

Survival of the Fittest: 90 Years of Dutch Aeronautics RDT&E in a Globalising Environment

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Summary

In 1919 Royal Dutch Airlines – KLM, Fokker Aircraft Industry and The National Aerospace Laboratory – NLR, were founded. In the following 90 years, in three main time periods, many political and technological developments shaped KLM, Fokker and NLR into today's form and structure. These three time periods are 1919 to 1945, the Cold War period to 1989, and the post Cold War period to the present day.

The main developments in these time periods were:

- the consolidation of the multiple national aircraft industries, through National Champions and Joint Ventures between National Champions into European aerospace industries
- the consolidation of the multiple national airlines, through national flag carriers, airline alliances and mergers into global airlines
- the consolidation of Europe and the development of European organisations and agencies
- the development of European and international cooperation in aeronautical research

Against these global and European developments, the lecture will address the development and implementation of new technology to support the Netherlands Aeronautical Industry, and civil and military operators in the changing environments of the periods between the First and Second World Wars, during the Cold War and after the Cold War.

The presentation will address the NLR RDT&E support of:

- the Dutch Military Forces in the field of threat analysis, self protection, training and maintenance, as well as helicopter-ship qualification
- Fokker in the field of aerodynamic design, structural testing and flight testing of the Fokker F.27, F.28, Fokker 50 and Fokker 100, and the support in composites design and qualification in the period after the Fokker bankruptcy in 1996
- Schiphol Airport and ATC The Netherlands in order to increase the airport capacity, within the (legal) boundaries of safety, noise and emissions

Furthermore it will address how NLR increases its RDT&E effectiveness and efficiency by increased participation in the EU Framework Programmes, AGARD/RTO, GARTEUR, ACARE and the Association of European Research Establishments in Aeronautics, and in the field of wind tunnels, by jointly building, operating and exploiting large wind tunnels like the Large Low-speed German-Netherlands Windtunnel (DNW-LLF) and the European Transonic Windtunnel (ETW).

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Fred Abbink graduated in Electrical Control Engineering at the Faculty of Electrical Engineering of the Technical University Delft in January 1968. After serving as an officer in the Royal Netherlands Navy, he joined NLR in October 1969 as a project engineer / project leader in a number of avionics projects: NLR's moving base flight simulator, SpaceLab, navaid calibration / flight inspection system for the NL ANSP, airborne computer based flight testing system for the Fokker 50/100 evaluation and certification.

In 1981 he became head of NLR's flight testing and helicopters department, responsible for NLR's laboratory aircraft, helicopter research, avionics research, military operations research and accident investigation. In the same year, he was appointed as part-time professor in aircraft instrumentation and avionics at the Faculty of Aerospace Engineering of the Technical University Delft.

In 1988 he became Technical Director of NLR, responsible for the government funded research programmes and the development of NLR's large test and evaluation facilities, international cooperation and quality management. From 1996 to 1998, he was detached from NLR to become Programme Director Aeronautics at the German Aerospace Center – DLR, in Cologne. There he was responsible for all of DLR's in-house aeronautics research programmes. In 2005 he became General Director of NLR.

Mr Abbink has been a visiting professor at the Institut Teknologi Bandung in Indonesia in 1983 and 1989, the National Aerospace Laboratory – NAL (now JAXA) in Japan in 1992, and the Technical University in Helsinki in 1999. From 2006-2008 he was President of the International Council for the Aeronautical Sciences (ICAS) and chair or member of a number of supervisory boards and committees, including DNW, ETW, AIAA, EU-TAG, EREA, ICAS, VKI, ANAE, ACARE.

After his retirement at the end of 2009, he remained very active in the field of Aerospace including a position as President Commissioner at the firm NEDAERO, Chairman of the Netherlands Foundation CompoWorld and chairman of the Netherlands Association for Aeronautical Engineers (NVvL). He is also member of various advisory boards for: the EU CleanSky Scientific and Technology Advisory Group (STAB), the EU SESAR Scientific Board, the board of the Von Karman Institute (VKI), the Strategic Advisory Council of TNO Integral Safety and Security, the Programme Council of the Netherlands Space Office (NSO), the Royal Netherlands Association for Aviation (KNVvL), the Programme Committee van ICAS, the Board of the Council of European Aerospace Societies (CEAS) and the EU

Transport Advisory Group (EU TAG). Furthermore he is a member of the Netherlands Academy of Technology and Innovation (AcTI).

Mr Abbink is an Officer in the Order of Oranje Nassau, Fellow of the American Institute of Aeronautics and Astronautics (AIAA), Honorary Fellow of the International Council for the Aeronautical Sciences (ICAS, Fellow of the French Académie de l'Air et de l'Espace (ANAE), Member of the Netherlands Academy of Technology and Innovation, and Honorary Member of the TU-Delft Aerospace Students Association Leonardo Da Vinci.