Mesh generation and adaptivity
Mesh generation methods are used in a daily basis by computational engineers and scientists to obtain numerical predictions on discrete approximations of complex geometrical configurations.

**Summary**

Meshes are a key ingredient to perform computer simulations with unstructured methods such as the finite element method, finite volume, and finite differences. They are used to discretize continuous domains into smaller, manageable pieces. The size of the mesh elements can be locally adapted to obtain more accurate approximations to the PDE solution.

**Objectives**

Our current research in meshing deals with:

1. Curved mesh generation for unstructured high-order methods
2. Quality based framework for mesh validation and optimization
3. Automatic mesh generation for wind farm simulation
4. Mesh based representation of urban areas for forecast simulation
5. Reduction and measurement of the geometrical error

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