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RTO MEETING PROCEEDINGS 77

Human Factors in the 21st Century

(Les facteurs humains au 21^e siècle)

Papers presented at the RTO Human Factors and Medicine Panel (HFM) Specialists' Meeting held in Paris, France, 11-13 June 2001.

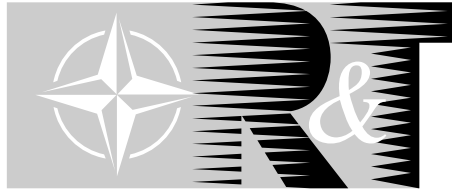


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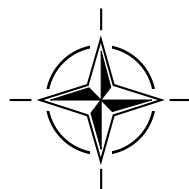
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RTO reports both to the Military Committee of NATO and to the Conference of National Armament Directors. It comprises a Research and Technology Board (RTB) as the highest level of national representation and the Research and Technology Agency (RTA), 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 of R&T activities is covered by the following 7 bodies:

- AVT Applied Vehicle Technology Panel
- HFM Human Factors and Medicine Panel
- IST Information Systems Technology Panel
- NMSG NATO Modelling and Simulation Group
- SAS Studies, Analysis and Simulation Panel
- SCI Systems Concepts and Integration Panel
- SET Sensors and Electronics Technology Panel

These bodies are made up of national representatives as well as generally recognised 'world class' scientists. They also provide a communication link to military users and other NATO bodies. RTO's scientific and technological work is carried out by Technical Teams, created for specific activities and with a specific duration. Such Technical Teams can organise workshops, symposia, field trials, lecture series and training courses. An important function of these Technical Teams is to ensure the continuity of the expert networks.

RTO builds upon earlier cooperation in defence research and technology as set-up under the Advisory Group for Aerospace Research and Development (AGARD) and the Defence Research Group (DRG). AGARD and the DRG share common roots in that they were both established at the initiative of Dr Theodore von Kármán, a leading aerospace scientist, who early on recognised the importance of scientific support for the Allied Armed Forces. RTO is capitalising on these common roots in order to provide the Alliance and the NATO nations with a strong scientific and technological basis that will guarantee a solid base for the future.

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Human Factors in the 21st Century

(RTO MP-077 / HFM-062)

Executive Summary

On 11th-13th June 2001, NATO members, representatives from Partnership for Peace nations, and Non-NATO nationals met in Paris to discuss the subject of Human Factors linked to developments in military affairs in the increasingly technological context of the 21st century. This meeting was part of the activities of the Human Factors and Medicine Panel of the North Atlantic Treaty Organisation's Research and Technology Organisation (RTO/HFM).

The revolution in military affairs, dating from the end of the Cold war, and the technology breakthroughs achieved in a number of different fields, lead us to look again in different ways at the place of the human operative in military activities and in particular at the place which should be allotted to him in complex socio-technical systems, with their difficult multilanguage, multisystem and multicultural contexts, in uncertain and ambiguous environmental and conflictual situations and from an increasingly broader and more integrated technological point of view.

The different groups worked on manpower, communications and management organisation in new, complex socio-technical systems, on technology and man-machine interface (MMI) related aspects and on medical implications.

A summary of the work undertaken during the specialists meeting was focussed down to a list of priorities selected from a number of fairly broad disciplinary fields identified as requiring a considerable amount of work in the HFM field.

It was considered that three approaches were particularly interesting, given their integrated response to the aims and priorities in question i.e.: first, a global interdisciplinary approach, enabling true systems engineering and human factors engineering integration, second, complex thinking as a way of responding to the need to stop dealing with problems one by one, in a static way, and third, the need to adopt an epistemological approach in the future in order to ensure the satisfactory overall positioning of the human being with respect to available techniques. Finally, multinational operations and in particular, operations other than war (OOTW) were considered as the military situation the most likely to benefit from the results achieved by these new approaches.

Les facteurs humains au 21^e siècle

(RTO MP-077 / HFM-062)

Synthèse

Des membres de l'OTAN, des représentants des pays du Partenariat pour la Paix et des représentants de pays non membres de l'OTAN se sont réunis à Paris du 11 au 13 Juin 2001 pour discuter des Facteurs Humains liés aux évolutions des affaires militaires et dans un contexte technologique de plus en plus fort, à l'aube du 21^{ème} siècle. Cette réunion de spécialistes faisait partie des activités de la Commission sur les facteurs humains et la médecine de l'Organisation pour la recherche et la technologie de l'OTAN (RTO/HFM).

La révolution dans les affaires militaires née de la fin de la guerre froide, et l'évolution technologique dans de nombreux domaines amènent à réfléchir à de nouveaux aspects de la place de l'humain dans l'activité militaire. En particulier, il faut s'intéresser à la place qui lui doit être spécifiée dans les systèmes socio-techniques complexes, avec leur difficile contexte de multi-langues, de multi-systèmes et de multi-cultures, dans des situations de conflits et d'environnement ambigus et incertains, et dans une approche technique globale de plus en plus large et intégrée.

Les travaux des différents groupes ont porté sur les concepts des ressources humaines, d'organisation de management et de communication au sein des nouveaux systèmes socio-techniques complexes, sur les aspects liés à la technologie, les interfaces homme-machine (MMI), et les implications en matière de médecine.

Une synthèse des travaux de la réunion de spécialistes a permis de converger vers une liste de priorités, composée de différents domaines disciplinaires plus ou moins larges, dans lesquels un important travail dans le domaine HFM est à réaliser.

Il a été considéré que trois approches devaient plus particulièrement être abordées pour leurs capacités à répondre de manière intégrée aux objectifs et aux priorités : l'interdisciplinarité au niveau de l'approche globale pour permettre une véritable intégration de l'ingénierie système et de l'ingénierie facteurs humains, la pensée complexe comme moyen de répondre au besoin qui existe de ne plus traiter les problèmes de façon granulaire et en situation statique et le besoin de conduire une approche épistémologique pour assurer dans le futur un positionnement satisfaisant et global de l'homme et de la technique. Enfin, les opérations multinationales et en particulier les opérations autres que la guerre (OOTW), devaient être considérées comme les plus aptes à bénéficier des résultats de ces nouvelles approches.

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14. Abstract					
<p>Representatives of NATO member nations, Partnership for Peace countries and non-NATO member nations met in Paris (Val de Grâce Hospital) from 11 to 13 June 2001, for a Specialists Meeting on "Human Factors problems in the 21st century". This meeting was particularly concerned with Human Factors problems which have appeared since what is known as the Revolution in Military Affairs (RMA) dating from the end of the Cold War.</p> <p>The meeting was held in parallel with a workshop on decision making in the 21st century from 13 to 15 June 2001, organised jointly by the DGA (The General Armaments Delegation of the French Ministry of Defence), the ONRIFO (Office of Naval Research Field Office) and the company THALES.</p>					

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