Flow Physics Working group outbrief

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Key initiatives

- Wall Model LES and IDDES implementation.
- Spalart Allmaras with Rotation / Curvature Correction
- Further validation of available transition models.
- FHW solid and permeable surface for moving and non-moving sources + coupled adjoint
- FHW Wind tunnel formulation.
- Broadband noise assessment and reduction using adjoint-based RANS-SNG
- Linearised Euler Equation / Acoustic Perturbation equation using DG. + coupled adjoint

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Envisioned Required Code Developments

- Turbulence Modelling:
  - SA Rotation and Curvature.
  - SST LM and SA BC Transition Validation
  - SST convergence and check implementation
  - SA in Multi zone (possible bug in conservation)
  - Check inlet profile (interpolation)
  - WMLES
  - IDDES (need to implement Synthetic Turbulence Generator (STG))
  - DDES with Stochastic Backscatter
- Boundary Conditions.
  - Input BC (Check if Mass flow imposed directly).
- Mesh
  - CGNS file must be ADF (hdf5 to adf document).
  - Format multi-block unstructured needs to be documented that we need to convert to single zone.
- Aeroacoustic
  - FWH solid and permeable formulation without volumetric solution
  - Wind-tunnel FWH formulation
  - Moving-source FWH for rotor blades etc
  - Linearised Euler Equation / Acoustic perturbation equation using DG (Non Reflective BC)
  - Further work/verification on RANS-SNG for BBN

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Point(s) of contact

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