Guidelines For Baseline Grids

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OUTLINE

- **SURFACE SPACINGS**

- **BOUNDARY-LAYER RESOLUTION**

- **MISCELLANEOUS**

- **BASELINE GRIDS**

SURFACE SPACINGS

- **AIRFOIL SECTIONS**
  - Leading Edge
    * $\Delta S \simeq 0.1\%$ chord

  - Trailing Edge
    * Base thickness $= 0.5\%$ chord
    * $\Delta S \simeq 0.1250\%$ chord (4 base cells)
    * $\Delta S \simeq 0.0625\%$ chord (8 base cells)

SURFACE SPACINGS

- **WING**

  - Tip Spanwise Spacing
    * $\Delta S \simeq 0.5\%$ semispan ($\simeq 3\,mm$)

  - Gridlines To Resolve:
    * Leading-edge line

    * Trailing-edge lines

    * Planform breaks

    * Intersection line

- **FUSELAGE**

  - Nose & Afterbody Regions
    * $\Delta S \simeq 10\ mm$ or less

  - Gridlines To Resolve:
    * Crown line

    * Intersection line

BOUNDARY-LAYER RESOLUTION

- **NORMAL SPACING**
  - Standard Meshes
    * $Y^+ \simeq 1 \, (\simeq 0.001 \, mm)$
    * Stretching Ratio $\leq 1.25 \, (\simeq 1.20)$
    * Cells in boundary layer $\simeq 20$
  - Wall-Function Mesh
    * Cells in boundary layer $\simeq 4$

- **VISCOUS SURFACES**
  - Wing
  - Fuselage

MISCELLANEOUS

- ## FARFIELD BOUNDARY
  - Chord Lengths From Geometry ≥ 50

- ## MULTIBLOCK MESH
  - Grid Dimensions For Multigrid

- ## OVERSET MESH
  - Comparable Cell Sizes In Over-Lap Regions

- ## GRID SYSTEM
  - Total Grid Points $\simeq 3 \, million$

BASELINE GRIDS

- **MULTIBLOCK**

- **OVER-SET**

- **UNSTRUCTURED TETRAHEDRA**
  - Vertex-Based Solvers
  - Cell-Centered, Wall Function Solvers