

**Multiblock Grid
Generation
Results of the EC/BRITE-
EURAM Project
EUROMESH, 1990–1992**

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Michael J. Marchant,
and D. A. King

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Foreword

Computational Fluid Dynamics research, especially for aeronautics, continues to be a rewarding and industrially relevant field of applied science in which to work. An enthusiastic international community of expert CFD workers continue to push forward the frontiers of knowledge in increasing number. Applications of CFD technology in many other sectors of industry are being successfully tackled. The aerospace industry has made significant investments and enjoys considerable benefits from the application of CFD to its products for the last two decades. This era began with the pioneering work of Murman and others that took us into the transonic (potential flow) regime for the first time in the early 1970's. We have also seen momentous developments of the digital computer in this period into vector and parallel supercomputing. Very significant advances in all aspects of the methodology have been made to the point where we are on the threshold of calculating solutions for the Reynolds-averaged Navier-Stokes equations for complete aircraft configurations.

However, significant problems and challenges remain in the areas of physical modelling, numerics and computing technology. The long term industrial requirements are captured in the U. S. Governments 'Grand Challenge' for 'Aerospace Vehicle Design' for the 1990's: 'Massively parallel computing systems and advanced parallel software technology and algorithms will enable the development and validation of multidisciplinary, coupled methods. These methods will allow the numerical simulation and design optimisation of complete aerospace vehicle systems throughout the flight envelope'.

This volume contains a set of papers describing work carried out during the EuroMesh project on 'Multi-Block Mesh Generation for Computational Fluid Dynamics'. The work was performed under a cost shared research contract (AERO 0018) within the programme BRITE/EURAM Area 5 Aeronautics of the Commission of the European Communities (CEC). EuroMesh was a pre-competitive research project lead by British Aerospace Regional Aircraft Ltd under the umbrella of the Aeronautics initiative managed and administered by the CEC DGXIIIF. The project ran for two years with fourteen partners (6 from the aeronautics industry, 3 universities and 5 research institutes) from seven countries from the European Community and EFTA.

I would like to thank all those involved with EuroMesh for their enthusiasm and cooperation. In particular I would like to thank the Task Managers and Working Group Coordinators for their efforts. I would also like to offer my gratitude to Nigel Weatherill and Michael Marchant (University College of Swansea) for their assistance in the preparation of this publication and to Drietrich Knoerzer (CEC-DGXIIIh) for his guidance on the running of the project.

D. A. King, BAe Woodford, February 1993.

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