Final Project Meeting

MEGADESIGN
Aerodynamic Simulation and Optimization in Aircraft Design

With Contributions of the DLR Internal Project

MegaOpt

May, 23-24, 2007
DLR Braunschweig , Hermann-Blenk-Saal

Wednesday, May 23, 2007

Introduction

13:00   Welcome and Introduction
C. Rossow, N. Kroll, DLR

13:10   National CFD Project MEGADESIGN – Motivation, Objectives, Milestones
N. Kroll, DLR

13:25   Overview DLR Project MegaOpt
D. Schwamborn, DLR

Milestones M1 & M4 – Reduction of Simulation Time

13:40   TAU Solver Improvement
R. Dwight, DLR

14:05   Recent Developments of TAU Adaptation
Th. Alrutz, D. Vollmer, DLR

14:30   Adaptive Wall Function for Prediction of Turbulent Flows
T, Schmidt, C. Mockett, F. Thiele, Berlin University of Technology

14:55   Acceleration of CFD Processes for Transport Aircraft
E. Elsholz, Airbus

15:15   Efficient Combat Aircraft Simulations with TAU RANS Code
H. Rieger, K. Soerensen, EADS-MAS

15:35   *Pause*

Milestone M2 – Preparation of optimization scenarios

15:55   Geometry Parametrization for Shape Optimization
A. Ronzheimer, DLR

16:20   Knowledge Capturing by Best Practice Methods for Optimization
O. Frommann, Synaps Ingenieur-Gesellschaft mbH

16:45   ModeFrontier, a Framework for the Optimization of Military Aircraft Configurations
L. Nardin, K. Soerensen, S. Hitzel, U. Tremel, EADS-MAS,

Milestone M3 – Adjoint Methods for Optimization

17:05   Theory and Application of Adjoint Methods in TAU
R. Dwight, J. Brezillon, M. Widhalm, DLR

17:30   One-Shot Methods for Aerodynamic Shape Optimization
V. Schulz, Trier University

17:55   *Closing 1ˢᵗ Day*

Thursday, May 24, 2007

Milestone M3 – Adjoint Methods for Optimization (continued)

9:00   Automatic Differentiation of FLOWer
R. Giering, FastOpt

Milestone M5 – Aerodynamic Optimization of 3D Configurations

9:25   Aerodynamic Design Methods in High-Lift Configurations
J. Brezillon, DLR

9:50   Aerodynamic Design Optimization of a UAV
S. Hitzel, L. Nardin, K. Soerensen, EADS-MAS

Milestone M6 – Fluid Structure Coupling

10:15   Numerical Methods for Aeroelastic Analysis and Aircraft Design
L. Reimer, RWTH Aachen

10:40   *Break*

11:00   Development and Application of TAU-ANSYS Coupling Procedure
R. Heinrich, DLR

11:25   Fluid-Structure Coupling: Simplified Structural Modal on Complex Configurations
E. Elsholz, Airbus

Milestone M7 / M9 – Improvement of Simulation Quality

11:50   Universal Wall Functions for Aerodynamic Flows:
Turbulence Model Consistent Design, Potential and Limitations
T. Knopp, DLR

12:15   Near-Wall, Reynolds Stress Model Calculations of Transonic Flow past Aircraft
Configurations
S. Jakilic, Darmstadt University

12:40   *Lunch*

13:30   Transition Prediction for Three Dimensional Configurations
N. Krimmelbein, Braunschweig University

13:55   Simulation Quality Assessment for Transport Aircraft
K. Becker, Airbus; J. Häuser, HPCC

Milestone M8 – Multidisciplinary Optimizations

14:20   Flexible Wing Optimization Based on Shapes and Structures
H. Barnewitz, Airbus

14:45   Multidisciplinary Optimization of a UAV combining CFD and CSM
S. Hitzel, L. Nardin, K. Soerensen, H. Rieger, EADS-MAS

Assessment and Outlook

15:10   Assessment of Project and Outlook
N. Kroll, DLR

15:20   Final Discussion

15:30   *Closure*