



The Market Leading Open-Source GUI for OpenFOAM®

# Introducing the new Version of the Open Source GUI HELYX-OS

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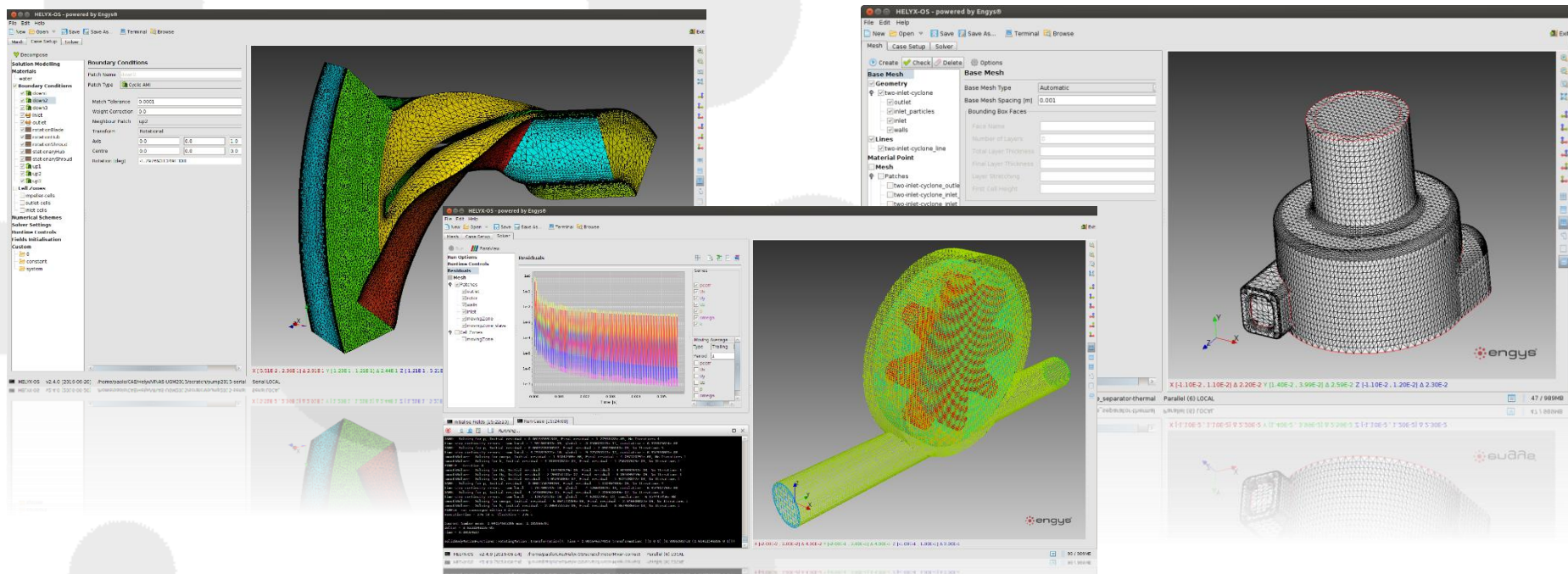
# Contents

- Introducing HELYX-OS
- Key Features v2.4.0
- Future Developments
- Live Demo



# HelyxOS | Introduction

- HELYX-OS is an open-source Graphical User Interface (GUI) for OpenFOAM<sup>®</sup> developed by ENGYS



OPENFOAM<sup>®</sup> is a registered trade mark of OpenCFD Limited, producer and distributor of the OpenFOAM software.

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- Development platform: Java+VTK
- Free to download via GitHub

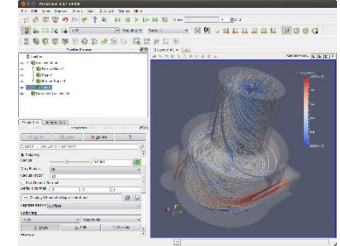
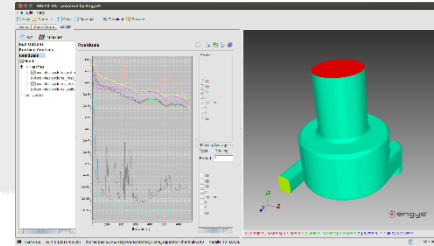
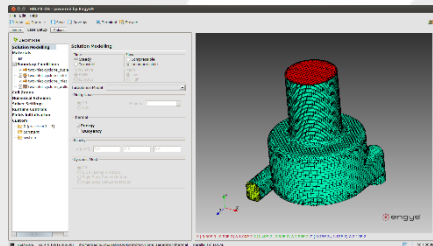
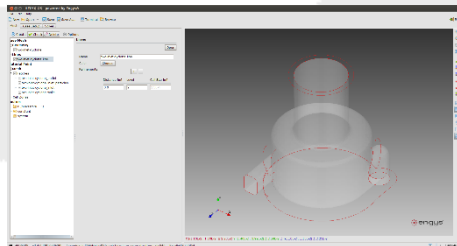
→ <http://engys.github.io/HELIX-OS/>

Mesh

CaseSetup

Run

Post-processing



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## General

- Support for OpenFOAM 3.0.x and OpenFOAM 3.0+
- New Cloud interface for Parallel.Works

## Mesh

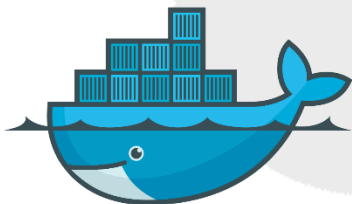
- New relaxed settings
- New default templates

## Case Setup

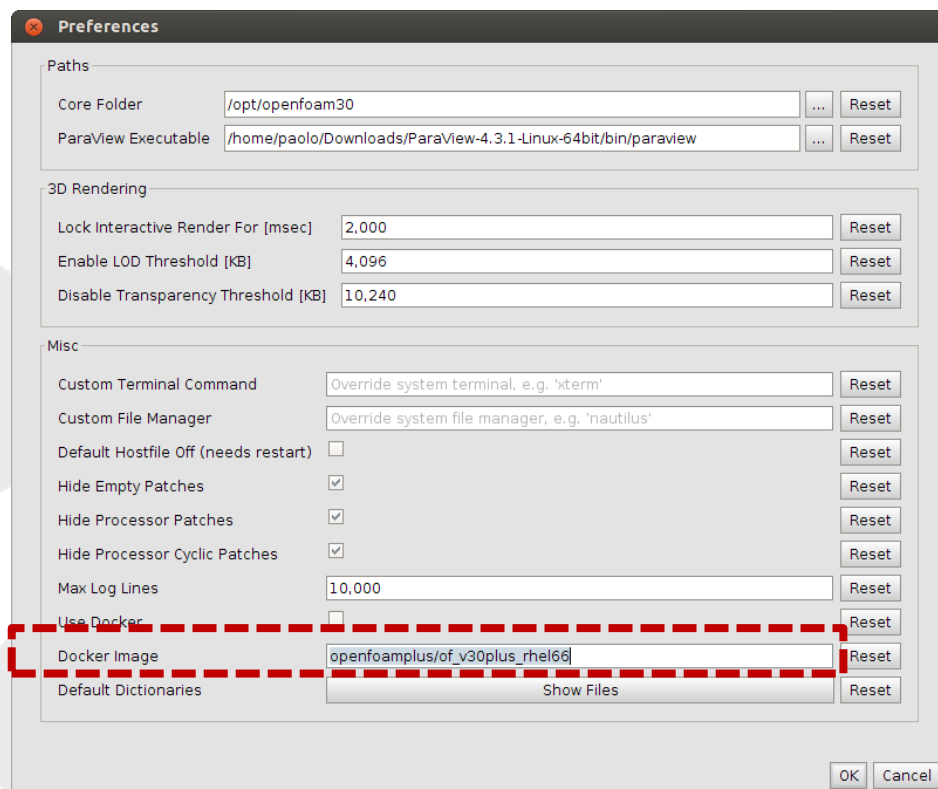
- Support for dynamic mesh motion solvers
- New potential flow initialization methods
- Enhanced solver best-practices

## OpenFOAM<sup>®</sup> Support

- v.3.0.x
- v3.0+
- Support for OpenFOAM<sup>®</sup> Docker images

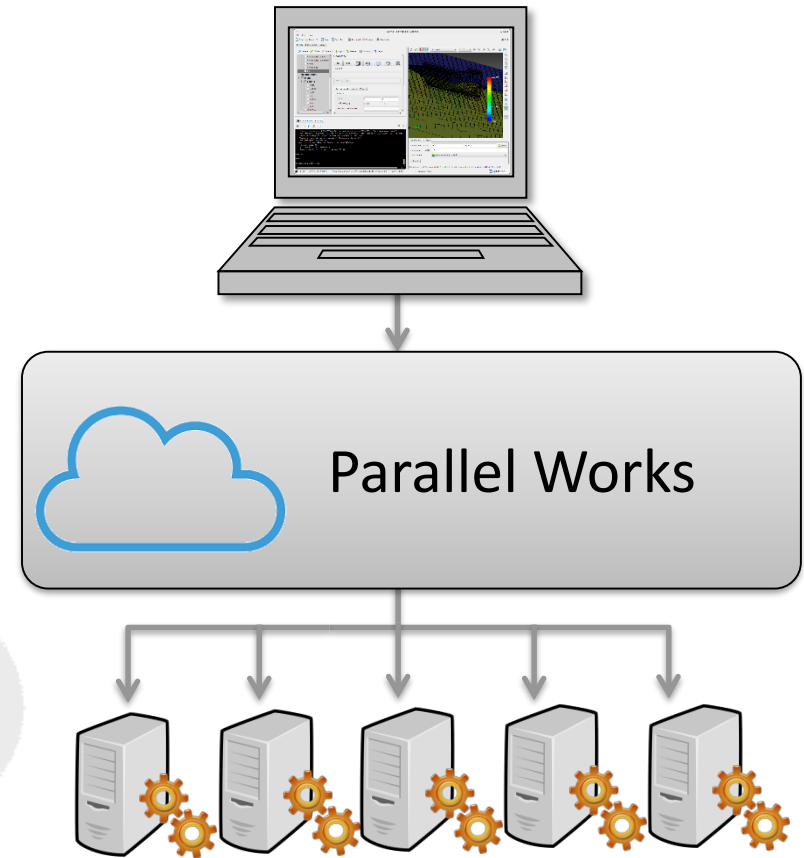


# docker



## Cloud Computing

- New interface for Parallel Works
- HPC on-demand services
- Secure data transfer
- Remote case execution
- Local and remote post-processing



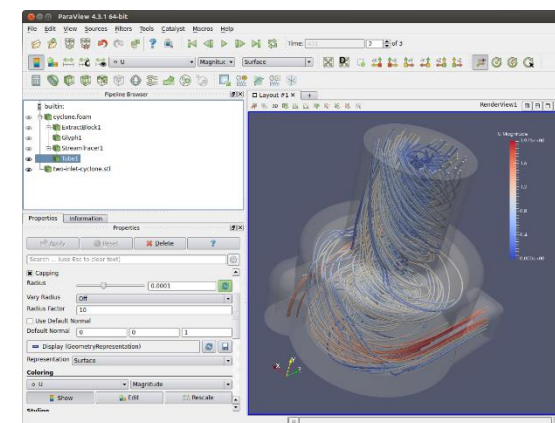
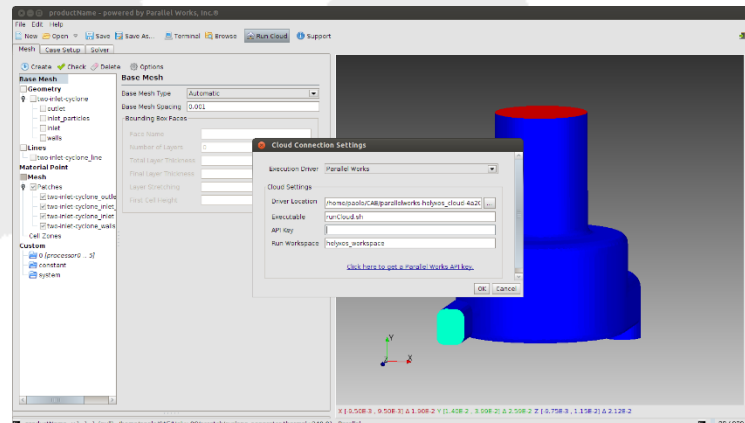
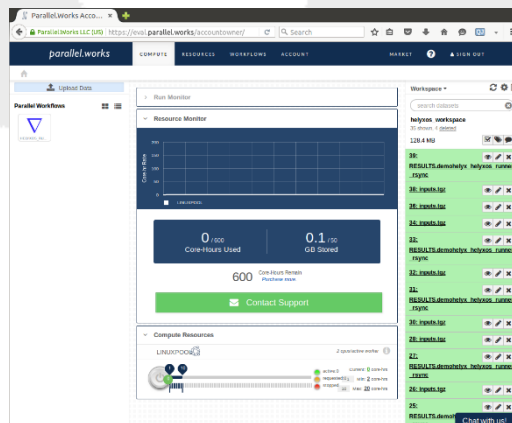
## Cloud Computing

- New interface for Parallel Works

Account Setup

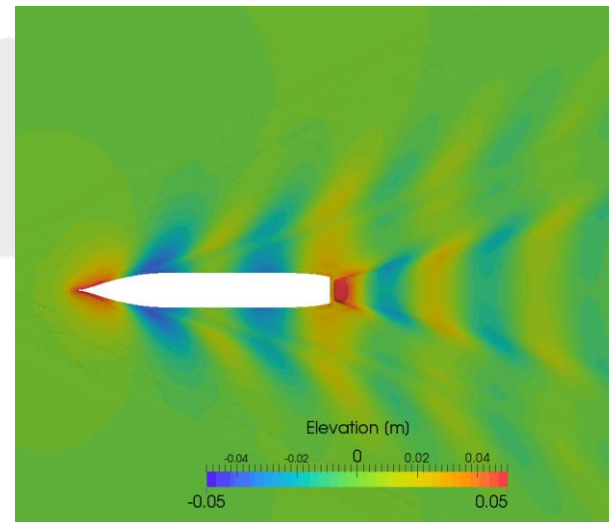
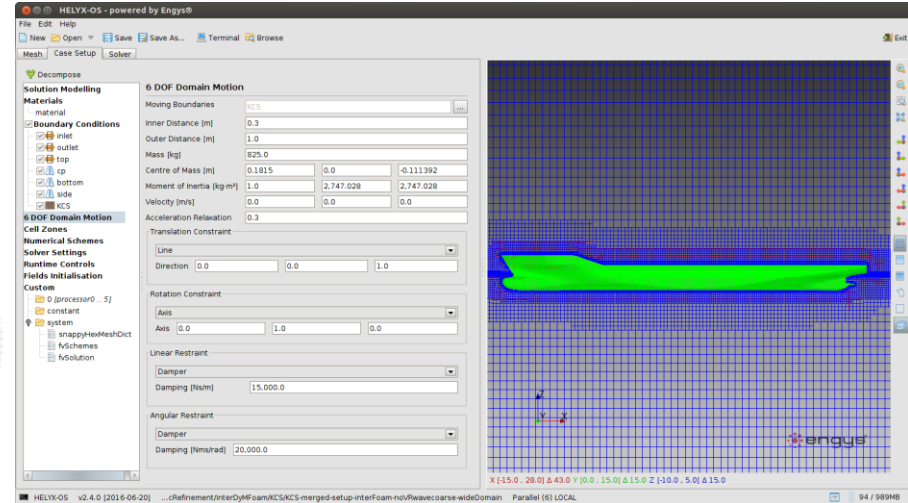
Case Creation and Run

Post-processing



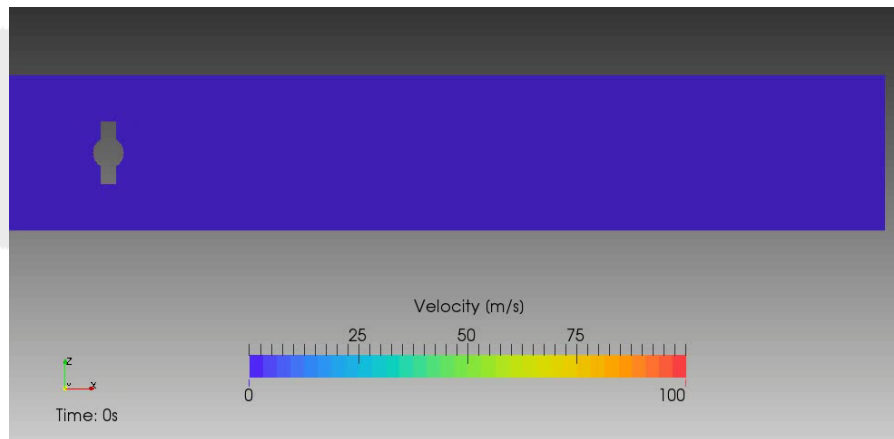
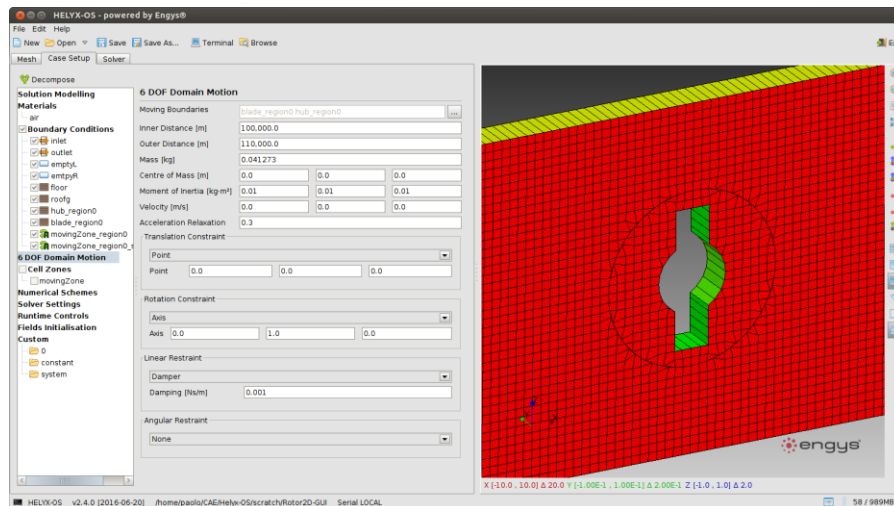
## Dynamic Solver Interface

- 6DOF Rigid Body Motion
- Multiphase applications
- Allows calculation of sinkage and trim for marine applications



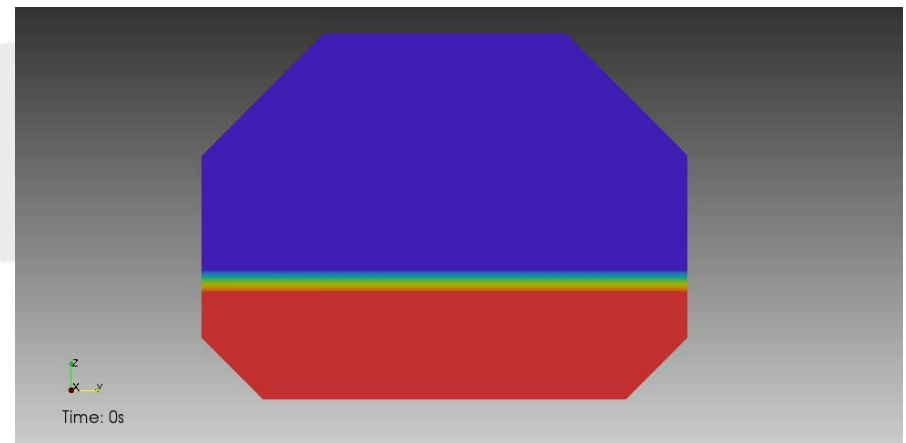
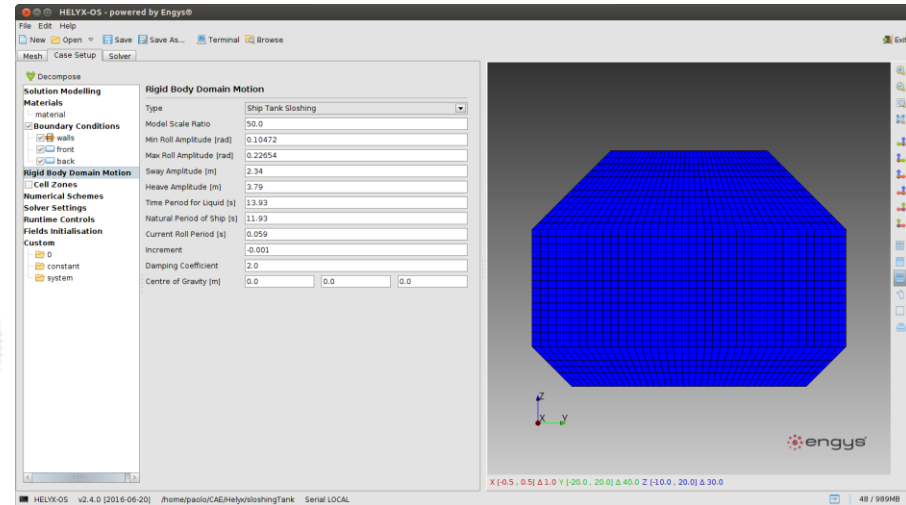
## Dynamic Solver Interface

- 6DOF Rigid Body Motion
- Single-phase applications, e.g. free-spinning rotor, turbines, etc.



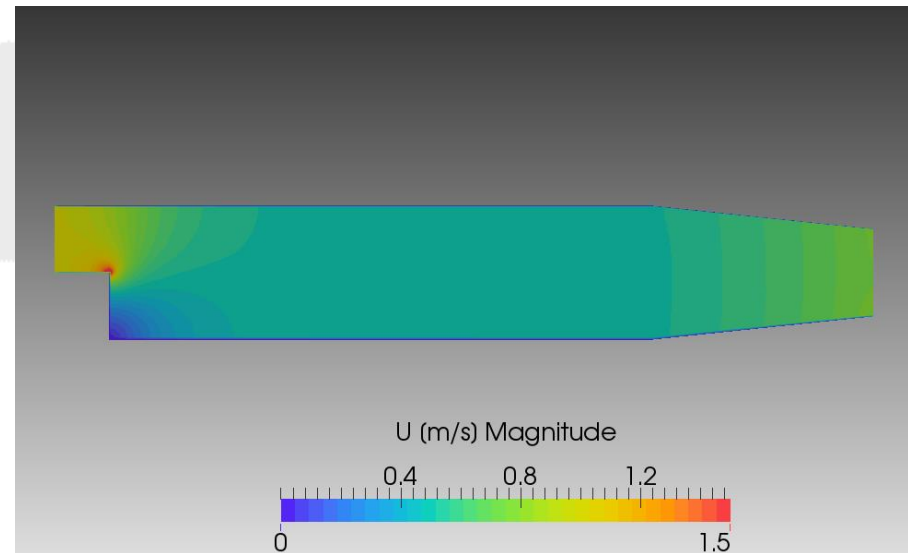
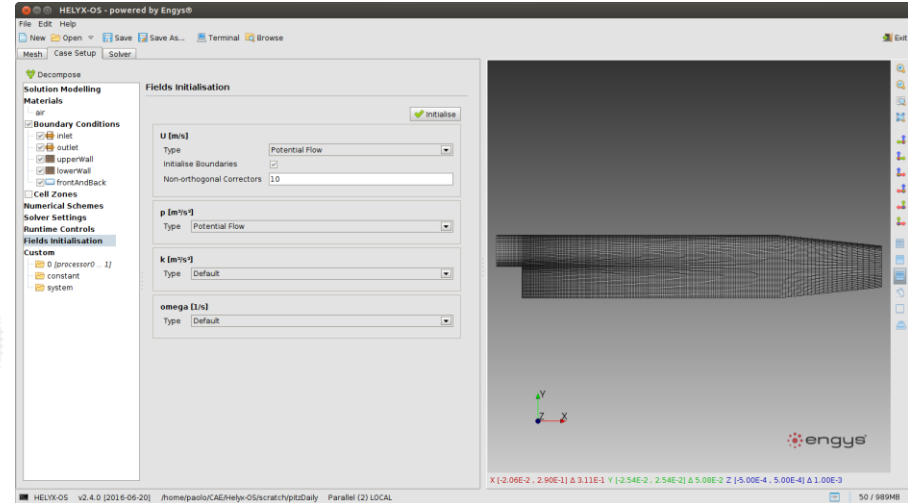
## Dynamic Solver Interface

- Ship Tank Sloshing
- Linear Motion
- Rotating Motion
- Axis Rotating Motion
- Oscillating Linear Motion
- Oscillating Rotating Motion



## Other Features

- Potential Flow initialisation method
- Enhanced best-practices for mesh and case setup



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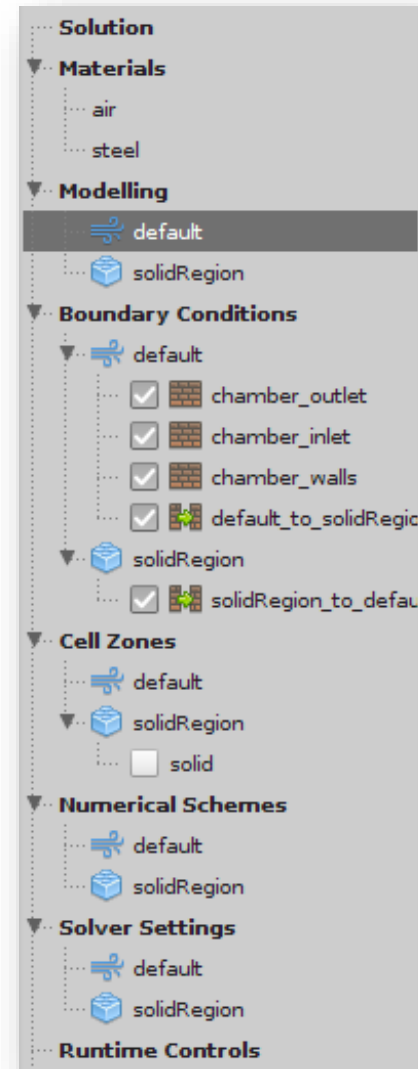
## Multi-Phase Euler-Euler Solver

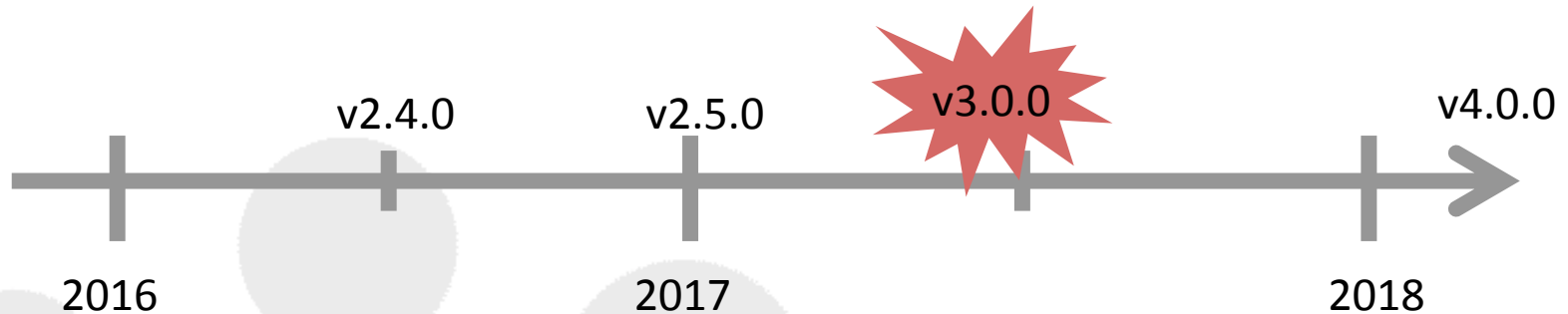
- Phases interface:
  - Diameter model
  - Sigma
  - Interface compression
  - Virtual Mass
  - Drag Model
- Multi-phase boundary conditions and fields initialisation



## Conjugate Heat Transfer (CHT) Solvers

- Full support in the GUI of ENGYS Coupled CHT solver
- Multi-region handling in the GUI
- Solid-fluid material library database





- v2.5.0:
  - Maintenance Release
- v3xx:
  - Multi-phase Euler-Euler
  - Support for Conjugate Heat Transfer (CHT) Solvers
  - New solvers

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# HelyxOS | Live Demo

The screenshot displays the HELYX-OS software interface, titled "HELIX-OS - powered by Engys®". The interface is divided into several sections:

- File Edit Help**: Standard menu options.
- Mesh Case Setup Solver**: Tabbed navigation options.
- Decompose**: A tree view showing the simulation setup, including:
  - Solution Modelling**:
    - Materials**: air
    - Boundary Conditions**: outlet, rotor, walls, inlet, movingZone, movingZone\_slave
    - Cell Zones**: movingZone
    - Numerical Schemes**
    - Solver Settings**
    - Runtime Controls**
    - Fields Initialisation**
    - Custom**: 0 [processor0 ... 5], constant, system
  - Solution Modelling**:
    - Time**:  Steady,  Transient
    - Flow**:  Compressible,  Incompressible
    - Turbulence**:  RANS,  LES/DES
    - Math**:  Low,  High
    - Turbulence Model**: Laminar
    - Multiphase**:  Off,  VOF (Phases: 1)
    - Thermal**:  Energy
    - Gravity**: g (m/s²) 0.0, 0.0, -9.81
    - Dynamic Mesh**:  Off,  6 DOF Domain Motion,  Rigid-Body Domain Motion,  Rigid-Body Cell-Zone Motion
- 3D Viewport**: A 3D model of a yellow rotor mixer. The Engys logo is visible in the bottom right corner of the viewport. The coordinate system is shown as X [-2.00E-2, 2.00E-2] Δ 4.00E-2, Y [-2.00E-1, 2.00E-1] Δ 4.00E-1, Z [-1.00E-1, 9.99E-2] Δ 2.00E-1.
- Bottom Status Bar**: HELYX-OS v2.4.0 [2016-06-20] /home/paolo/CAE/Helyx-OS/scratch/rotorMixer Parallel (6) LOCAL 56 / 989MB

