

Contents

	Page
Foreword/Avant-Propos	iii
SECTION 1: AEROSPACE MEDICAL PANEL	
Contents	1
Drawing on Today's Wise Investments: Longitudinal and Baseline Human-Resource Research by R.E. King, S.E. McGlohn and P.D. Retzlaff	3
Laser Generated 3-D Space Displays Images by J. Taboada	7
Pilot Testing in Virtual Environments by J.L. Weeks and F.M. Siem	11
SECTION 2: FLUID DYNAMICS PANEL	
Contents	13
1. Introduction	15
2. (CFD) Computer Dependent Developments, Prospects and Challenges	15
3. Prospects and Challenges in Wind Tunnel Testing	21
4. Fundamentals: Developments, Prospects, Challenges	25
5. Summary	32
SECTION 3: FLIGHT VEHICLES PANEL	
Contents	33
Future Transport Aircraft (FTA) (Tactical Transport Intermediate Range) by K. Wieland	35
Rotocraft 2020 by B.B. Blake and M.B. Tischler	40
Reconfigurable Flight Control at Wright Laboratory by P.R. Chandler	44
The International Test and Training "Range" by C. Van Norman	48
SECTION 4: MISSION SYSTEMS PANEL	
Contents	53
Information Correlation/Fusion by R. Onken and D. Dewey	55
Machine Perception by R. Onken and Dickmanns	59

Low Cost Inertial Systems by T. Cunningham	62
High Integrity Global Precision Positioning by G. Schmidt	64
Precision Pointing and Tracking for Targeting/Fire Control by T. King	66
Advanced Information Processing and Display Technologies by H. Timmers and K. Helps	68
Military Information Highway by J. Cymbalista	69
Fault Tolerant Highly Integrated Avionics Architectures by H. Timmers and L. Ott	73
Adaptive Real-Time Guidance Techniques by P. van Turenout and M.A.G. Peters	75
Integration of Technologies for Closed Cockpits by H. Timmers and K. Helps	78
Commanders' Decision Aid for Battle Planning and Execution by P. van den Brock	79
Advances in Supporting Technologies by U. Krogmann	83

SECTION 5: PROPULSION AND ENERGETICS PANEL

Contents	89
Pulse Detonation Wave Engine by R. Edelman and R.E. Enderson (Editor)	91
Gun Technology for the 21st Century by R.A. Pesce-Rodriguez and W.J. Kolkert (Editor)	94
Laser Power Beaming: An Emerging New Technology for Power and Propulsion in Space by H.E. Bennett and K.C. Schadow (Editor)	99

SECTION 6: STRUCTURES AND MATERIALS PANEL

Contents	105
Introduction by G.A.O. Davis (UK)	107
Required R & D in Airframe Structures & Materials for Combat Aircraft by J.J. Olsen (USA)	108
Seamless Transition from Product Concept to Production and Deployment by J. Coyle (USA)	116
Integrated Airframe Design Technology by O. Sensburg (Germany)	119
Low Cost Manufacturing by V.J. Johnson and R.C. Holzwarth (USA)	121

Maintenance-Free Aircraft by S. Welburn (UK)	126
Ageing Aircraft by S.G. Sampath (USA)	128
Ageing Engines by J.P. Immarigeon (Canada)	131
Smart Structures & Materials in Aerospace Applications of Next Generation by C. Boller (Germany)	133