FUN3D v11.3 Training
NAVAIR-Pax River

Session 1:
Welcome and Overview

Eric Nielsen

Agenda Topics

- Welcome and Overview
- Capabilities and Applications Overview
- Compilation and Installation
- Gridding, Solution, and Visualization Basics
- Turbulence Models and Boundary Conditions

- Supersonic and Hypersonic Perfect Gas Simulations
- Time-Accurate Simulations and Dynamic Meshes
- Aeroelastic Simulations
- Overset/6-DOF Simulations
- Suggar++ Basics

All Material is Available Online

- A complete set of training material for FUN3D v11.1 is available online at the FUN3D website
  - *Very* similar to v11.3 – only very minor differences
  - Does not include the 6-DOF and Suggar++ sessions to be shown here, which are new
  - PDF copies of the slides
  - Pro-shot streaming video of these and many other sessions in Quicktime and Flash formats
  - Tarball of demo cases ready to run
  - New sessions on geometry parameterization using Langley-developed Massoud and "bandaids" packages to be filmed shortly
- The material presented here for v11.3 will be put online within a couple of days
  - Sessions chosen based on NAVAIR input
  - Sessions not included here:
    - Incompressible Simulations
    - Hypersonic Perfect Gas Simulations
    - Code Development Within the FUN3D Framework
    - Rotorcraft Simulations
    - Thermochemical Nonequilibrium Simulations
    - Adjoint-Based Design Optimization
    - Feature- and Adjoint-Based Mesh Adaptation

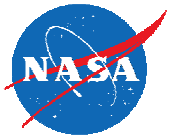
The FUN3D Development Team

fun3d-developers@lists.nasa.gov

- Consists of ~15 researchers across several branches at Langley
  - Computational AeroSciences Branch
  - Aerothermodynamics Branch
  - Flow Physics and Controls Branch
- Some people are full-time FUN3D, others part-time
- Also external groups such as Georgia Tech, National Institute of Aerospace (NIA)
- Open to other interested parties joining us!
  - Remote, real-time, read/write access to FUN3D repository is available

FUN3D Development Widespread

Developers work on central source code in real-time



Advanced Engineering Environments Branch
- Dana Hammond - HPC, computer science
- Bill Jones - geometry, gridding, adaptation

Aerothermodynamics Branch
- Karen Bibb – high-energy applications
- Peter Gnoffo - high-energy algorithms
- Bil Kleb - software practices, applications

Computational AeroSciences Branch
- Bob Biedron - dynamic simulations
- Jan-Renee Carlson – turbulence, jet flows
- Mark Carpenter - solvers
- Beth Lee-Rausch - applications
- Eric Nielsen - solvers, adjoints, design
- Mike Park - cut-cells, adaptation
- Chris Rumsey - turbulence
- Jim Thomas - solvers, discretizations
- Veer Vatsa - applications
- Jeff White - hypersonics

Flow Physics and Control Branch
- P. Balakumar - turbulence

NASA Glenn

National Institute of Aerospace

Academia
- Georgia Tech
- MIT
- NC A&T
- Penn State
- U. of Tennessee-Chattanooga
- U. of Wyoming

OGA
- US Army/AMRDEC-Huntsville
- Argonne, Oak Ridge National Labs

Industry

Visitors/Students

Very broad mix of theoretical, development, and applied personnel:
- *Fundamental research*
- *Real-world applications*

The FUN3D Support Team

fun3d-support@lists.nasa.gov

"Who sees my questions to the support alias?"

- Consists of 11 members of the development team
- All are NASA civil servants
  - Proprietary/sensitive data can be shared/discussed: all are bound by Trade Secrets Act
- Members: Karen Bibb, Bob Biedron, Jan-Renee Carlson, Peter Gnoffo, Dana Hammond, Bill Jones, Bil Kleb, Beth Lee-Rausch, Eric Nielsen, Mike Park, Jeff White

Myth: Our job is to develop a production-level tool and support users.
Reality: ***None*** of us are funded at ***any*** level to support users, maintain documentation, keep up a website, run training workshops, etc. The team is funded solely to perform their individual research efforts.

We squeeze in code support, etc in our copious free time, out of the kindness of our hearts. We enjoy doing so, but please be patient and remember this when asking for help!

The FUN3D User Community

fun3d-users@lists.nasa.gov

- Users across NASA
- Distributed to hundreds of external organizations
  - Individuals
  - Industry
  - Academia
  - Other Government Agencies
- Broad variety of applications being simulated across the speed range

Questions?