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20010058955 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France

Soldier Mobility: Innovations in Load Carriage System Design and Evaluation ***la Mobilite du Combattant: Innovations dans la Conception et l'Evaluation des Gilets d'Intervention***

Soldier Mobility : Innovations in Load Carriage System Design and Evaluation; May 2001; 280p; In English, 27-29 Jun. 2000, Kingston, Canada; See also 20010058956 through 20010058977; CD-ROM contains full text document in PDF format

Report No.(s): RTO-MP-056; AC/323(HFM-043)TP/28; ISBN 92-837-1062-2; Copyright Waived; Avail: CASI; C01, CD-ROM; A13, Hardcopy; A03, Microfiche

On 27-29 June 2000, NATO, Partners for Peace and Non-NATO nationals from 10 countries met in Kingston, Canada to discuss soldier mobility through innovations in load carriage system design and evaluation. Sponsored by the Human Factors and Medicine Panel (HFM) of the North Atlantic Treaty Organization's Research and Technology Organization, the specialist's meeting participants examined the current state of knowledge in load carriage, exchanged findings from recent research and development initiatives, explored what initiatives were needed to develop new concepts in design and evaluation and identified opportunities for collaboration. Specific sessions were held on the physiology, biomechanics and performance measures of load carriage, approaches and tools for assessment, development and validation of objective tests and their use in design solutions, mathematical modelling and the accuracy of pressure sensor measurement systems. There were two keynote addresses, twenty-five scientific papers, four workshops on future directions and tours of load carriage research facilities during the conference. The meeting unveiled many new findings, such as: possible energy transfers between body segments and between the pack and the person; objective assessment technologies for better understanding and design of load carriage systems; an interest in mathematically modelling the pack-person interactions and their effects on the carrier; and a willingness to work together toward sharing resources, data and the development of an improved STANAG for personal load carriage.

Author

Biodynamics; Conferences; Human Factors Engineering; Human Performance; Weight (Mass)

20010059206 Research and Technology Organization, Information Systems Technology Panel, Neuilly-sur-Seine, France

Visualisation of Massive Military Datasets: Human Factors, Applications, and Technologies ***Final Report la Visualisation d'Ensembles Volumineux de Donnees Militaires: Facteurs Humanins, Applications et Technologies***

May 2001; 162p; In English; Original contains color illustrations

Report No.(s): RTO-TR-030; AC/323(IST-013)TP/9; IST-013/RTG-002; ISBN 92-837-1066-5; Copyright Waived; Avail: CASI; C01, CD-ROM; A08, Hardcopy; A02, Microfiche

This final report of IST-013/RTG-002 "Visualization of Massive Military Datasets" presents some of the issues involved in visualisation as well as techniques that have been used in support of visualization for military applications. These issues are

examined from three viewpoints: issues relating to human abilities and requirements, issues of data and of display technology, and issues relating to exemplary applications. Visualisation is seen to be something that happens in the mind of a human, not on the screen of a display. Effective visualization requires the users to interact closely with visual, auditory and perhaps haptic displays. IST-013/RTG-002 has accepted a reference model developed by IST-005, its predecessor group. The IST-005 Reference Model describes three loops of interaction between human and machine, an outermost loop that is the ”Why”, a middle loop that is the ”What”, and an inner loop that is the ”How” of visualisation. Since it is the human who visualizes, the central questions concern the human factors of the visualisation process. Important among these questions are the purposes of the users, together with the sensory and cognitive capabilities and limitations of humans. We identify four classes of purpose: Monitoring/controlling, Alerting, Searching, and Exploring. These purposes have different implications for the displays and the input devices, as well as for the engines that process the data. Chapter 3 of this report attempts a simple taxonomy of the kinds of data that might be involved in visualization. Finally, it is not enough simply to construct a visualisation system. It must be evaluated. Chapter 8 of the report discusses how this may be done.
Author
Data Processing; Display Devices; Human Factors Engineering; Data Bases

20010063892 Research and Technology Organization, Neuilly-sur-Seine, France
RTO Technical Publications: A Quarterly Listing ***Quarterly Report, 1 Apr. - 30 Jun. 2001***
July 2001; 6p; In English
Report No.(s): RTO-01-02; Copyright Waived; Avail: CASI; A02, Hardcopy; A01, Microfiche

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Author
Technical Writing; Reports

20010066252 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France
The Impact of NATO/Multinational Military Missions on Health Care Management ***L'Impact des Missions OTAN/Militaires Internationales sur la Gestion des SOIns de Sante***
The Impact of NATO/Multinational Military Missions on Health Care Management; May 2001; 140p; In English, 4-6 Sep. 2000, Kiev, Ukraine; See also 20010066253 through 20010066273; CD-ROM contains full text document in PDF format
Report No.(s): RTO-MP-068; AC/323(HFM-051)TP/35; ISBN 92-837-1059-2; Copyright Waived; Avail: CASI; C01, CD-ROM; A07, Hardcopy; A02, Microfiche

The proceedings include the Technical Evaluation Report, two key-note addresses, and solicited papers of the Specialists' meeting sponsored by the NATO Human Factors and Medicine panel and held at the 'Ukrainsky Dim' in Kiev, Ukraine, 4-6 September 2000. Recent major events across the world and at national levels have radically altered the global picture and have reshaped the NATO strategy from one aimed at resolving international conflict to one predominantly aimed at missions other than way (peacekeeping, humanitarian, disaster relief, etc.). Most of these missions are performed by multinational forces, which requires the cooperation of all military services including the medical support systems. The new objectives require radical changes in the organizational structure, management, and supply of national and allied military health systems. The purpose of this Specialists' Meeting was to exchange information and experience on Health Service Support (HSS) of multinational troops, to review the development of interoperable forms of multinational HSS in the field, to examine the lessons learned during actual operational deployment of multinational medical facilities, and to discuss the interplay between multinational, alliance/NGO, and civil/military operations in coping with disasters which require alliance or EAPC assistance.
Author
Medical Services; Health; North Atlantic Treaty Organization (NATO); International Cooperation; Standardization; Emergencies

20010067671 Research and Technology Organization, Applied Vehicle Technology Panel, Neuilly-sur-Seine, France

Active Control Technology for Enhanced Performance Operational Capabilities of Military Aircraft, Land Vehicles and Sea Vehicles

June 2001; 950p; In English; In French, 8-11 May 2000, Brunswick, Germany; See also 20010067672 through 20010067754; CD-ROM contains full text document in PDF format

Report No.(s): RTO-MP-051; AC/323(AVT-048)TP/35; ISBN 92-837-0018-X; Copyright Waived; Avail: CASI; C01, CD-ROM; A99, Hardcopy; A10, Microfiche

The Symposium analyzed the potential of active control technology for the performance demands of future vehicles and engines. in particular high maneuverability, lower specific fuel consumption, higher power-to-weight ratios, and lower life-cycle cost. Performance, stability, control, fluid dynamics, structural and engine layout questions were dealt with in five keynotes and 77 papers. The following sessions were held: Boundary Layer Control; Active Flow Control of Nozzle/Jet; Drag and Buffet Control; Noise Control; Vortex Control; Flight Vehicle Active Control; Smart Structures Applications; Active Control Technology For Load Alleviation; Active Elements for Structural Design; Active Materials and Applications; Applications Overview; Compressor Stall/Surge Measurements; Compressor Stall/Surge Control; Combustion Instabilities, Measurements and Predictions; Combustion Instabilities, Control Fundamentals; and Combustion Instabilities, Control Applications. The Symposium was organized by the Applied Vehicle Technology Panel (AVT).

Author

Active Control; Flight Control; Conferences; Boundary Layer Control; Fluid Dynamics; Thrust Vector Control; Buffeting; Combustion Control; Combustion Stability; Aerodynamic Stability

20010071193 Research and Technology Organization, Systems Concepts and Integration Panel, Neuilly-sur-Seine, France

Technologies for Future Precision Strike Missile Systems ***les Technologies des Futurs Systemes de Missiles pour frappe de precision***

Technologies for Future Precision Strike Missile Systems; July 2001; 148p; In English, 18-19 Jun. 2001, Tbilisi, Bucharest, Madrid, Stockholm, Georgia, Romania, Spain, Sweden; See also 20010071194 through 20010071203; Original contains color illustrations

Report No.(s): RTO-EN-018; AC/323(SCI-087-bis)TP/37; ISBN 92-837-1070-3; Copyright Waived; Avail: CASI; C01, CD-ROM; A07, Hardcopy; A02, Microfiche

This lecture series addressed recent advances in the state-of-the-art for precision strike missile systems. Emerging technologies that were addressed in the lecture series included: (1) Mission planning technology. Assessments included off-board sensor integration, near-real-time mission planning, flight altitude, terrain following, and missile data links for in-flight targeting; (2) Missile aeromechanics technology. Assessments included hypersonic airframes, low cost/high temperature structure, and ramjet propulsion; (3) Guidance and control technology. An overview of existing guidance and control was given. Assessments included precision guidance and optimal guidance laws; (4) Missile GPS/INS sensor technology. Assessments included low cost INS and GPS/INS integration; (5) Missile design technology. An overview of the missile design process was given. Assessments included computer programs and electronic spreadsheets for conceptual design and missile deign criteria; (6) Seeker technology. Assessments included active and passive imaging infrared and radar seekers; (7) Missile/aircraft integration technology. Assessments included high firepower weapon concepts, reduced observables, and insensitive munitions; and (8) Simulation/validation technology. Assessments included hardware-in-the-loop and design validation.

Author

Missiles; Mission Planning; Aerodynamics; Missile Systems; Missile Design; Missile Control

20010071702 Research and Technology Organization, Neuilly-sur-Seine, France

RTO Highlights 2000, May 2001

May 2001; 60p; In English

Report No.(s): RTO-HIGHLIGHTS-00/1; Copyright Waived; Avail: CASI; A04, Hardcopy; A01, Microfiche; C01, CD-ROM

RTO is the single focus in NATO for Defence Research and Technology activities. Its mission is to conduct and promote cooperative research and information exchange. The objective is to support the development and effective use of national defence research and technology and to meet the military needs of the Alliance, to maintain a technological lead, and to provide advice to NATO and national decision makers. The RTO performs its mission with the support of an extensive network of national experts. It also ensures effective coordination with other NATO bodies involved in R&T activities. RTO reports both to the Military Committee of NATO and to the Conference of National Armament Directors. It comprises a Research and Technology Board (RTB) as the highest level of national representation and the Research and Technology Agency (RTA), a dedicated staff with its headquarters in Neuilly, near Paris, France. In order to facilitate contacts with the military users and other NATO activities, a small

part of the RTA staff is located in NATO Headquarters in Brussels. The Brussels staff also coordinates RTO's cooperation with nations in Middle and Eastern Europe, to which RTO attaches particular importance especially as working together in the field of research is one of the more promising areas of initial cooperation. The total spectrum R&T activities is covered by the following seven bodies: (1) Applied Vehicle Technology Panel; (2) Human Factors and Medicine Panel; (3) Information Systems and Technology Panel; (4) NATO Modelling and Simulation Group; (5) Studies, Analysis, and Simulation Panel; (6) Systems Concepts and Integration Panel; and (7) Sensors and Electronics Technology Panel.
Author
Research and Development; Autonomy; Personnel; Technology Utilization

20010072746 Research and Technology Organization, Modelling and Simulation Group, Neuilly-sur-Seine, France
The Second NATO Modelling and Simulation Conference ***Deuxieme Conference OTAN sur la Modelisation et la Simulation***
July 2001; 190p; In English, 24-26 Oct. 2000, Shrivenham, UK; See also 20010072747 through 20010072767; CD-ROM contains fulltext document in PDF or PowerPoint format
Report No.(s): RTO-MP-071; AC/323(NMSG-010)TP/1; ISBN 92-837-1069-X; Copyright Waived; Avail: CASI; C01, CD-ROM; A09, Hardcopy; A02, Microfiche

The conference presented a series of papers in plenary sessions that were designed to provide an overview of NATO Modelling and Simulation (M&S) current best practice, standards, interoperability and reuse. The Conference also provided information on NATO M&S policy, and new M&S activities within the Alliance.
Author
Conferences; Computerized Simulation; Environment Simulation; Models; Human Factors Engineering; Military Technology

20010076799 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France
Operational Medical Issues in Hypo- and Hyperbaric Conditions ***Les Questions Medicales a Caractere Operationnel Liees aux Conditions Hypobares ou Hyperbares***
Operational Medical Issues in Hypo- and Hyperbaric Conditions; June 2001; 382p; In English; In French, 16-19 Oct. 2000, Toronto, Canada; See also 20010076800 through 20010076846; CD-ROM contains full text document in PDF format
Report No.(s): RTO-MP-062; AC/323(HFM-050)TP/34; ISBN 92-837-0019-8; Copyright Waived; Avail: CASI; C01, CD-ROM; A17, Hardcopy; A03, Microfiche

On 16-19 October 2000, NATO, Partnership for Peace (PfP), and Non-NATO nationals from 24 countries met in Toronto, Canada to attend a symposium on Operational Medical Issues in Hypo- and Hyperbaric Conditions relevant to the alliance, arranged by NATO/RTO/HFM. Exposures to the said conditions are experienced regularly in military operations, but this was the first time operational medical issues affecting air, sea, and land forces were addressed in a NATO forum. Canada was chosen as venue site due to Canadian research establishments' expertise in special environmental issues. Themes addressed were decompression illness, breathing gas composition, hypoxia, hyperbaric oxygen treatment of combat injuries, selection, training and adaptation of personnel for special operations, Eustachian tube function, barotrauma, alternobaric vertigo, positive pressure breathing and long term health damage in divers. Relevant technical issues were also discussed.
Author
Decompression Sickness; Diving (Underwater); Hypoxia; Pressure Breathing; Hyperbaric Chambers; Hypobaric Atmospheres; Aerospace Medicine

20010081057 Research and Technology Organization, Applied Vehicle Technology Panel, Neuilly-sur-Seine, France
NATO East-West Workshop on Magnetic Materials for Power Applications ***Atelier OTAN Est-Ouest sur les Materiaux Magnetiques pour Applications Propulsives***
August 2001; 58p; In English, 25-30 Jun. 2000, Marathon, Greece; CD-ROM contains the entire document in PDF format
Report No.(s): RTO-TR-031; AC/323(AVT-060)TP/36; ISBN 92-837-1060-6; Copyright Waived; Avail: CASI; C01, CD-ROM; A04, Hardcopy; A01, Microfiche

The NATO Workshop with Partners for Peace on Advanced Magnetic Materials for More Electric Vehicles and Electric Pulse Power Weapons (AVT-060) was organised with the aim of assessing the need for improved magnetic materials primarily in future generations of more electric vehicles and (to a lesser extent) in electric pulse power weapons. Scientists from eight NATO countries and five non-NATO countries participated. Recent advancements and further improvements were discussed: 1) Applications; 2) Fundamental and Technical Magnetism; 3) Characterisation; 4) Materials; 5) Novel Processing; and 6) foundations for future co-operation were established.
Author
Electric Motor Vehicles; Magnetic Materials; Magnetic Properties; Electric Power Supplies; Military Vehicles

20010082326 Research and Technology Organization, Systems Concepts and Integration Panel, Neuilly-sur-Seine, France
Strategies to Mitigate Obsolescence in Defense Systems Using Commercial Components ***Strategies Visant a Attenuer l'Obsolescence des Systemes par l'Emploi de Composants du Commerce***
June 2001; 270p; In English; In French, 23-25 Oct. 2000, Budapest, Hungary; See also 20010082327 through 20010082355; Original contains color illustrations
Report No.(s): RTO-MP-072; AC/323(SCI-084)TP/31; ISBN 92-837-0020-1; Copyright Waived; Avail: CASI; A12, Hardcopy; C01, CD-ROM; A03, Microfiche

The meeting proceedings from this symposium on 'Strategies to Mitigate Obsolescence in Defense Systems Using Commercial Components' was organized and sponsored by the Systems Concepts and Integration (SCI) Panel of the Research and Technology Organization of NATO in Budapest, Hungary from 23 to 25 October 2000. The symposium's goal was to propose new strategies for obsolescence management including open architecture, functional partitioning and technology insertion that have to be addressed during system engineering, detailed design, production, and product support. The symposium outlined actual problems and solutions to the issue of obsolescence by the entire defense system community. It also addressed burning questions related to the problem of parts obsolescence and diminishing, manufacturing sources and material shortages. Management tools and methodologies to cope with the risk of obsolescence were discussed. This included new design concepts and system architectures to allow advanced technology insertion during the system life cycle. Session topics were organized under the four topics of: (1) status and experience with commercial off-the-shelf technology in defense electronic systems; (2) obsolescence management tools; (3) new design concepts and architectures to combat obsolescence; and (4) strategies and initiatives for life cycle management.
CASI
Commercial Off-The-Shelf Products; Conferences; Systems Engineering; Defense Industry; Avionics; Electronic Equipment; Computer Programs

20010083585 Research and Technology Organization, Human Factors and Medicine Panel, Neuilly-sur-Seine, France
Medication for Military Aircrew: Current Use, Issues, and Strategies for Expanded Options ***les Medicaments pour les equipages militaires: Consommation actuelle, questions et strategies pour des options elargies***
Medication for Military Aircrew: Current Use, Issues, and Strategies for Expanded Options; June 2001; 166p; In English; See also 20010083586 through 20010083603; CS-ROM contains full text document in PDF format
Report No.(s): RTO-TR-014; AC/323(HFM-014)TP/14; ISBN 92-837-1063-0; Copyright Waived; Avail: CASI; C01, CD-ROM; A08, Hardcopy; A02, Microfiche

Working Group 26 evaluated issues pertaining to expanding the range of medications available for use in military aircrew. Working Group 26 completed its work under the auspices of the Human Factors and Medicine Panel of the NATO Research and Technology Agency. The group conducted a survey of medication use policies among NATO air forces and presents the data. The group also reviewed the current state of aeromedical issues for treatment of certain commonly encountered conditions in military aircrew. The working group also presents discussions of the general approaches to determining the suitability of medication for use in military aircrew for therapeutic indications and for operational indications. The ethics of such decisions in military aerospace medicine are also discussed. The best means for evaluating specific areas of aeromedical concern when studying medication are presented. Medications identified as candidates for immediate study for the benefit of military aircrew and their air forces are used for hypertension, lipid disorders, depression, anxiety disorders, malaria prevention, promotion of performance during prolonged sleepless periods, and promotion of sleep for short periods of time to support sustained operations. The working group provides recommendations to enhance knowledge between nations about aeromedical research on medications effects and aeromedical experience with medication. The group proposes use of cooperative research between nations to accelerate the process of answering questions about aeromedically significant side effects and expand the range of medications available for use in military aircrew.
Author
Aerospace Medicine; Flight Crews; Drugs; Pharmacology; Human Factors Engineering