

OpenVSP Integrated Flowpath Modeling (WIP)

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Integrated Flowpath Modeling

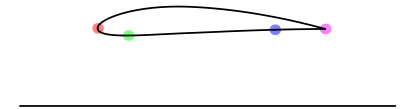
- Simplify propulsive flowpath modeling
 - Geometry
 - Analysis
- Many ways to model geometry
 - Must choose a single representation / intent
 - Geometry built to suit
 - Challenges for buried flowpaths
- IFM Goals
 - Maintain flexibility in geometry modeling
 - Enable flexibility in representation / intent
 - Improve support for buried flowpaths

} $N \times (1:1)$

} $N:M$

Geometry Modeling & Identification

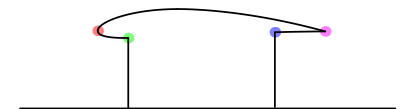
Flowthrough



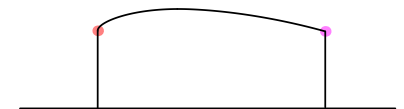
Flowpath



To Face



To Lip



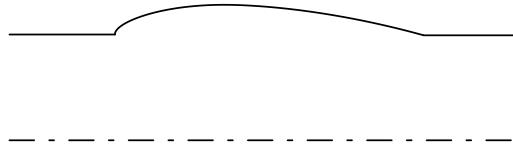
Inlet

Nozzle

Both

Representation & Intent

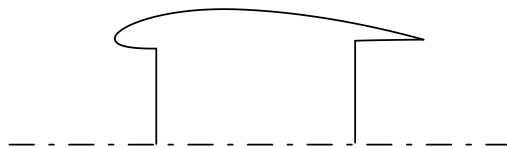
Extend



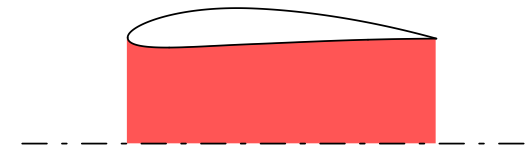
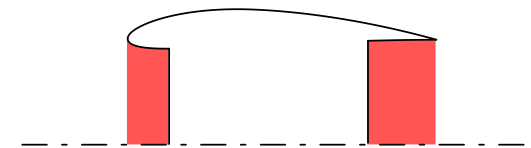
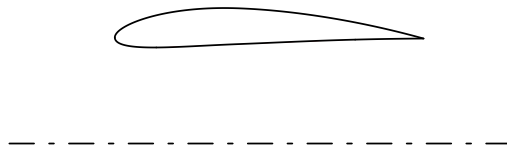
To Lips



To Faces



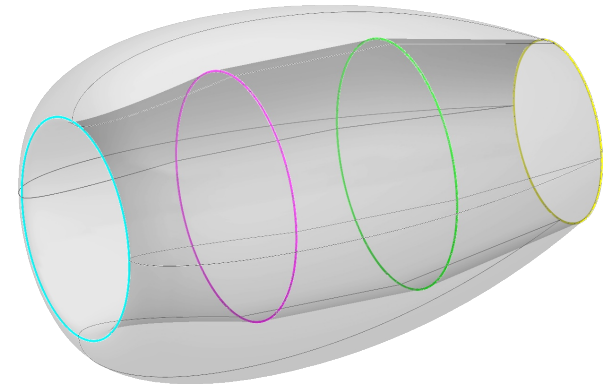
Flowthrough



Negative

Status

- Large combinatorics problem
 - Challenge for development and testing
- Geometry modifications working well
 - 'Coincident' positive / negative faces
 - CompGeom & family
 - CFDMesh & family
- TODO:
 - Automatic tagging or subsurfaces
 - Long tail of things to fix
 - Tessellation specification
 - Subsurfaces
 - Attachment
 - Texture mapping
 - Wave drag recognition
 - Other analysis tools
 - ???



Demo

Questions?