Advanced Simulation Summit

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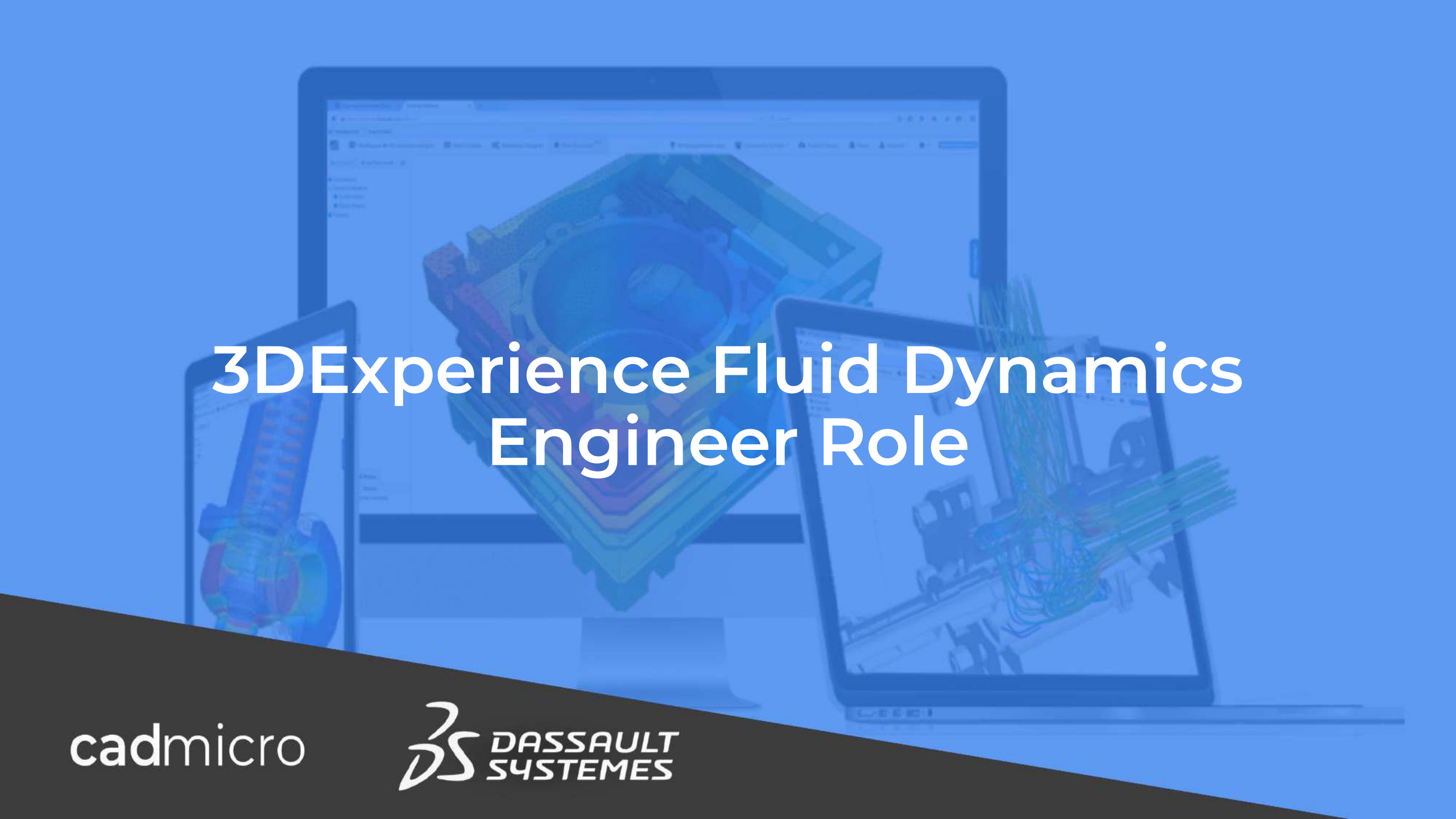
DASSAULT SYSTEMES



3DExperience Fluid Dynamics Engineer Role

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DASSAULT SYSTEMES

Agenda

Fluid Dynamics Engineer – First Look

Key Features and Applications

Conclusion

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Meet Our Team

Harpreet Matharoo
Sr. Applications Specialist
Harpreetm@cadmicro.com

Fluid Dynamics Engineer
First Look

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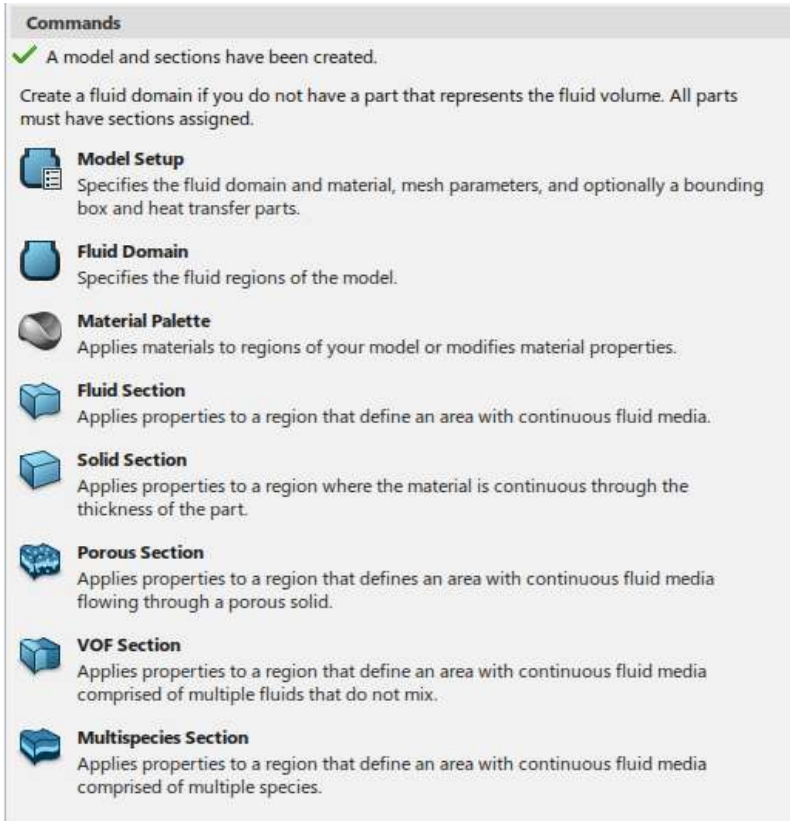
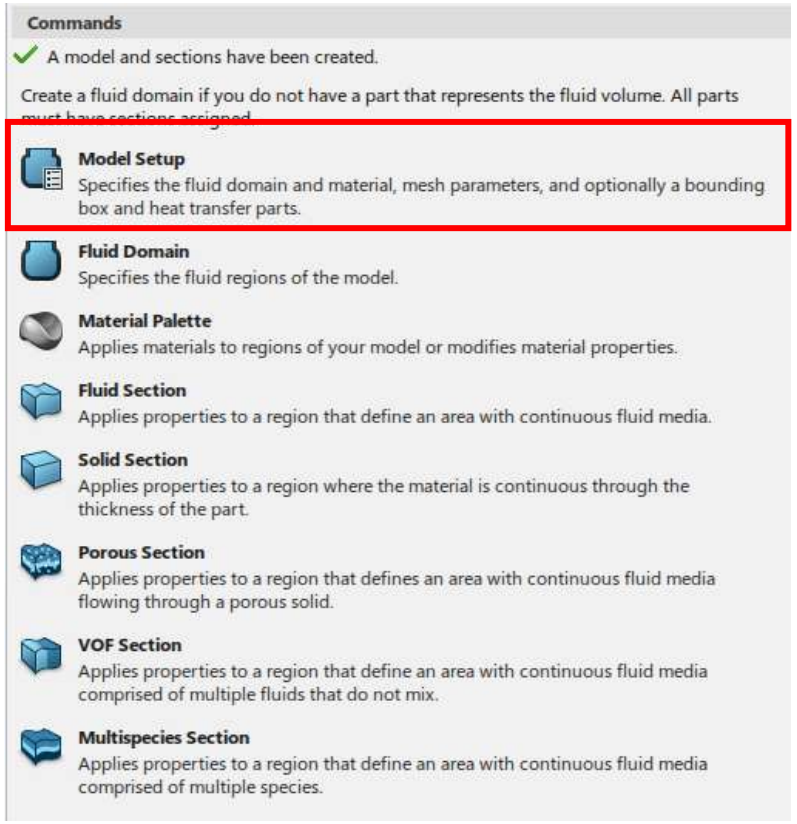
Key Features

- Explicit Model Definition



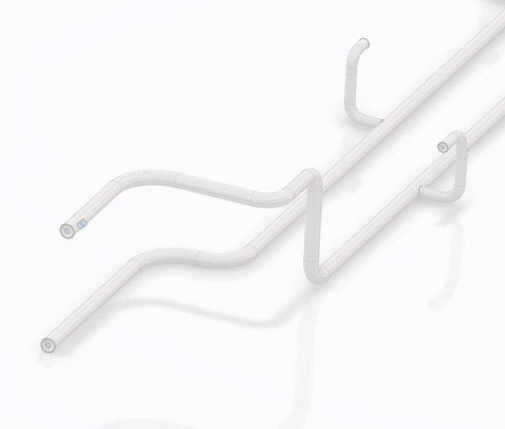
Key Features

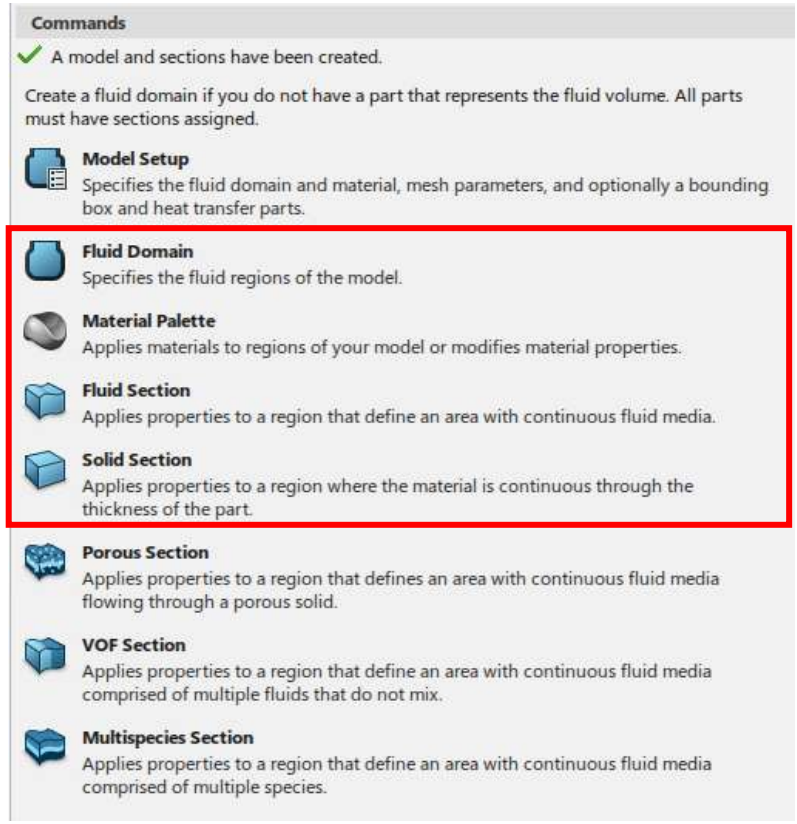
- Explicit Model Definition
  - Explicitly define the computational domain



Key Features

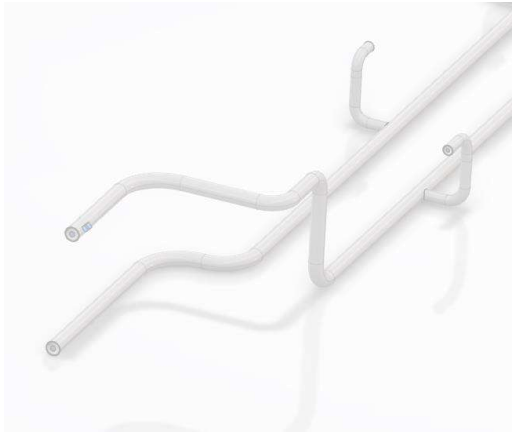
- Explicit Model Definition
  - Explicitly define the computational domain
  - Subdivide the computational domain

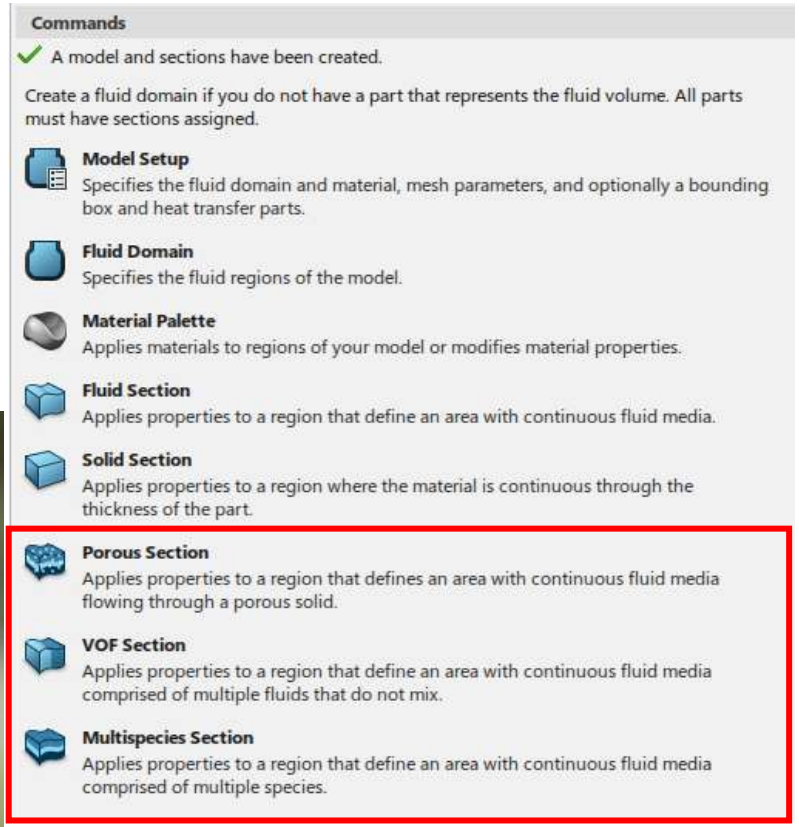




Key Features

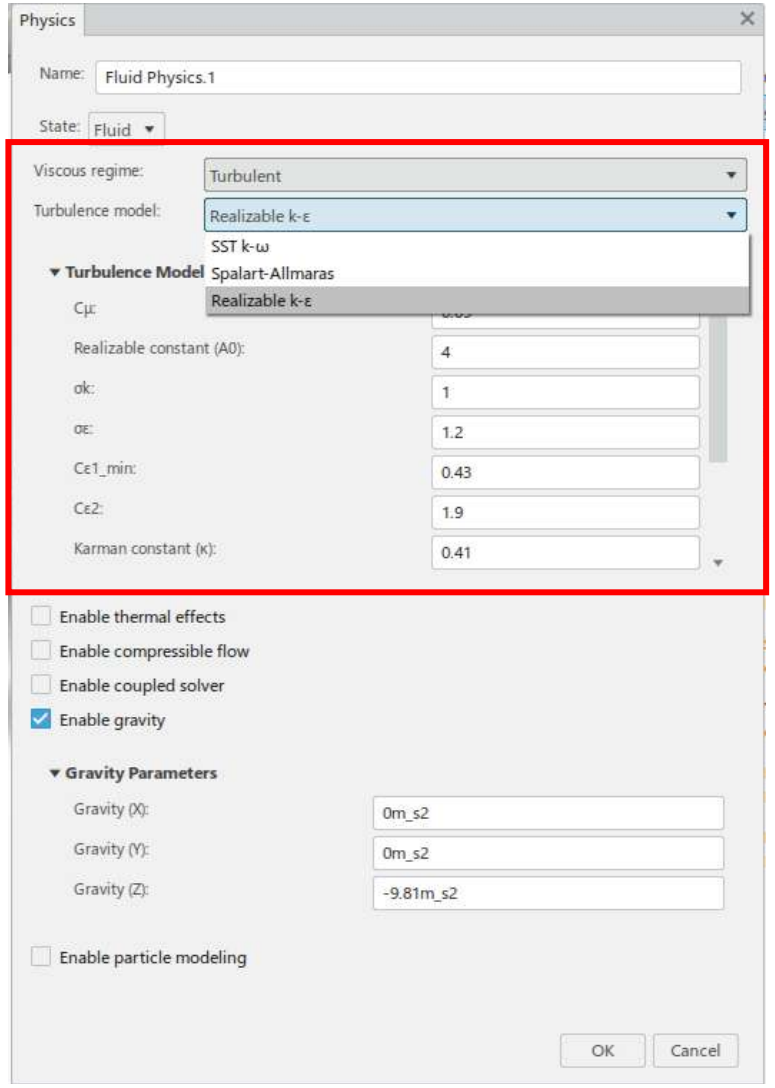
- Explicit Model Definition
  - Explicitly define the computational domain
  - Subdivide the computational domain
  - Multispecies Study, porous media and Volume of fluid for liquid-liquid interaction





Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
    - SST k-omega – for internal/external/thermal
    - Realizable k-epsilon – for internal flow
    - Spalart-Allmaras – for external aerospace application



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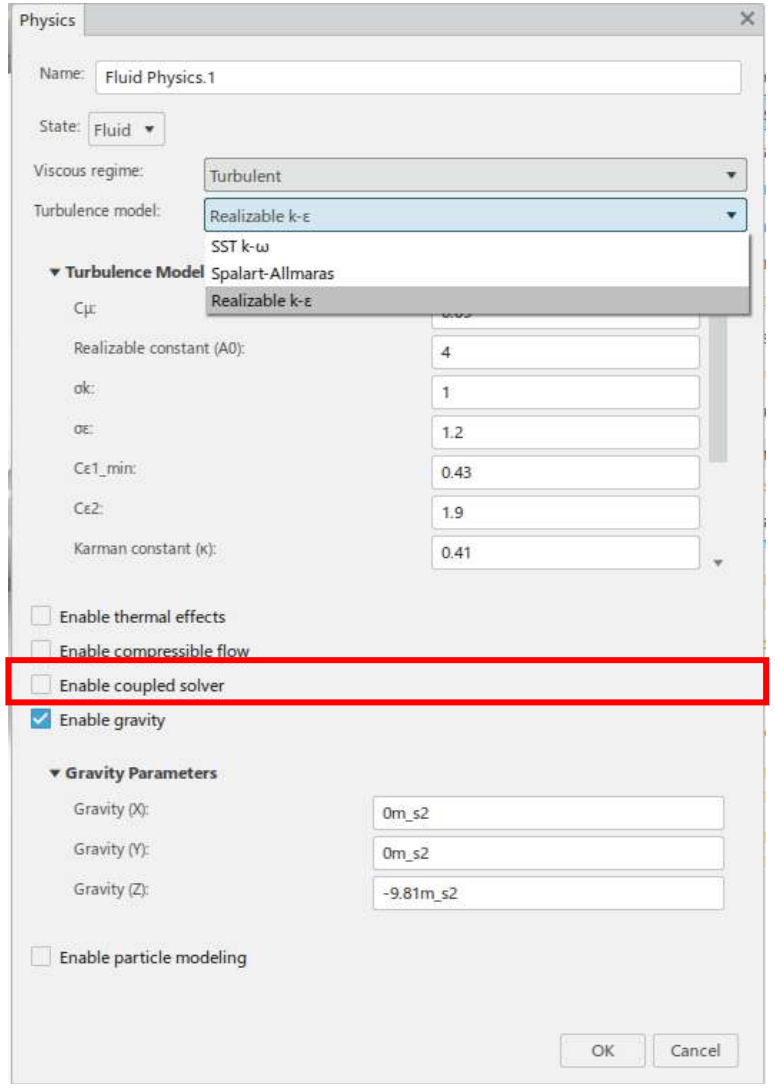
Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
  - Coupled solver for faster convergence



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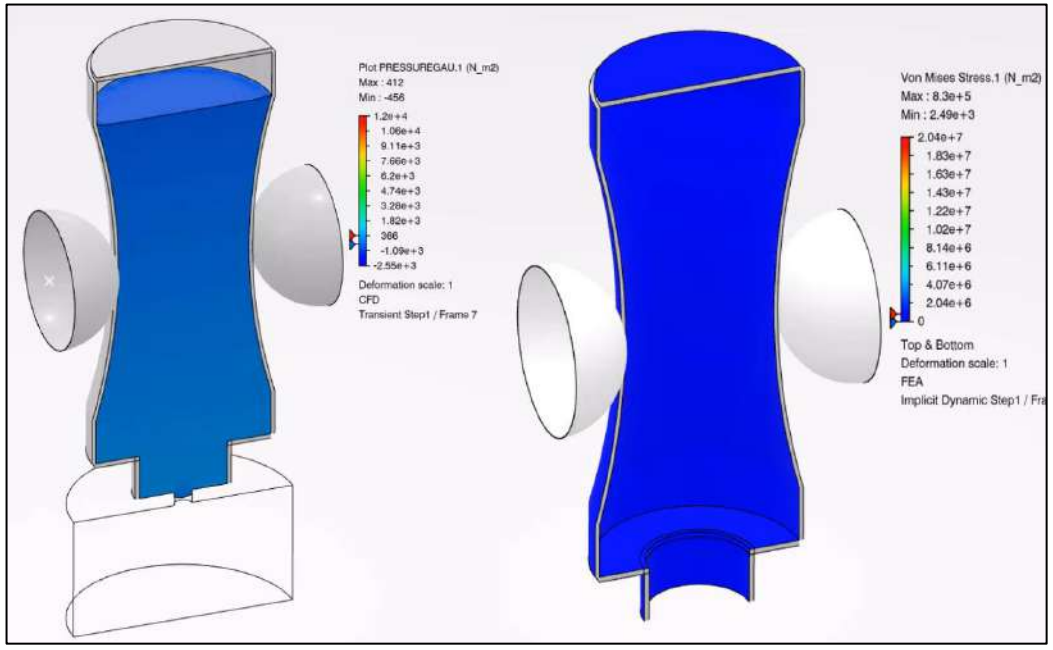
Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
  - Multiphysics and Fluid Structure Interaction*



*Requires system modeling role and coupling role on 3DEXPERIENCE

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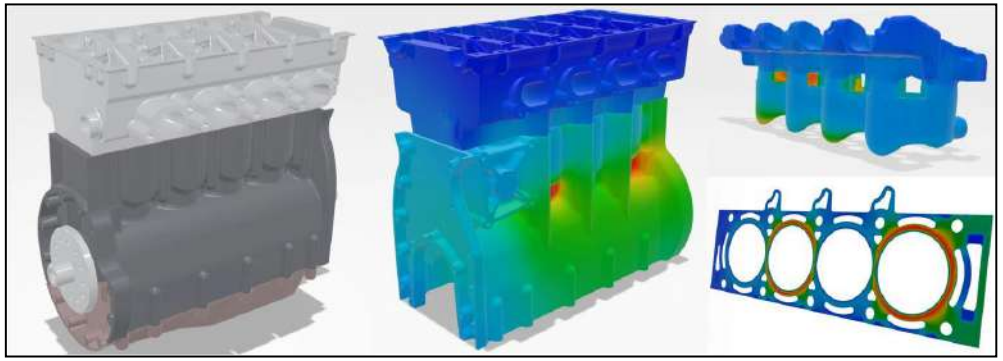
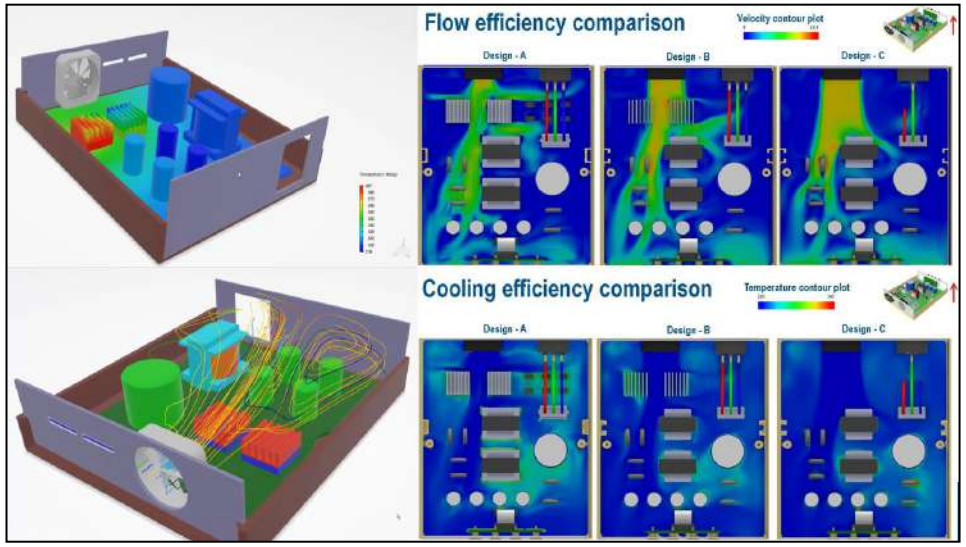


Equipment Thermal Performance



Electronic Device Thermal Performance

*Requires system modeling role and coupling role on 3DEXPERIENCE

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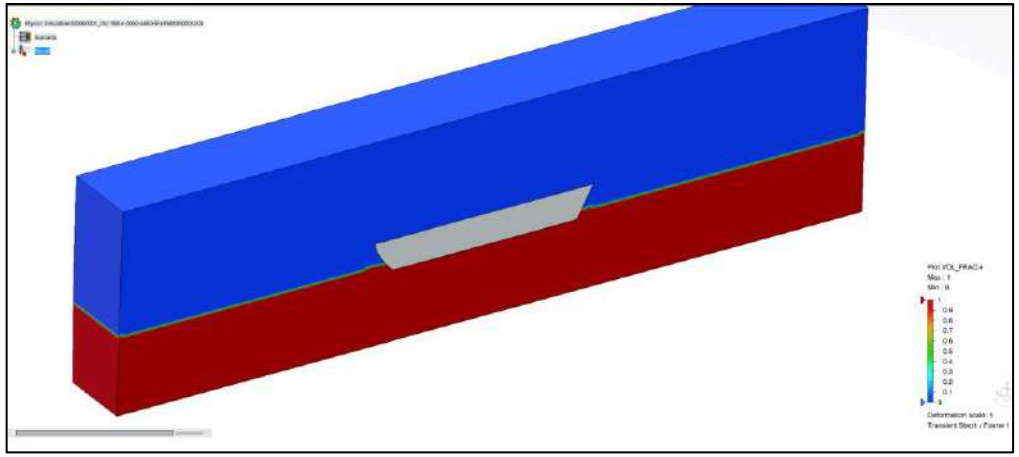
Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
  - Multiphysics and Fluid Structure Interaction
  - Multiphase, Multispecies, and 2-way particle modeling, Rigid Body



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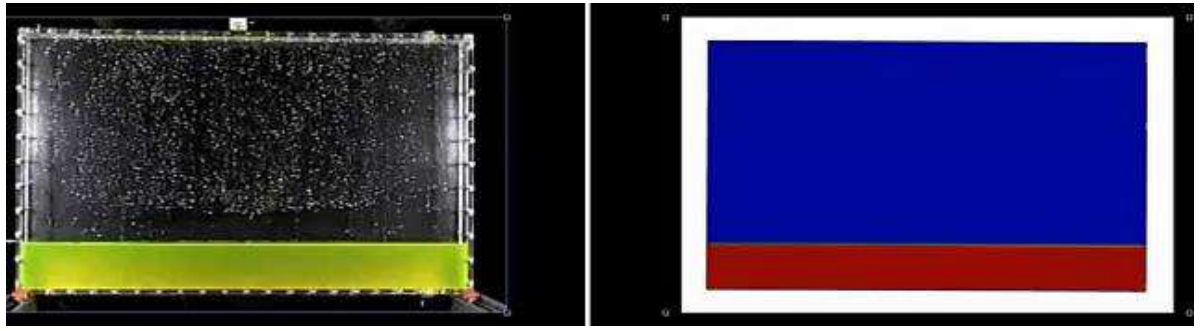

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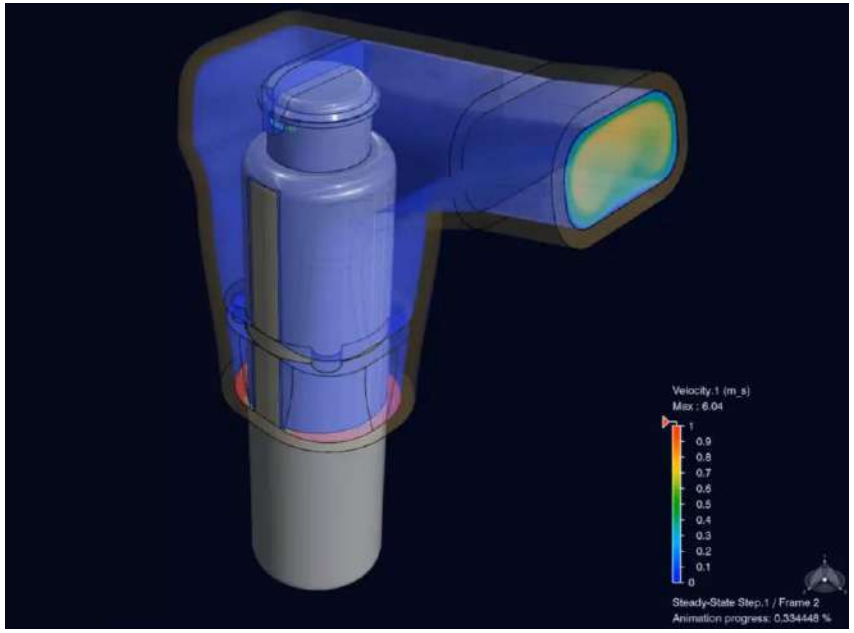
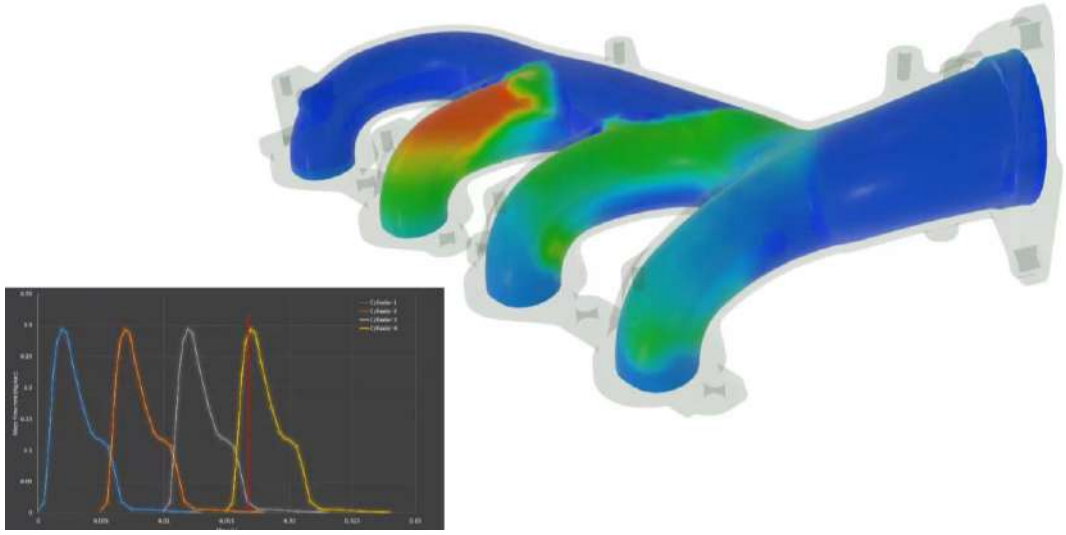


Key Features

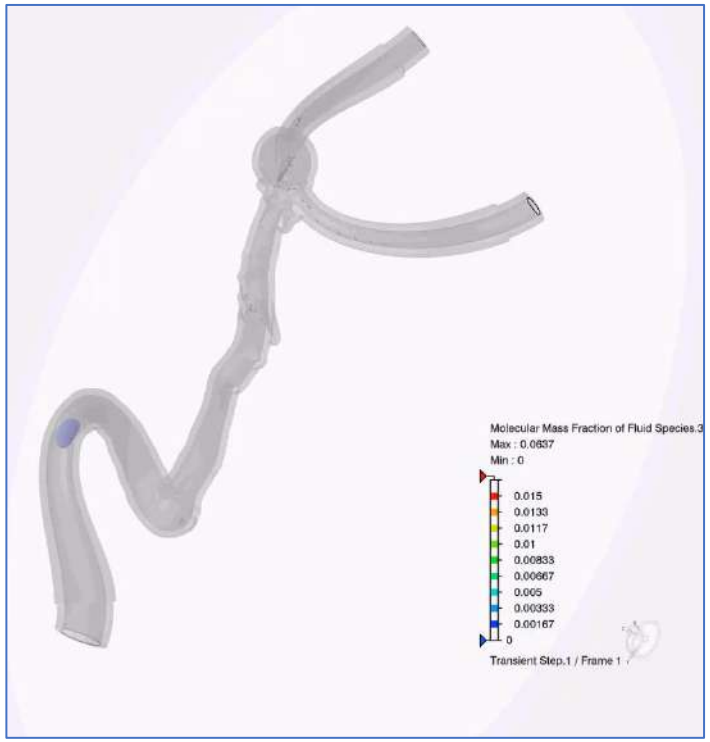
- Explicit Model Definition
- Physics:
  - Range of models available
  - Multiphysics and Fluid Structure Interaction
  - Multiphase and Multispecies
  - Transient Simulation



Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
  - Multiphysics and Fluid Structure Interaction
  - Multiphase and Multispecies
  - Transient Simulation

Drug injection and diffusion

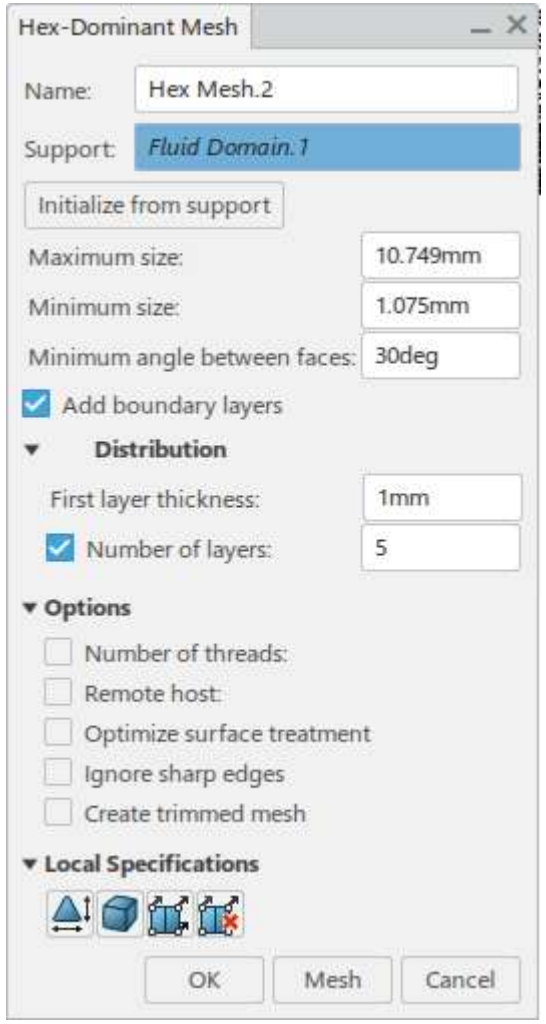


Key Features

- Explicit Model Definition
- Physics:
  - Range of models available
  - Multiphysics and Fluid Structure Interaction
  - Multiphase and Multispecies
  - Transient Simulation
  - Rotating Region

Key Features

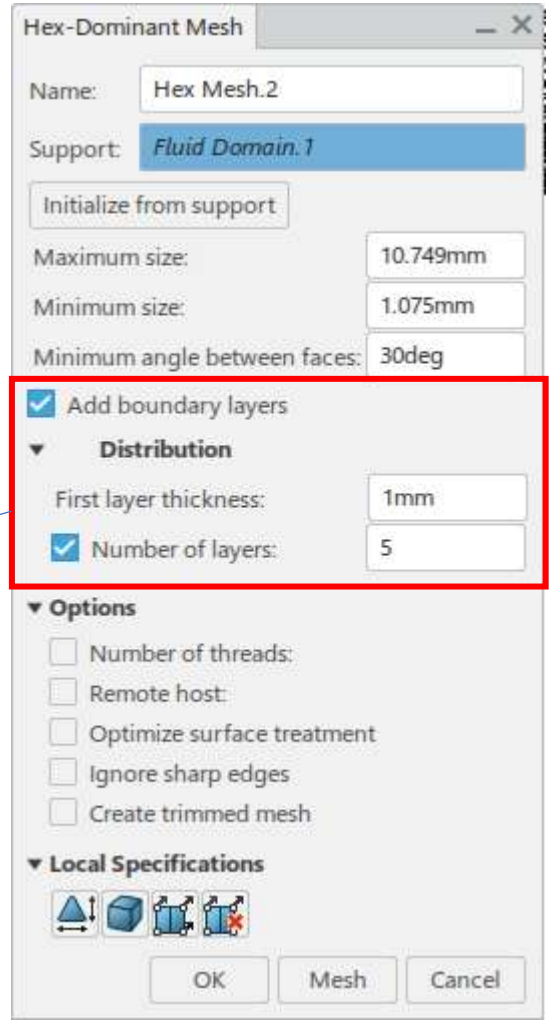
- Explicit Model Definition
- Physics
- Meshing
  - Hex Dominant Body Fitted Mesh



Key Features

- Explicit Model Definition
- Physics
- Meshing
  - Hex Dominant Body Fitted Mesh

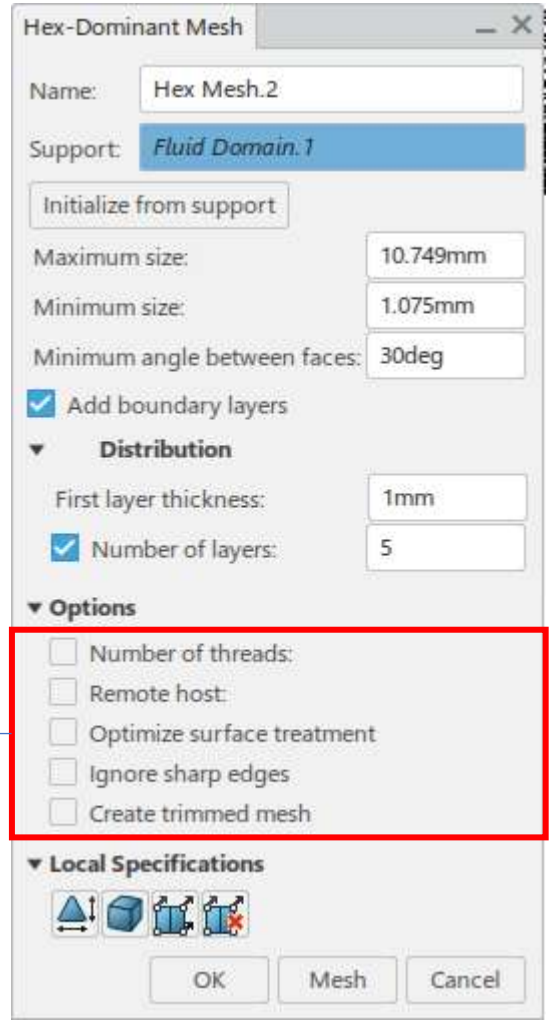
Control the number of boundary layer mesh



Key Features

- Explicit Model Definition
- Physics
- Meshing
  - Hex Dominant Body Fitted Mesh

Offload meshing, automate optimization, generate cartesian mesh



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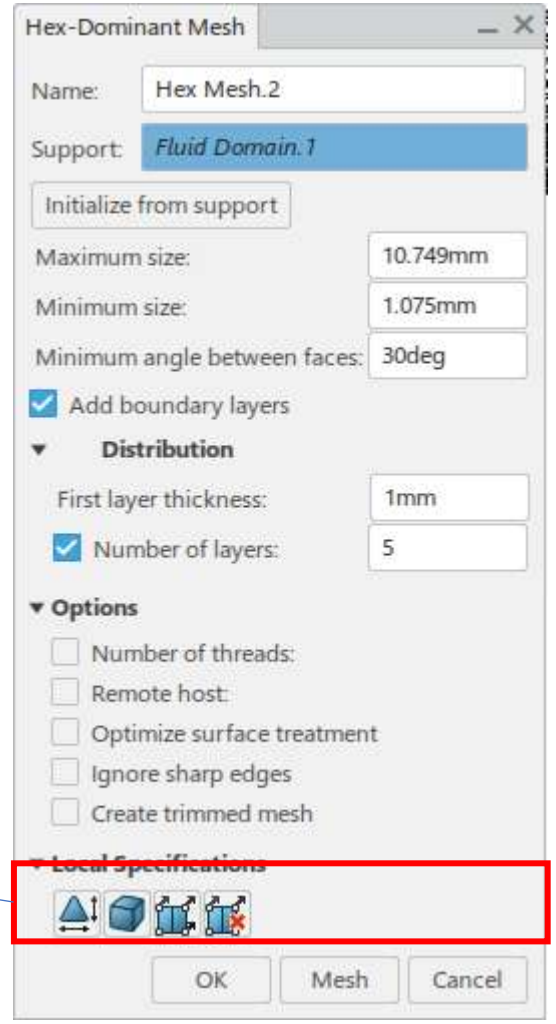
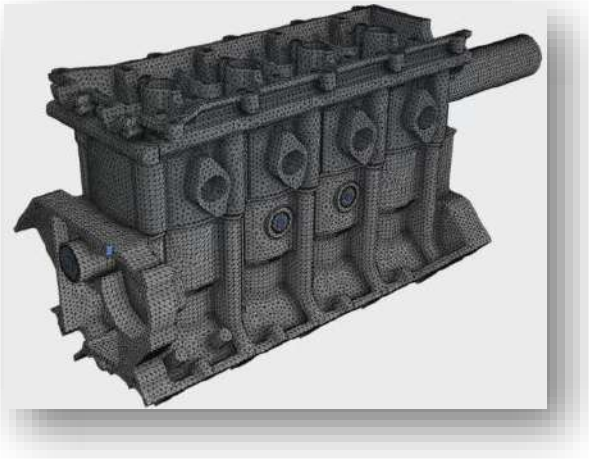
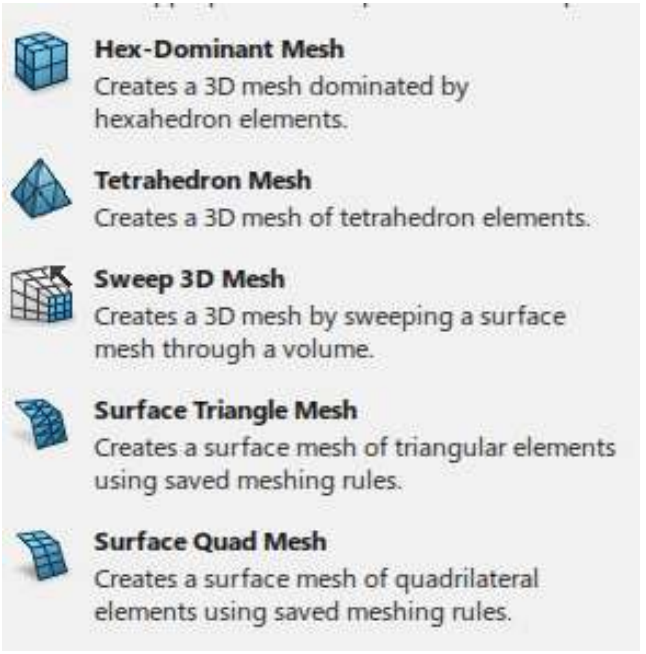


Local mesh controls in the support

Key Features

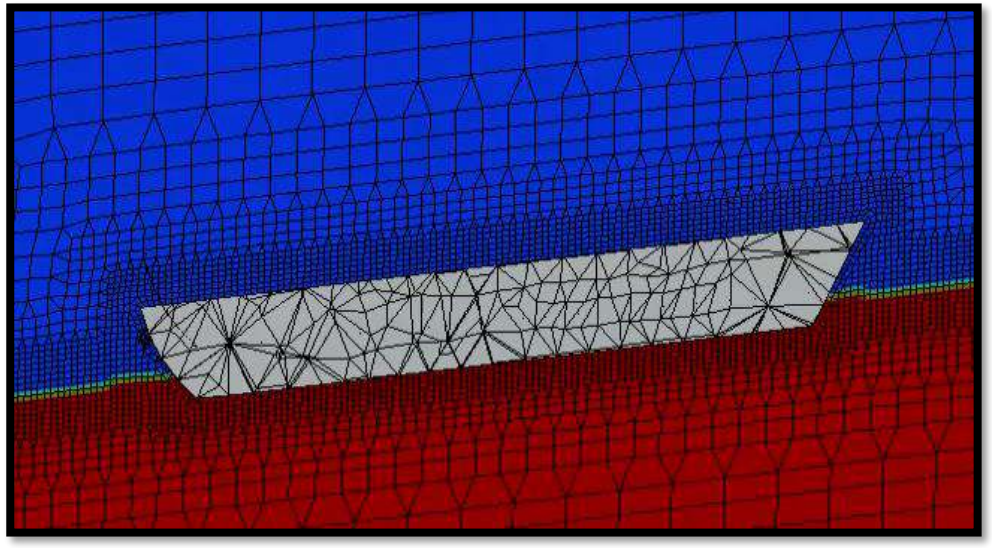
- Explicit Model Definition
- Physics
- Meshing
  - Hex Dominant Body Fitted Mesh
  - Much more





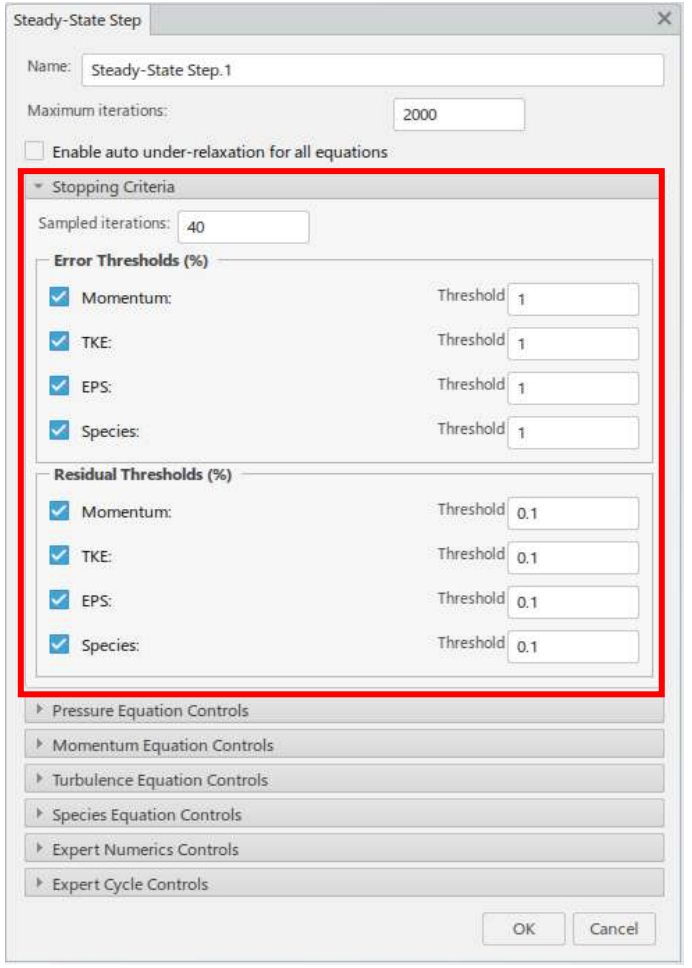
Key Features

- Explicit Model Definition
- Physics
- Meshing
  - Hex Dominant Body Fitted Mesh
  - Much more
  - Morphing mesh for FSI



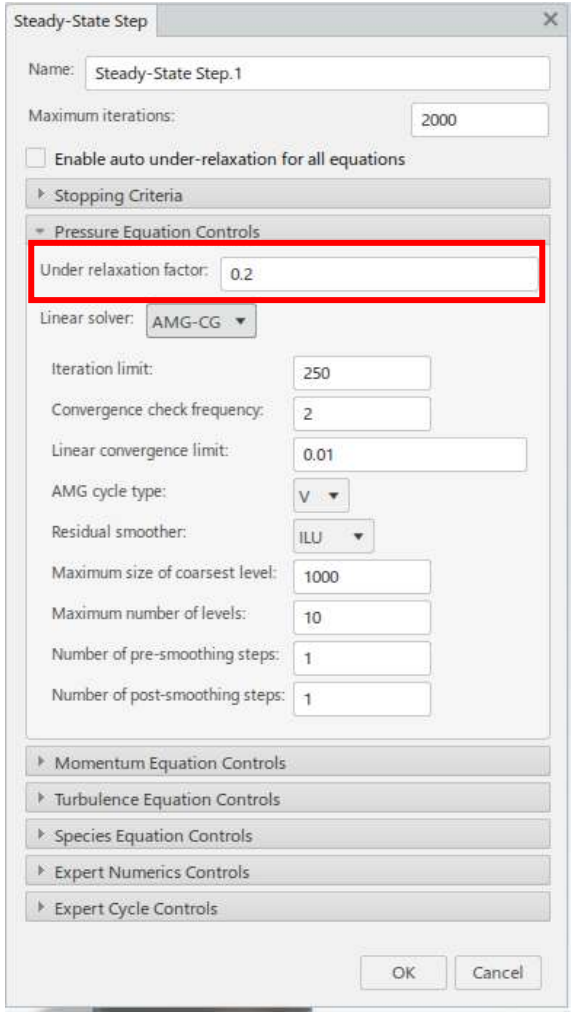
Key Features

- Explicit Model Definition
- Physics
- Meshing
- Solver
  - Residual Criteria or patented error criteria for faster convergence



Key Features

- Explicit Model Definition
- Physics
- Meshing
- Solver
  - Residual Criteria or patented error criteria for faster convergence
  - Under relaxation for solver stabilization
    - Related to Courant Number



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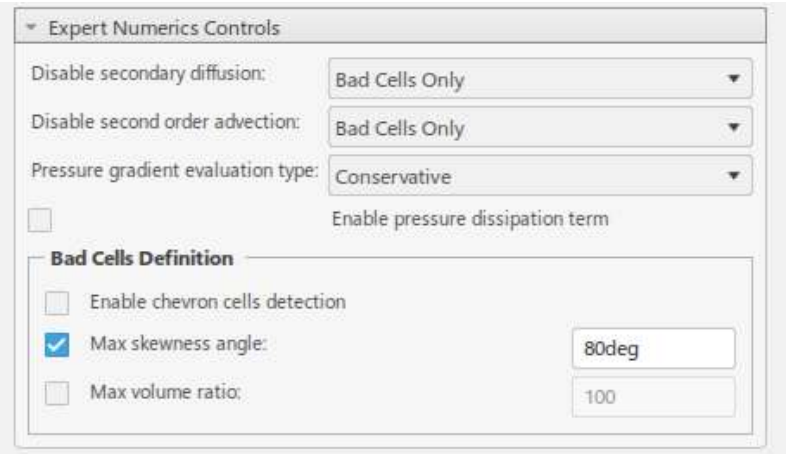
Key Features

- Explicit Model Definition
- Physics
- Meshing
- Solver
  - Residual Criteria
  - Under Relaxation for solver stabilization
  - Expert Numerical Controls
  - HPC – Up to 144 Cores on Cloud



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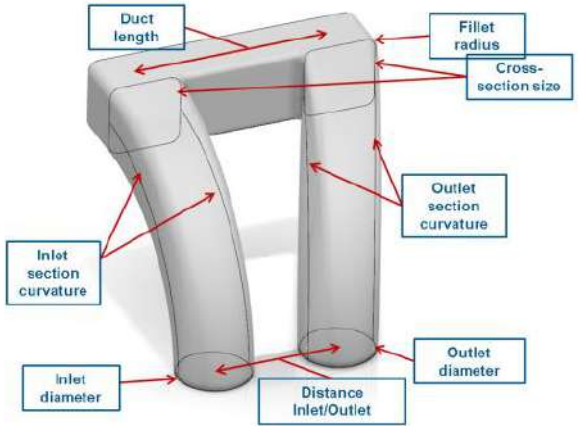
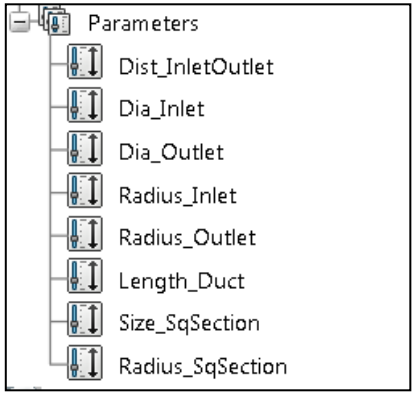
Key Features

- Explicit Model Definition
- Physics
- Meshing
- Solver
- Design Automation*

Identify Key Parameters





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Key Features

- Explicit Model Definition
- Physics
- Meshing
- Solver
- Design Automation*

Setup Initial

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Key Features

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Setup
Initial Simulation

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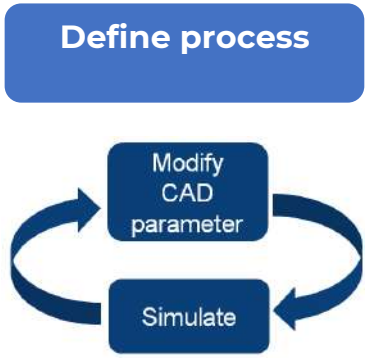

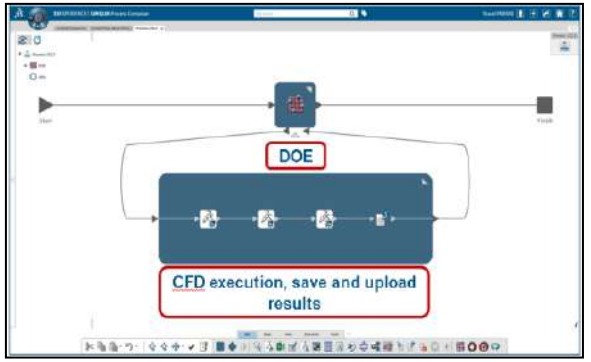

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Key Features

- Explicit Model Definition
- Physics
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Review performance analytics and trade-offs

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Conclusion

- Deeper control on the models and physics
- Wider range of options for physics
- Automated design optimization
- PLM embedded CFD

Questions?

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Stay up to date on upcoming events & webinars!

www.cadmicro.com/events

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