI and HELIX-Core, including help with installation and software usage. ENGYS also offers support for OpenFOAM® and other auxiliary open-source components as needed. In addition, ENGYS delivers regular software maintenance updates and bug fixes for all HELIX® components via our dedicated secure client login website.

## Documentation

HELIX® is provided with a comprehensive set of written documentation, including:

- User reference guide for HELIX-Core: for understanding the open-source CFD utilities and solvers available in HELIX®
- Tutorial guide for HELIX-GUI: practical hands-on reference guide to learn the main capabilities of the GUI
- Software release notes
- Installation instructions

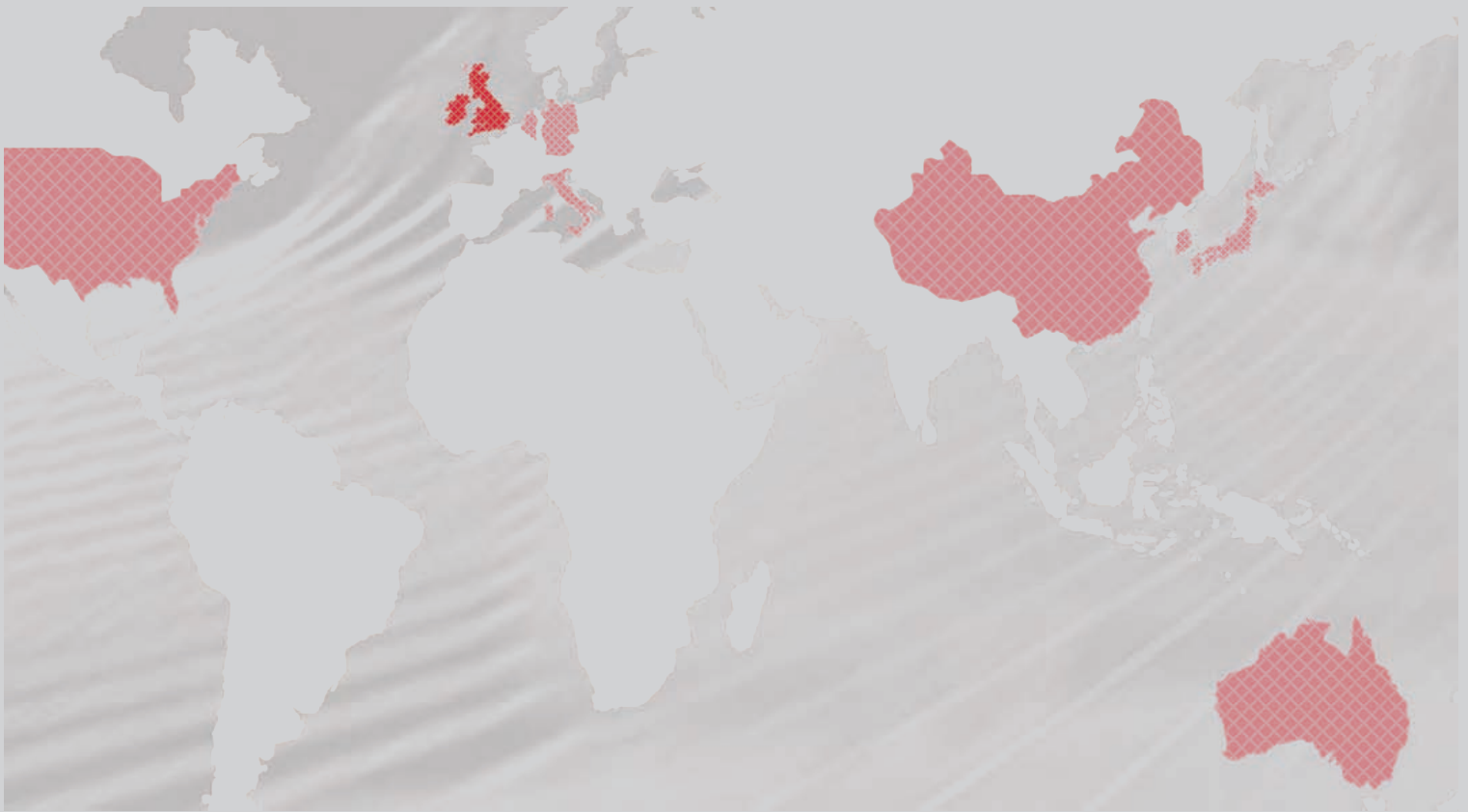
## Training

ENGYS provides training for HELIX® to facilitate the learning process and speed-up the use of the software in production. The courses are typically delivered at the customer's premises or ENGYS headquarters in London, UK.

## About ENGYS

ENGYS develops, supports and delivers best-in-class CAE software solutions for industry based on open-source technologies, with a main focus on CFD and optimisation.

The company operates globally through a network of offices in the UK, Germany, Italy, USA and Australia, and local distributors in Japan, South Korea, China, USA and Benelux.



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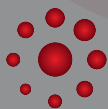
- **Dynaflow Research Group b.v.  
(Distributors Benelux)**

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