Nextflow
Studio

PRODUCT
Brochure

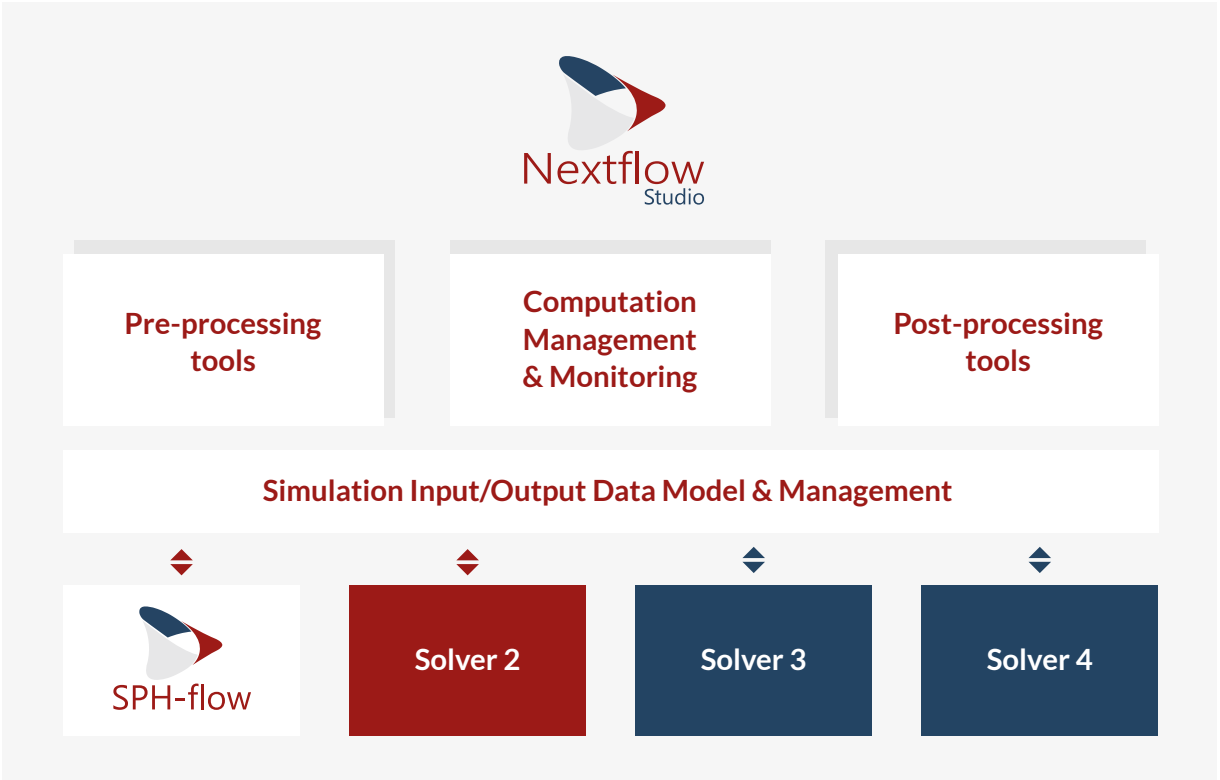
Product Overview

Nextflow Studio is Nextflow Software's **integrated simulation environment.**

Nextflow Studio is a software toolset that provides an **advanced and intuitive Graphical User Interface (GUI)** for using Nextflow Software's Computational Fluid Dynamics (CFD) solvers. It covers the entire simulation flow: pre-processing, computation and post-processing.

Nextflow Studio is also a full software framework for interoperating with multiple independent solvers. Through this framework, an integrated solver can benefit from a unified GUI and common tools, including data and project management, geometry editing and meshing, 3D rendering and others. Nextflow Studio can also integrate solver-specific tools.

An **extensible Simulation Input Data Model (SIDM)** allows to handle all solvers' input data and parameters.

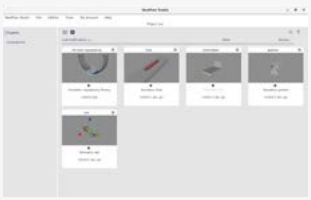


Nextflow Studio assists the user in configuring and generating valid solver input data and mesh files. From those input files, simulations can easily been run on any machine, including High-Performance Computing (HPC) supercomputer cluster. In the future, remote connection to an HPC cluster, launch and monitoring of computations running on the cluster will be directly available from Nextflow Studio through a dedicated computation monitoring server.

Intuitive GUI

Nextflow Studio provides the following features:

Project & simulation data management

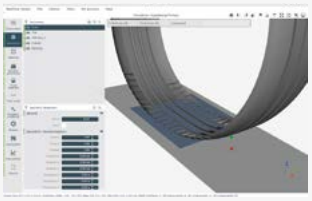


Intuitive and optimized GUI technology based on the latest C++ and Qt software technology

Features:

- Create, delete and copy projects and simulations
- Export and import simulation data
- Select simulation-wide solver
- Display simulation thumbnail

Geometry visualization & editing



Geometry import & editing based on industry-leading **Dassault Systèmes SPATIAL CGM** technology

Features:

- Create analytical 2D or 3D geometries
- Import CAD files. Supported formats: **IGES, STEP, DXF/DWG, ACIS, Parasolid** – optional: **CATIA V5, Inventor, Pro/E, NX Direct**
- Import Mesh files. Supported formats: STL, INRIA/DISTENE
- Choose rendering mode and display faces normal direction
- Manipulate geometries (positioning, rescale, Boolean operations, partial volume filling…)

Geometry meshing

CAD meshing and mesh optimization based on advanced **DISTENE MeshGems** technology

Features:

- Perform automatic CAD meshing
- Perform CAD cleaning* and mesh optimization
- Compute mesh quality metrics*
- Perform automatic volume meshing*: hexahedral mesh (for FV-based solvers) and particles generation (for SPH-based solvers)
- Apply local mesh refinement*

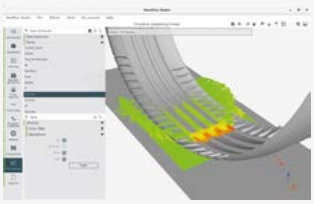
Computation monitoring & management

Support of local and remote computations on HPC clusters

Features:

- Export simulation data and mesh files into solver-specific format
- Launch simulation on local computer and remote* HPC cluster
- Monitor (remote) computation progress in real-time*
- Manage cloud-based computations*

Simulation results visualization: XY, 2D and 3D plots



Post-processing tools & 3D GUI based on **Kitware VTK** technology

Features:

- Import solver computation result files
- Automatically retrieve computation results from local computer and remote* HPC cluster
- Store and analyze simulation results
- Plot XY graphs and 2D/3D field contours
- Export to standard post-processing tools. Supported formats: HDF Group **HDF5, Tecplot, ParaView**

*Future plans.

Supported Solvers

SPH-flow

Supported Platforms

PC x64 architecture

Operating systems:

- Microsoft Windows 10
- Red Hat Enterprise Linux 7