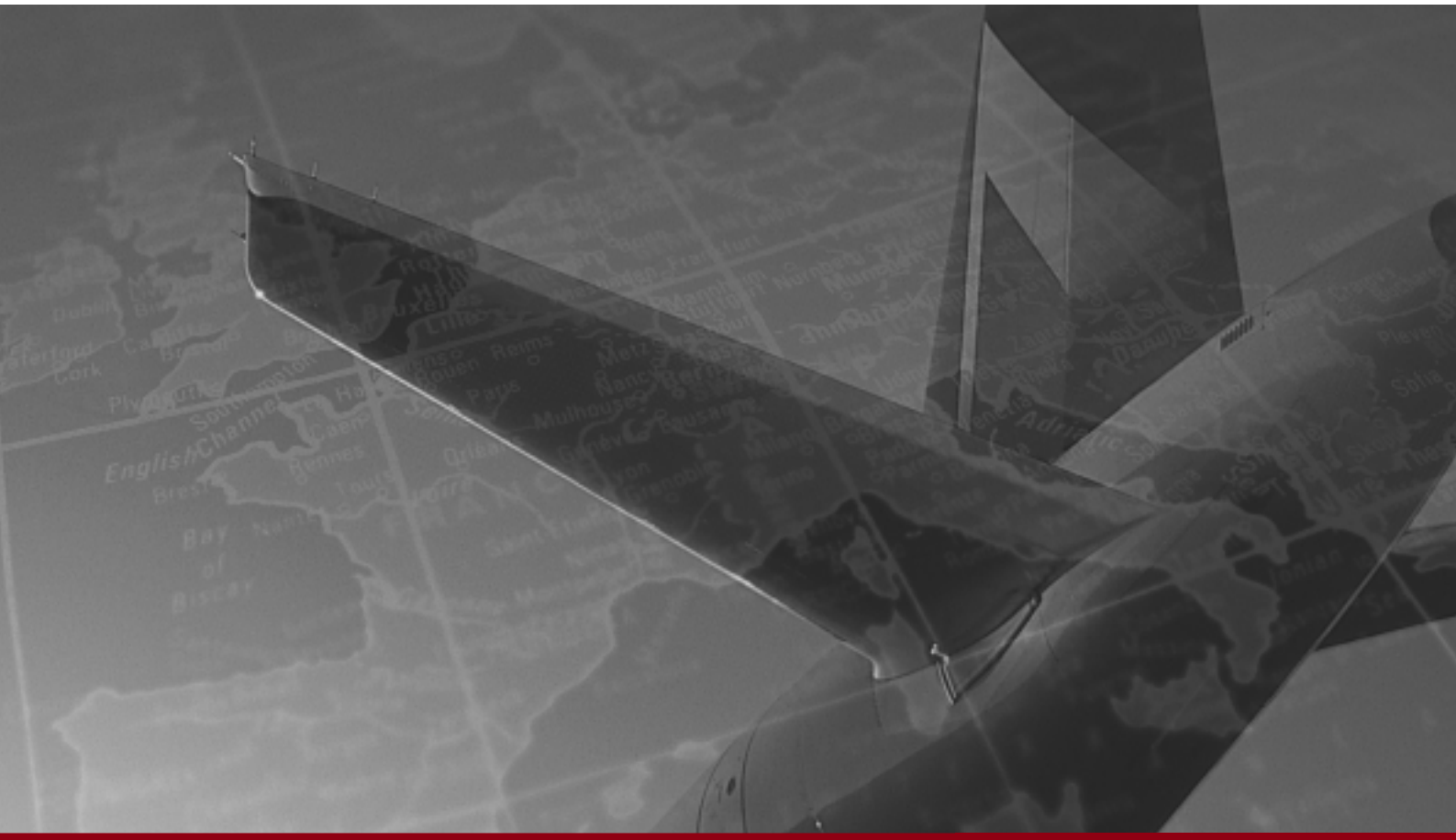
EUROCONTROL
Annual Report 2003



European Organisation for the Safety of Air Navigation

EUROCONTROL

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EUROCONTROL – THE EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL is an international organisation with 33 Member States: Albania, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, the former Yugoslav Republic of Macedonia, Malta, Moldova, Monaco, the Netherlands, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, Ukraine and the United Kingdom.

It is responsible for air traffic management in Europe. Its goals are to:

- heighten air traffic safety
- increase airspace capacity
- reduce air traffic delay
- enhance the cost-effectiveness of the air traffic management system
- minimise the effect of aviation on the environment.

Originally founded in 1960 as a civil/military international organisation to deal with air traffic control on a European level, EUROCONTROL is now a world-leader, pioneering advancement in air traffic management technology, operational procedures and system interoperability.

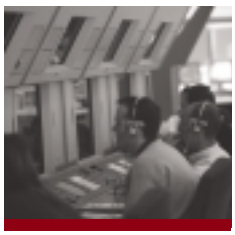
EUROCONTROL aims to develop a seamless air traffic management system for the entire European continent; a system which processes almost 60% of the world's international flights.

With more than 2,000 experts based in seven European countries, EUROCONTROL's core business activities are to:

- define and manage pan-European programmes for Air Traffic Management
- conduct research and development work aimed at increasing Air Traffic Control safety and capacity in Europe
- operate a Central Flow Management Unit
- collect route charges on behalf of Member States and through bilateral agreements with non-Member States – € 5.6 billion was billed in 2003
- provide training, education and the transfer of knowledge in Air Navigation Services, across the European continent and beyond
- provide Air Traffic Services through the management of an international Air Traffic Control Centre at Maastricht in the Netherlands for four States and the development of another centre for eight states in Central Europe.

Working closely with Member States, air navigation service providers, civil and military airspace users, airports, the aerospace industry, professional organisations and European institutions, EUROCONTROL is committed to ensuring that airspace users and passengers can continue to benefit from a safe, reliable and efficient air transport system.

2003 AT A GLANCE



22 January

Inauguration of the new operations room at the EUROCONTROL Upper Area Control Centre in Maastricht

20 February

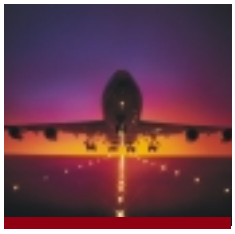
EUROCONTROL's European Aeronautical Information Services (AIS) Database Programme wins ATC Maastricht 2003 Award

1 March

EUROCONTROL celebrates the 40th Anniversary of the entry into force of its Convention relating to the Safety of Air Navigation

18 March

The Minister of Communications and Transport of Bosnia and Herzegovina, Branko Dokic, signs the EUROCONTROL revised Convention on behalf of his contry



10 April

The EUROCONTROL Provisional Council approves the European Strategic Safety Action Plan (SSAP)

14 April

EUROCONTROL and ENAV begin live trials of Medium-Term Conflict Detection (MTCD) at Rome ACC. These are the second of three trials begun at Malmo, Sweden, in winter 2002 and ending at the Maastricht Centre in winter 2003

29 April

EUROCONTROL awards contract to INDRA ATM for the development of a new generation of Flight Data Processing System

8 May

EUROCONTROL and NATO sign Memorandum of Cooperation

a glance

22 December

EUROCONTROL and the European Commission sign a Memorandum of Cooperation

18 December

First aircraft certified for Controller Pilot Datalink Communication

17 December

One hundred years of flight

24 November

EUROCONTROL inaugurates the entry into operation of EAD

17 November

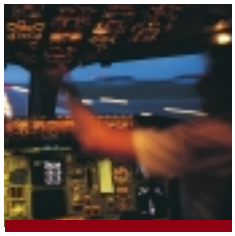
The Secretary of State of the Ministry of Infrastructure of Poland, Andrzeja Pilata, signs the Protocols relating to the EUROCONTROL revised Convention and the Accession of the European Community to EUROCONRTOL

6 November

EUROCONTROL's Commission approves ESARR6 "Safety Regulatory Requirement in ATM Systems"

18 June

The EUROCONTROL Upper Area control Centre launches a new screen-to-screen method of communication between pilots and air traffic controllers designed to improve safety and increase capacity in Europe's congested airspace



6 June

EUROCONTROL launches the pilot version of the European AIS Database (EAD)

MESSAGE FROM MIKKO TALVITIE, PRESIDENT OF THE PROVISIONAL COUNCIL

Mikko Talvitie

2003 will prove in the coming years to have been a turning point in the Organisation's history, for it was chiefly a year of preparation for great changes at EUROCONTROL.

Much work was carried out on the institutional front, culminating at the end of the year with the signing of a Memorandum of Cooperation between EUROCONTROL and the European Commission. This will provide a framework for cooperation and ensure synergies between the two bodies. This step coincided with the conclusion of the conciliation process on the Single European Sky Regulations, with EU States and the European Parliament reaching an agreement.

Based on its extensive expertise in air traffic management, the EUROCONTROL Agency has already started to support the implementation of the far-reaching Single European Sky Regulations following their adoption at the beginning of 2004. The Regulatory Committee will contribute actively to the implementation of these Regulations by supporting the development of relevant implementing rules. To this end, in 2003 the Committee put in place EUROCONTROL regulatory structures and working methods together with a regulatory work programme.

Although war in Iraq and the SARS epidemic made for severe economic constraints, which hurt airlines and air navigation service providers badly, it was gratifying to see traffic levels recovering and substantial savings being made through the sharp reduction in delays. While record numbers of flights were reported in the summer, delays fell by 30%. This is a most encouraging indication that efforts to improve capacity are paying off.

With delays brought down to record levels in 2003, increased efforts were made to deliver a safe and cost-efficient European air traffic management system.

The improvement of Europe's safety record remained a high priority on the Provisional Council's agenda. Europe's safety results in 2003 were better than ever. However, recent accidents prove that even more needs to be done in this area. In 2003 the Provisional Council approved the Strategic Safety Action Plan proposed by the High-Level European Action Group for ATM Safety (AGAS). This plan provides a solid structure for change and calls for immediate action across Europe.

At the same time, EUROCONTROL, in close coordination with its stakeholders, demonstrated determination to identify opportunities to increase economic efficiency in air traffic management without compromising safety, capacity or service levels. While safety remains EUROCONTROL's key driver, cost efficiency is a crucial consideration for the Organisation.

In this respect, the Performance Review Commission and the Safety Regulation Commission continued to play a critical role, producing high-quality work geared to improving the performance and safety of European ATM.

Solid advances were also made in civil and military cooperation in air navigation with the conclusion of a Memorandum of Cooperation with NATO. The two organisations have clearly demonstrated in the past that they can join forces to advance their respective aims. This Memorandum, signed in 2003, reinforces existing cooperation to the advantage of the entire European air traffic management system.

The European ATM environment is expected to evolve considerably over the coming 15 - 20 years. 16 million flights a year by 2002, together with institutional changes, will be the principal drivers behind this transformation. EUROCONTROL will require leadership and determination in order to achieve its objectives and consolidate its role within the Single European Sky Regulations. It will require the same commitment it has displayed over the past forty years to bring all the main stakeholders together in the knowledge that all players in the industry must better understand each other's functions and basic role in the service chain. We must work more closely together than ever before if we are all to deliver the level of services demanded by the travelling public.

At the end of my second year as President of the Provisional Council, I look back with great satisfaction at what the Organisation has achieved in 2003. These achievements would not have been possible without the close cooperation and hard work of everybody at EUROCONTROL. I would like to extend special thanks to my Bureau in the central secretariat for their advice and support throughout the year.

FOREWORD
BY THE DIRECTOR GENERAL

Víctor M. Aguado

2003 was an anniversary year: EUROCONTROL celebrated 40 years of existence and aviation commemorated one hundred years of powered flight.

But economic difficulties, brought on by the situation in Iraq and the international outbreak of SARS (Severe Acute Respiratory Syndrome), made it a hard one for airlines and air navigation service providers.

However, 2003 was also a year that saw a number of advances. Safety records were improved; traffic figures began to recover and there was sufficient capacity to deal with growing numbers of flights. A number of technical programmes came online and the Single European Sky initiative became reality.

Capacity

One of the major achievements of 2003 was made in the capacity/delay domain. The economically optimum target of one minute's air traffic flow management delay per flight was almost reached, resulting in savings of millions of euros for the airlines.

These encouraging results can be attributed to long-term cooperation between a range of partners, careful planning and investment. The introduction of RVSM (Reduced Vertical Separation Minima) played a key role in this achievement.

Safety

2003 was a good year for safety overall but EUROCONTROL will not be complacent.

The High-Level European ATM (Air Traffic Management) Safety Action Group (AGAS), launched in EUROCONTROL after the Überlingen accident in 2002, developed a Strategic Safety Action Plan in 2003 which addresses a number of aspects including runway incursions, human resource issues and how to draw lessons from incidents and accidents.

Cost efficiency

Cost efficiency became a major issue in 2003. EUROCONTROL worked closely with partners from across the industry to try to improve matters. An Industry Crisis Monitoring High-Level Group was formed and its recommendations were reviewed by the Provisional Council in November. EUROCONTROL also launched an Efficiency Drive for the Agency that will reduce expenditure through the revision of logistic costs and overheads.

International cooperation

Approaches to aviation from across the world were collated at the eleventh ICAO Air Navigation Conference. European viewpoints, coordinated by EUROCONTROL, were well received and contributed to the successful outcome.

Importantly, the Global ATM Operating Concept was endorsed. This included pivotal elements, such as performance orientation, ATM-wide safety management, the use of airspace as a continuum, Collaborative Decision Making and information management. All these now form part of the global vision.

The relationship between NATO and EUROCONTROL was taken a step further with a new Memorandum of Cooperation, signed on 8 May 2003.

The two organisations also established a joint coordination group: the NATO/EUROCONTROL Air Traffic Management Security Coordinating Group. Together, they have developed ATM Security Guidelines which have been endorsed by our Member States. The group is now defining a European ATM Security Action Plan.

European Union

Pan-European cooperation in the context of the Single European Sky was strengthened. A Memorandum of Cooperation was signed at the end of the year by the European Commission and the EUROCONTROL Organisation. This was an important additional step following on from the European Community's accession to the Organisation.

Technical advances

A number of technical advances were made during the year – more details can be found in the pages that follow.

It is worth singling out just one, the European AIS Database, which was launched in pilot form in June and went live in November. The EAD will play an increasingly important role in the efficient distribution of aeronautical information in a cost-effective manner.

In conclusion

EUROCONTROL made sound progress in 2003. These achievements must be built on still further in the future.

Technical advances and solid collaboration with all the Organisation's partners are equally necessary.

Growth in traffic is still expected and all players in the field of air traffic management must be careful not to fall victim to the same situation that prevailed in 1999.

The Single European Sky initiative must be furthered.

Above all, every effort must be made to keep safety at the forefront of every activity.

SENIOR MANAGEMENT

Víctor M. Aguado
Director General

Wolfgang Philipp
Senior Director [1]

Jean-Marc Garot
Director EUROCONTROL Experimental Centre

George Paulson
Director Air Traffic Management Programmes

Massimo Fusco
Director Central Route Charges Office

Francisco Del Pozo
Director Finance

Volker Thiem
Director Human Resources

Jean-Robert Bauchet
Director Central Flow Management Unit

Gerhard Stadler
Director of the General Secretariat

Lars Wedbäck
Director Institute of Air Navigation Services

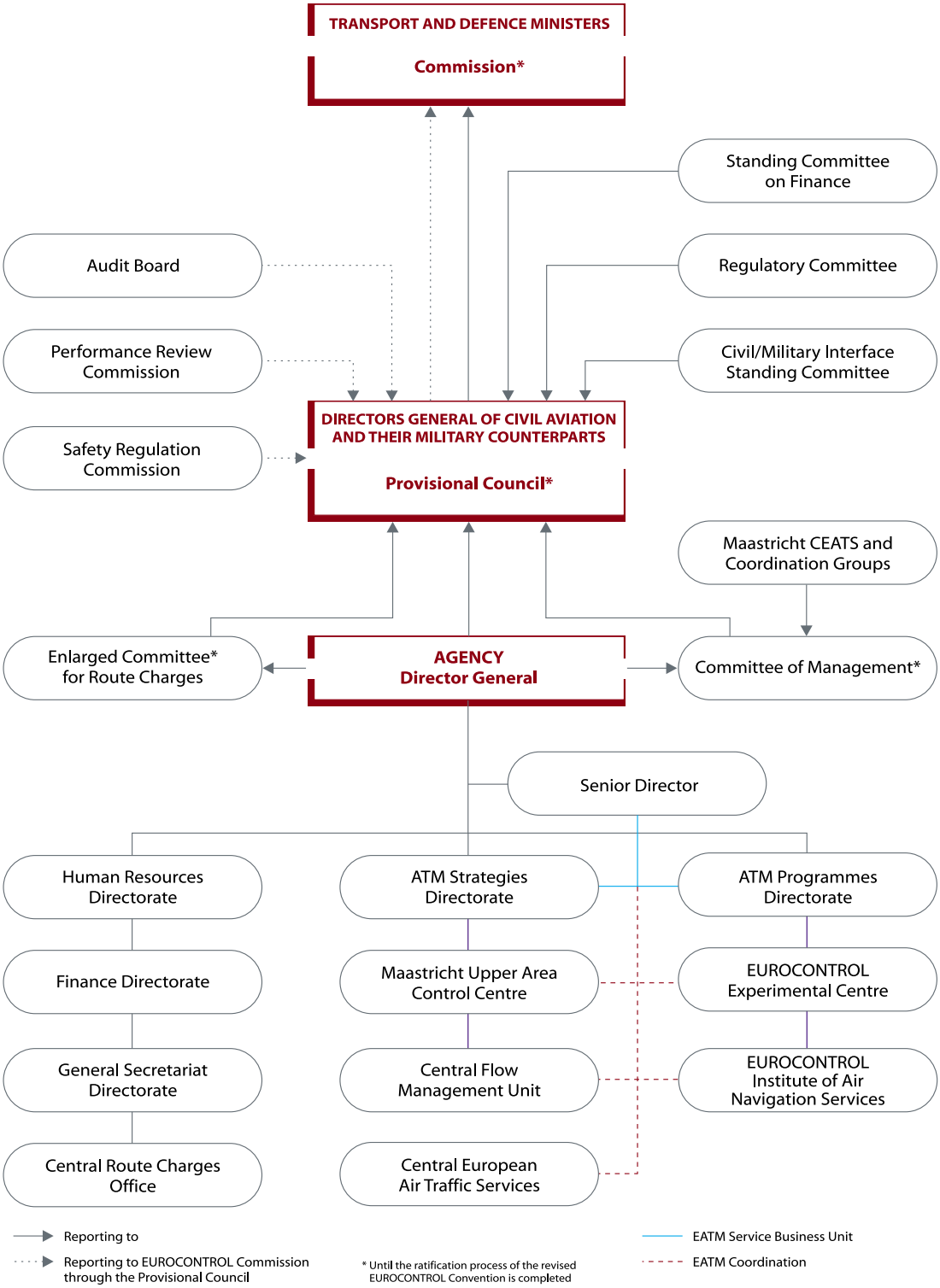
Karl-Heinz Kloos
Director of the Maastricht Upper Area Control Centre [2]

Bo Redeborn
Director Air Traffic Management Strategies [3]

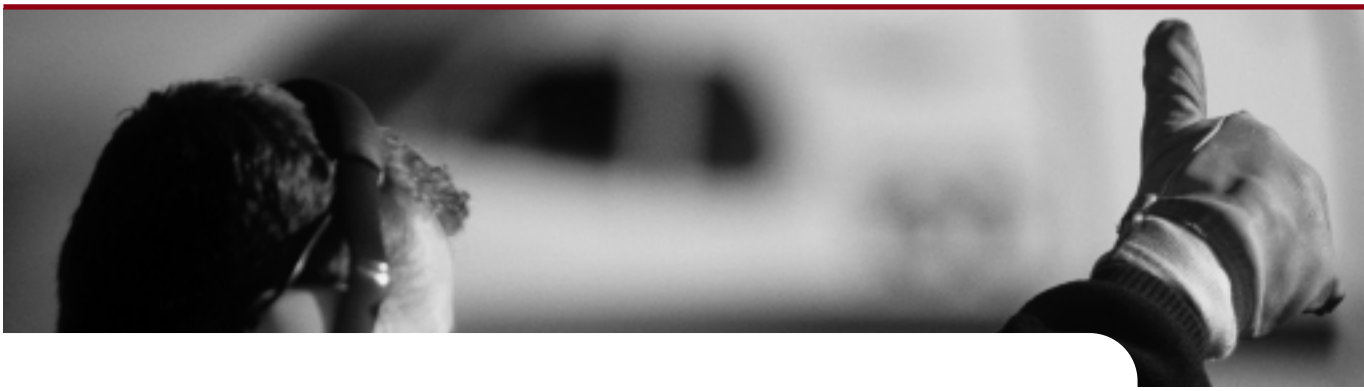
Guido Kerkhofs
Director Central European Air Traffic Services Programme

[1] retired in May 2004 [2] succeeded Arnold Vandenbroucke as Director of Maastricht UAC in Jan. 2004 [3] since Jan. 2004

ORGANISATION STRUCTURE



Promoting the Safety and Efficiency of the Air Traffic Management System



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The fundamental changes needed by the European traffic management system require robust institutional frameworks and pan-European arrangements. A way of providing such frameworks has been devised within the scope of the EUROCONTROL revised Convention.

The Regulatory Committee created in 2002, together with the Performance Review Commission, Safety Regulation Commission and Civil/Military Interface Standing Committee, established in 1998, provide advice to the Provisional Council and, via that body, to the EUROCONTROL Commission as and when necessary.

These bodies carry out their functions in a spirit of transparency, with a view to ensuring efficient European air traffic management services, consistently high levels of safety and efficient civil/military coordination.

ADVISORY BODIES

REGULATION

Regulatory Committee

The Regulatory Committee (RC) was created in 2002 by the EUROCONTROL Commission to give an independent expert opinion on the ATM Rules developed by EUROCONTROL.

The Regulatory Committee considered it imperative that these EUROCONTROL Rules be developed within the framework of the Single European Sky and, as such, the Committee, during its first year of existence, did its utmost to ensure that all its regulatory work was fully aligned with the draft Single European Sky Regulations. To this end, it coordinated on a regular basis with the services of the European Commission and developed an important working relationship with DG TREN, ATM Unit.

The Committee met for the first time in September 2002 under the Chairmanship of Ole Asmussen. In December 2003, seven meetings later, its main achievements are:

- the development of the EUROCONTROL Regulatory and Advisory Framework (still to be submitted to the Provisional Council for adoption);
- the development and execution of the first EUROCONTROL Regulatory Work Programme;
- the launch of several formal consultations, using the EUROCONTROL Notice of Proposed Rule-Making (ENPRM) process, on:
  - a EUROCONTROL Rule for Airspace Classification;
  - an Advanced ENPRM Consultation on Aeronautical Data End-to-End Integrity;
  - a EUROCONTROL Informative Process on the Common Framework for the Regulation of Mode S Enhanced Surveillance;
  - an advanced ENPRM on Air Traffic Flow Management.

During the year, and with the support of the Regulatory Unit (RU), the RC also established relationships with international organisations, including the International Civil Aviation Organization (ICAO), the Joint Aviation Authorities (JAA), the International Air Transport Association (IATA), the Association of European Airlines (AEA) and the International Federation of Air Traffic Controllers Associations (IFATCA). Within EUROCONTROL, the RC established working relationships with such bodies as the Civil and Military Interface standing Committee (CMIC), the Chief Executive Standing Conference (CESC), the Safety Regulation Commission (SRC) and the ATM/CNS Consultancy Group (ACG).

Within its first year of operation, the Regulatory Committee directed its regulatory work towards the following priority areas:

- Air Traffic Flow Management (ATFM);
- Airspace and Navigation;
- Performance and Interoperability.

Now that the EUROCONTROL regulatory structures and working methods have been put in place and the EUROCONTROL Regulatory Work Programme has been actively started, the Regulatory Committee is determined to make an active contribution to the implementation of the Single European Sky by supporting the development of relevant implementing rules.

PERFORMANCE REVIEW

Performance Review Commission

The Performance Review Commission (PRC) was established in 1998. It advises the governing bodies of EUROCONTROL on the development of a strong, transparent and independent performance review and target-setting system. This system addresses all aspects of air traffic management including policy and planning, safety management at and around airports and in airspace, as well as financial and economic aspects of the air traffic services provided.

In 2003, the PRC held six meetings under the chairmanship of Mr Keith Williams. It submitted three reports to the EUROCONTROL Commission through the Provisional Council, namely:

PRR6

The sixth Performance Review Report (PRR 6) addresses the performance of the European ATM system in four key performance areas (safety, delays, cost-effectiveness and flight efficiency) and trade-offs between these areas.

It updates and confirms results of the initial US-Europe comparison published in PRR 4 (2001), and gives a summary of a detailed comparison of selected US and European en-route centres (see US/Europe Report).

An open consultation meeting was held with interested parties on 19 May 2003.

ACE 2001 REPORT

All EUROCONTROL Member States are required to ensure that their air navigation service providers supply the PRC with information on a yearly basis, in conformity with the EUROCONTROL "Specification for Information Disclosure". The PRC published its first ATM cost-effectiveness Benchmarking Report (ACE 2001) in September 2003.

ACE 2001 focuses on the cost-effectiveness of air navigation and aeronautical meteorology services. It describes productivity at both air navigation service providers and ACC levels.

US/EUROPE REPORT

A detailed comparison of selected US and European en-route centres was conducted in close cooperation with the US Federal Aviation Administration and concerned air navigation service providers in order to determine the extent to which the significant cost-effectiveness differences identified between the two ATM systems arose from differences in the performance of individual control centres. The report gives a detailed breakdown of ACC cost-effectiveness into productivity, employment costs and support costs.

A list of the PRC's recommendations and their implementation status can be found in the Performance Review Report (PRR 7) covering 2003.

PRC documentation can be found on the PRC website http://www.eurocontrol.int/prc.

SAFETY REGULATION

Safety Regulation Commission

Under the Chairmanship of Martin Radusch, the Safety Regulation Commission made significant progress during 2003 in developing and harmonising ATM safety regulation.

The strategic approach adopted focuses on the development and implementation of harmonised safety regulatory frameworks for implementation by the 41 European Civil Aviation Conference (ECAC) States. The EUROCONTROL Safety Regulatory Requirements (ESARRs), which underpin this framework, were further enhanced with the approval by the EUROCONTROL Commission of ESARR 6, addressing software in ATM. Significant additions were also made to the range of ESARR advisory material supporting all other approved ESARRs.

These safety requirements will be further enhanced through transposition into European law, as mandated under the Regulations for the creation of a Single European Sky. The second half of 2003 saw the establishment of close working links between EUROCONTROL and the European Commission to commence this process, which will represent a significant enhancement for ATM safety.

A major area of safety regulatory work in ATM has been identified through the European Strategic Safety Action Plan (SSAP) and its associated Implementation Master Plan, both of which have been approved by the EUROCONTROL Provisional Council. A considerable range of specific SSAP activities and work packages have been identified and integrated into the short and medium-term areas of the Work Programme of the Safety Regulation Commission.

The ESARRs Implementation Monitoring and Support (ESIMS) Programme, already successfully covering the vast majority of EUROCONTROL's Member States in 2003, will be extended, through voluntary cooperation, to other ECAC States throughout the first half of 2004.

The Strategic Safety Action Plan further identified the deficiency in trained safety personnel as being a major inhibitor to progress. In the safety regulation area, a comprehensive training strategy and programme has been developed and approved by the Safety Regulation Commission. The Programme includes a comprehensive range of courses designed to fully equip ATM safety regulatory staff with the necessary expertise and skills to undertake their work at national level. ATM Safety Audit Training was delivered throughout 2003, and implementation of the Programme and design of the further courses will commence in early 2004.

CIVIL AND MILITARY COOPERATION

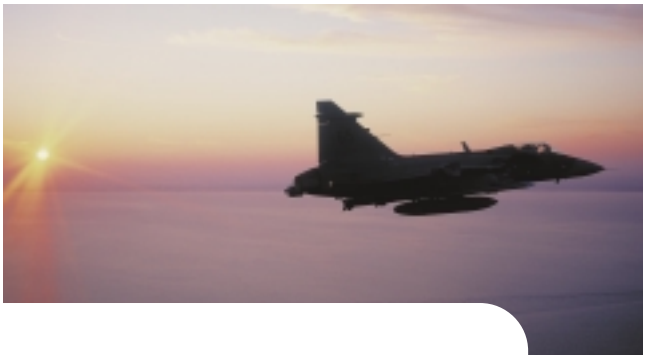
The Civil/Military Interface Standing Committee

The Civil/Military Interface Standing Committee (CMIC) provides advice and guidance to the Provisional Council on the whole range of ATM/CNS issues, with particular emphasis on civil/military cooperation and coordination.

2003 was the last year of the Chairmanship of General Antonio Pilotto, the Italian Airspace Brigade Commander. During that year, CMIC continued, in accordance with its terms of reference, to be involved in the consultation of major Agency initiatives. These included:

- the expansion of the 8.33 kHz Channel Spacing Programme horizontally and below FL 245 and the results of the Feasibility Study on the Multi-Function Information Distribution System (MIDS) for ADS-B;
- the Strategic Safety Action Plan and the Air Traffic Flow and Capacity Management Strategy.

The Committee discussed and pledged support for a number of other initiatives, the most important ones being ATM security, runway safety and the dynamic management of European airspace.



Flowing over from 2002, 2003 saw the realisation of three major events:

- The adoption by the Provisional Council of the "Policy Guidance for the Exemption of State Aircraft from Compliance with Specific Aircraft Equipage Requirements", developed by CMIC in 2002 and finalised in early 2003.
- The adoption by the Provisional Council, in November 2003, of a milestone document worked out by the CMIC's subgroup, the Military Harmonisation Group (MILHAG), and endorsed by the European Air Chief Conference, entitled "Determining Future Military Airspace Requirements in Europe". The Council endorsed it as "guidance by EUROCONTROL Member States and the Agency during the development of ATM and CNS related Projects and Programmes".
- The publication of a Catalogue of Non-Sensitive Flight Planning Material on the website.

At the last meeting of the CMIC in 2003, a new Chairman was elected for 2004-2005: General Wolfgang Baltes, Deputy Commander of the 1st German Air Division.

CMIC believes that 2004 will be an important year in the continued effort to harmonise civil and military procedures, the finalisation of a framework for military key performance indicators with which to attempt quantification of military satisfaction with the performance of the ATM system, and last, but not least, the consideration of military requirements in the shaping of the Single European Sky.

The Military Business Division

In accordance with the EUROCONTROL revised Convention, the Agency has completed the recruitment of 15 senior military experts to provide expertise and support across the full range of European ATM activities. Those serving military officers with controller, air defence and air traffic management, pilot and engineer background have been recruited for a limited period by the Agency and work in the overall interest of the Organisation.

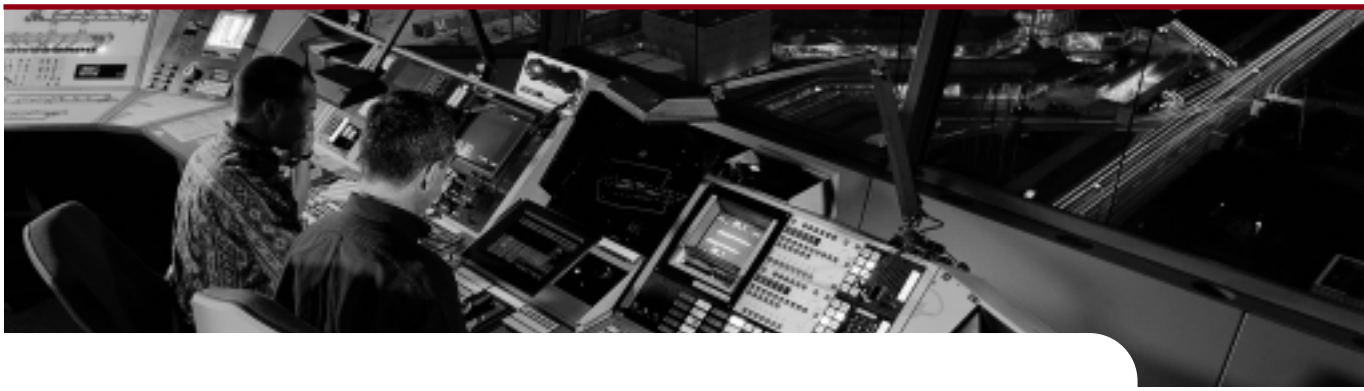
In late spring, this unit of military experts was renamed the Military Business Division in order to reflect the new Agency structure. Beyond the specific expertise it provides to the rest of the Agency, it is managing in conjunction with the Airspace, Flow Management and Navigation Domain (AFN) an ambitious civil/military action plan intended to improve the coordination of activities, ranging from the handling of military traffic (OAT) to the exchange of flight data between civil and military units.

In order to streamline the internal and external relations of the Division, 2004 will see the creation of a military team. This team will provide input from stakeholder level to support the specific tasks of the Division, including those relating to the implementation of the EU Single European Sky initiative. The creation of a direct line of communication between the national experts and the Agency will guarantee total consistency between the deliverables and State expectations on military issues.

In the same vein, a Memorandum of Cooperation was signed in 2003 with NATO. The Military Business Division has been designated as point of contact. This will encourage the exchange of expertise between the two organisations, and the Military Business Division will ensure that exchange through permanent links with all NATO Committees and Agencies dealing with ATM/CNS issues.

eatm

Air Traffic Management Performance Enhancement



European air transport needs a safe, secure, efficient and cost-effective air traffic management system, organised on a uniform pan-European basis, for the benefit of all airspace users.

2003 was the busiest year on record, with 8.5 million flights. The resulting challenges reinforced the belief that cooperation between all parties in aviation is the best way to optimise the efficiency of air traffic management.

Activities linked to improving safety in European skies continued to take absolute priority in 2003 and the Strategic Safety Action Plan set the scene for significant current and future safety improvements in all aspects of air traffic management.

EUROPEAN AIR TRAFFIC MANAGEMENT

The genesis of European Air Traffic Management (EATM) is the EUROCONTROL European ATM 2000+ Strategy. This is a performance-oriented strategy, which means that it has as its basis a set of objectives that take into account the expectations of airspace users and all other stakeholders.

Safety, the fundamental priority in aviation, is the prime objective. Subordinated to this are a number of other objectives that drive the EATM work programme across a range of key ATM performance areas, in particular airspace capacity increases to accommodate rising demand; efficiency improvements through closer attention to cost; security improvements to improve public confidence in the air transport industry; and the environment, to minimise aviation's impact.

The scope of EATM work is pan-European, multinational and national. It focuses on Air Traffic Control Centres and airports throughout the 41 States of the European Civil Aviation Conference (ECAC). The EATM work programme outlines the specific stakeholder actions needed to implement the ATM operational improvements in each of these performance areas, which will ensure that the European ATM system is able to cope with the projected demand up to 2020.

Whilst the first step up to 2004 sees EATM concentrating on optimal airspace organisation and human resources management issues, the overall challenges that EATM has to meet include:

- reducing ATM safety risk (in the air and at and around airports) while air traffic is growing;
- improving human performance issues in a safety-related and regulated environment;
- gradually increasing the capacity of the European ATM system in balance with demand;
- optimising the use of available capacity through flexible use by civil and military airspace users, and improved procedures at airports;
- managing, predicting and planning traffic in order to reduce the level of ATM-specific delays;
- improving productivity in ATM and facilitating high standards of service linked to customer needs, while controlling costs and addressing human performance;
- enhancing the interoperability and support implementation of highly cost-beneficial ATM systems and tools;
- determining new mechanisms and procedures to enhance the response of ATM to security threats and events affecting individual components of the ATM system;
- achieving an environmentally sustainable air transport system whilst continuing to meet growing demand;

- accelerating the implementation of those measures and systems that will help mitigate the impact of aviation operations on the environment;
- ensuring mutual recognition of civil and military requirements.

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2003 IN PERSPECTIVE

ATM – A DYNAMIC INDUSTRY

2003 was a year of continuous, momentous change in ATM. It was the busiest year ever on record, with almost 8.5 million flights, representing an increase of 2.8% on 2002. The consequent challenges reinforced the belief that cooperative working between all parties in aviation is the best way to optimise the efficiency of ATM for all users. The most noteworthy example of this cooperation was the Single European Sky (SES) initiative, which was given the political go-ahead in 2003. This is helping to build a uniform European vision of future air traffic management systems. The amalgamation of technical excellence at EUROCONTROL and the regulatory strength of the European Commission will foster an approach to ATM management that will improve productivity, raise standards, control costs and improve efficiency.

2003 WAS THE BUSIEST YEAR ON RECORD, WITH ALMOST 8.5 MILLION FLIGHTS, REPRESENTING AN INCREASE OF 2.8% ON 2002

A Memorandum of Cooperation was signed with the North Atlantic Treaty Organisation (NATO) to further enhance existing cooperation in ATM and to focus on issues of common interest during crisis or war, and in response to acts of unlawful interference against civil aviation. This strategic agreement aids the development of short-term security and safety measures and paves the way for improved capacity during crisis or war.

EATM

Despite many challenges in 2003, EATM had a high success rate in delivering products and services to our stakeholders. An average completion rate of 87% for deliverables was achieved during a year of great organisational change within EATM.

EATM made significant inroads during 2003 in the development of cooperative working arrangements at political and international level.

As regards safety, the Strategic Safety Action Plan (SSAP) was published. This sets the scene for short-term and medium-term safety improvements in all aspects of ATM. In terms of capacity improvements, EATM played a significant role, in cooperation with its stakeholders, in the development of new network structures and improving ATM productivity. These, plus our new gate-to-gate perspective on ATM, have all been precursors to improving the availability of capacity in 2003. The simultaneous reduction in delays over the same period was directly attributable to the capacity improvements made before and during 2003.

The launch of the European Aeronautical Information Services Database (EAD) in 2003 was an award-winning example of cost-effective and cooperative solution development in European ATM, with the potential, when fully implemented, to deliver a benefit-to-cost ratio of 4:1.

During 2003, initiatives and action plans were launched to address the growing need to tackle air pollution. Finally, security has become an important issue within ATM. This relatively new domain resulted in the publication of action plans to develop a coordinated approach to improve security for all.

Management of the EATM portfolio of activities also underwent significant change during the year. The redefinition of EATM activities into a value-adding and sequential model was a logical and structured approach to manage the evolutionary nature of our work. EATM continued to develop the initial strategies, concepts and roadmaps for enhancing the performance of European ATM, and, in turn, managed the portfolio of implementation programmes that will lead to a uniform, seamless, safe and efficient system of ATM.

Our new way of working captured opportunities to remove inefficiencies in our work, improve planning, enable resource efficiency and innovation, and helped us start to reduce costs. Unencumbered knowledge sharing and collaboration within EATM and with our stakeholders will reduce cycle time to deliver the operational improvements and other objectives outlined by the Provisional Council and in the ATM2000+ Strategy.

CUTTING COSTS

The political and economic challenges that are endemic in the ATM industry naturally also influence the orientation of the EATM programme of work and the associated funding programme. Working within an overall annual budget ceiling of €123 million for the EATM portfolio of activities for 2004-2008 has demanded discipline and focus to ensure deliverables meet stakeholders needs and that EATM delivers value for money.

INSTITUTIONAL AND PLANNING DEVELOPMENTS

REVISING THE EUROCONTROL EUROPEAN ATM 2000+ STRATEGY

Reviewed in the light of changing circumstances, a revised version of the EUROCONTROL European ATM2000+ Strategy was approved by EUROCONTROL's Provisional Council and Commission, after extensive consultation with the ATM stakeholders within ECAC in 2002.

The new version of the Strategy takes into account progress made since the Ministerial Meeting on the Air Traffic System in Europe (MATSE) in 2000 and the evolution of the ATM context. Additional emphasis was placed on safety, ATM security and system interoperability (not just in Europe but world-wide) and more developed airport improvement measures were introduced. The separation of service provision and regulation and the impact of the Single European Sky Regulations were reflected. The Strategy presents a road map of change through time that is performance-oriented, i.e. a series of safe, secure, environmentally sustainable, economically and financially sound changes that will also provide the required capacity.

The Strategy presents a performance-oriented road map of change through time. This road map, based on future performance requirements, defines the nature and the implementation timescales of the change steps to provide the capacity required to accommodate the forecast traffic demand in a safe, secure, environmentally sustainable, and economically and financially sound manner.

Progress has also been made on aspects that supplement the descriptions in the Strategy regarding the goal of a uniform European ATM system: the Operational Concept Document has been updated to describe the common operational vision for 2020. The Overall ATM/CNS Target Architecture (OATA) project has delivered the first of a planned series of iterations which are aimed at steering the technical and system-engineering development of ATM systems, providing a reference framework for their progressive convergence and in support of interoperability, regulation and standardisation initiatives.

PAVING THE WAY FOR UNIFORM ATM PROVISION

The performance level of the European ATM network needs constant improvement. The European Convergence and Implementation Plan (ECIP) is the ECAC-wide medium-term rolling plan (2004-2008) of action, for specific stakeholders. It is the precursor to achieving the operational improvements and performance requirements needed to achieve a uniform European network.

In 2003, 67 implementation objectives and some 600 lines of action for the various stakeholders were continuously developed and monitored by the Agency within the ECIP framework. Work started on the definition of new operational requirements and the corresponding objectives to achieve them. These objectives relate to all aspects of ATM, including collaborative civil-military airspace planning at European level, the flexible use of airspace (FUA), air traffic control communications effectiveness, controller/pilot task sharing, the (vertical) expansion below Flight Level (FL) 245 in the ICAO European Region of 8.33 kHz frequency spacing, airport safety and operations and the environment.

STATUS OF EUROPEAN CONVERGENCE AND IMPLEMENTATION

Every year the Agency produces a comprehensive report on the overall achievement in implementation in the ECAC area as foreseen by the Local Convergence and Implementation Plans. The European Convergence and Implementation Plan Status Report for 2002 was delivered in March 2003. It confirmed the increasing number of pan-European objectives, thus reflecting a growing commitment by States and air navigation service providers to move towards a uniform European ATM system.

Actions associated with most harmonisation objectives have progressed satisfactorily on the whole. This trend was confirmed in 2003 when 20 States achieved the international standard of ISO9001 in Aeronautical Information Services (AIS).

GETTING STAKEHOLDER COMMITMENT

During 2003, EATM concentrated on securing stakeholder commitment for actions that are paramount in improving the European ATM network. The main innovation of 2003 was the introduction of major airports into the planning and implementation of measures that are required to achieve an ATM gate-to-gate integrated system across the ECAC area.

In addition, EATM continued to support States in their efforts to implement the necessary ATM systems, regulations and procedures at local level by providing expert support to produce their own Local Convergence and Implementation Plans (LCIPs). The LCIPs are a consistent and comprehensive driver towards achievement of the commonly agreed performance targets for ATM in ECAC States. The safety regulation and safety management part of the document was further extended to support EUROCONTROL's Safety Regulatory Requirement (ESARR) Implementation and Support Monitoring Programme. Four of the 41 LCIPs produced in 2003 were new for Azerbaijan, Bosnia and Herzegovina, Luxembourg and Serbia and Montenegro. The Agency also started initial work concerning a common LCIP for the Central European Air Traffic Services (CEATS) in which the air navigation service providers from eight States were involved.

SERVICES SUPPORTING STAKEHOLDER IMPLEMENTATION EFFORTS

The EATM Work Programme is supplemented by a series of services that include the EATM Implementation Support Service (EIS), Surveillance Services, and support to Civil/Military ATM/Air Defence coordination.

The EIS provided support to States, airports and air navigation service providers for the planning and implementation of activities undertaken within the framework of EATM and the EUROCONTROL European ATM 2000+ Strategy. In 2003 much effort was devoted to the European Commission (EuropeAid) funded Air Safety and Air Traffic Control project (ASATC) for Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia and Serbia and Montenegro.

The Surveillance Services provided support for three major Agency products contributing to a high level of harmonisation in the European surveillance infrastructure which provide not only cost efficiency but also the platforms to validate this aspect of EATM programmes.

Support to Civil/Military ATM/Air Defence authorities continued with the provision of a tool to the EUROCONTROL and ECAC Member States, which is aimed at enhancing and improving civil-military cooperation within the context of the flexible use of airspace concept. During 2003, a number of systems were installed, including one at a NATO Agency in the Hague in support of EUROCONTROL/NATO's security initiative.

SAFETY

LEARNING FROM THE PAST

Safety is our number one priority. 2003 saw a much-improved safety record over previous years when several accidents had precipitated the establishment of the High Level European ATM Safety Action Group (AGAS). AGAS put together a Strategic Safety Action Plan (SSAP) to address a series of issues, which span all aspects of ATM.

A critical factor in aviation safety is that of incident reporting and data sharing, based mainly on the reporting of incidents by air traffic controllers and pilots. When an incident occurs – as in other safety-critical industries – it is important to learn from that incident to ensure continued improvement in safety. At the same time, one of the greatest impediments to good incident reporting is fear of legal consequences.

It is precisely this type of no-win situation that the SSAP aims to address. In consequence, in 2003 EATM addressed the need to create a "no-blame" culture within which – in clearly defined cases – ATC personnel are granted immunity from systematic prosecution for ATM incidents. EATM, working in cooperation with the European Commission, recommended that Member States adapt national legislation in order to eliminate or mitigate the effects that legal impediments have on the open reporting of ATM incidents.

On the more specific issue of runway safety work, a joint effort between EUROCONTROL, air navigation service providers, airport and airline operators, national regulators and aviation associations, has produced the European Action Plan for the Prevention of Runway Incursions. Early indications show that organisations that start implementations experience a drop in the actual number of runway incursions. As a consequence of the recommendations in this plan, national regulators are leading the initiative to establish local runway safety teams at designated airports. Teams have been set up to analyse incident data and provide preventative solutions to hazards at and around airports. An awareness CD-ROM was produced and widely distributed across the European regions.

THE EIGHT SAFETY PRIORITY AREAS: WHERE THE RESPONSIBILITIES LIE

Priority Area	ANSPs	Aircraft Operators	Aerodrome Operators	EUROCONTROL (Agency, SRC)	State Regulators	European Commission	ICAO	JAA	Aviation Associations
Human Resources	✓			✓	✓				
Incident Reporting & Data Sharing	✓	✓		✓	✓	✓			
ACAS	✓	✓		✓	✓		✓	✓	
Ground-Based Safety Nets	✓			✓	✓		✓		✓
Runway Safety	✓	✓	✓	✓	✓		✓	✓	✓
ESARRs				✓	✓	✓			
Awareness	✓	✓	✓	✓	✓				✓
Safety & Human Factors Research & Development	✓			✓					

SAFETY CASES

In addition to individual safety cases that are conducted on a regular basis within the scope of each implementation programme at European level, EUROCONTROL was requested to conduct some additional safety cases for local projects. Safety cases were conducted for the Terminal Area at Stockholm airport in Sweden. This was the first time EUROCONTROL had been involved in safety analysis for terminals.

A safety case was also conducted at Nattenheim, Germany. A highly complex airspace with traffic streams in various directions. This is one of the busiest areas in Europe, involving six States: Belgium, France, Germany, Luxembourg, Switzerland and the Netherlands.

POST-IMPLEMENTATION SAFETY

Reduced Vertical Separation Minima (RVSM), 8.33kHz, and Airborne Collision Avoidance System (ACAS) were all crucial contributors – not just to safety – but to capacity and efficiency within ATM. As technology advances however and new systems are introduced, it is important to ensure that current system reliability is not violated or compromised. Post-implementation performance monitoring is therefore an important task in safety management. Ongoing monitoring is also important and a post-implementation safety case for RVSM was initiated. Using the first 18 months of flight data under the new system, the analysis of RVSM safety was updated. Results will be published in 2004.

THE HUMAN FACTOR

Human performance is a fundamental element in safety. The deadline for implementation of ESARR5 Edition 1.0, which introduces safety regulatory requirements for air traffic control personnel, expired in November 2003. The EATM Human Factors activities complemented the regulatory requirements through its Human Resources Programme.

The EATM Human Resources Programme (HRS) provides a harmonised toolbox of guidelines, methods and tools, and reference material for the management of human issues in ATM. The programme promotes harmonisation and best practices in the areas of human factors, training and manpower.

The development, testing and validation phase of all HRS deliverables was finalised at the end of 2003, on time, and within budget. The introduction of these products across Europe will take place between 2004 and 2007. The implementation will help States to meet ESARR5 requirements, especially those for a uniform minimum standard of training for the licensing air traffic controllers. It will also help to achieve agreed common actions to improve the performance of European ATM. Specific human factors products will contribute to safety enhancements since human error is involved in 90% of ATM occurrences.

SAFETY ON THE GROUND

It is recognised that the Advanced Surface Movement Guidance and Control Systems (A-SMGCS) will greatly improve air traffic control situational awareness and hence, safety at airports. To ensure a harmonised and optimum implementation of these tools, the EUROCONTROL A-SMGCS project team worked closely with stakeholders during 2003 to produce agreed concepts, requirements and draft ATC procedures. Harmonised transponder operating procedures were also agreed and these are being implemented at those airports that are procuring A-SMGCS.

DOWNLINK OF RESOLUTION ADVICE

In today's ATC systems, controllers are not systematically informed when the Airborne Collision Avoidance System (ACAS) instructs the pilot to follow a Resolution Advisory (RA). Resulting contradictory instructions have given rise to confusion. EATM has launched a project to examine the use of new communication features for downlinking the RA for presentation on the controller's displays with minimum delay. In a first exercise involving some 30 European controllers, there was good support from the controller community for the RA presentation on their screens.

CAPACITY

A BUSY YEAR IN AVIATION

The work that has been done in recent years by the Agency and all parties involved in capacity enhancement began to bear fruit in 2003. An analysis for 41 European countries has shown that 2003 was the busiest year ever on record, with almost 8.5 million flights, which represented an increase of 2.8% on 2002. At the same time, the average air traffic flow management delay per flight was down 20% when compared to 2002, with an average delay per flight of just 1.7 minutes. 12 September 2003 was the busiest single day on record with 28,173 flights.

These statistics show, beyond doubt, that the delay reductions achieved in Europe were due exclusively to capacity improvements. The Performance Review Commission (PRC) has also shown that this resulted in savings of hundreds of millions of euros for the airline industry.

UNIFORM EUROPEAN AIRSPACE

Whilst the delay data for 2003 has shown that great strides have been made in capacity enhancement in recent years, work continues on the optimisation of the fragmented use of airspace classifications in European airspace. In 2003 the first significant milestone was achieved in the 'EUROCONTROL Airspace Strategy for ECAC'[5].

The work undertaken with Member States, military authorities and the airspace user organisations resulted in an agreement that the common division Level for airspace throughout the ECAC States would be Flight Level (FL) 195 and that the Airspace Classification above that level would be ICAO Class C airspace[6]. In addition, harmonised access rules were agreed for VFR (Visual Flight Rules) flights in this airspace.

On 27 November 2003, less than two years after EUROCONTROL's Commission endorsed the Airspace Strategy, 29 of the 40 participating States implemented the common division Level of FL 195, with ICAO Class C airspace above this level. All but three of the remaining ECAC States are expected to implement the same airspace structure during 2004. This achievement represents a significant contribution in facilitating the Single European Sky Regulations, improving safety by reducing confusion about airspace classification rules for those airspace users flying across Europe, and has the potential for improving air traffic management efficiency through transparency of international airspace boundaries.

MAKING THE ATS ROUTE NETWORK WORK

In parallel with the work on airspace classification, route network development activities continued at a rapid pace with a total of 83 Air Traffic Services (ATS) route network improvements effected during 2003 throughout the ECAC area. In March, a new ATS route structure over the North Sea was introduced to accommodate new military areas required for the Eurofighter aircraft.

In November, an optimised ATS route structure affecting Germany, France and the Benelux areas came into effect due to other changes in military airspace.

In southern Europe, new ATS routes were implemented in December, strengthening the interface between Greece, Turkey and neighbouring States in preparation for the 2004 Olympic Games.

5- 'EUROCONTROL Airspace Strategy for ECAC' to harmonise the airspace classification above a commonly agreed level throughout Member States' airspace.

6- ICAO Annex 11 defines Class C Airspace as airspace within which IFR and VFR flights are permitted. All flights are provided with air traffic control service and IFR flights are separated from other IFR flights and from VFR flights. VFR flights are separated from IFR flights and receive traffic information in respect of other VFR flights.

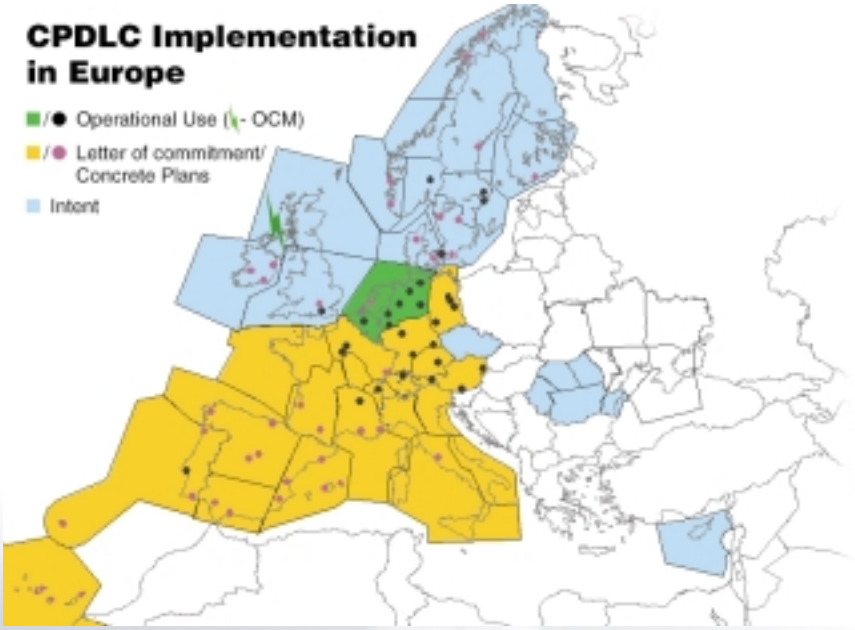
In addition to these implementations, an Advanced Airspace Scheme (AAS) concept was launched for the future development of both the route network and sectorisation, and the associated 'modus operandi'. A start was also made on the development of new criteria guidelines for the design of ATS routes, sectors and terminal airspace, for inclusion in the EUROCONTROL Manual for Airspace Planning.

DRIVING FORWARD DATALINK COMMUNICATIONS

The introduction of Controller Pilot Datalink Communications (CPLDC) will enable controllers and pilots to exchange messages without the need for verbal communication. This relieves the workload of the controller and frees congested voice communication channels. It has been proved that datalink-equipped controllers are more productive and can safely cope with higher traffic volumes.

Work on this activity moved several steps closer during the year, with the LINK 2000+ Programme, which is coordinating the implementation of a limited set of datalink services at airports and area control centres in the core area of Europe by 2007. To encourage aircraft equipage, a substantial package of financial incentives has been supported by the representative bodies, which offers pioneering airlines reduced route charges over time. Over 30 aircraft belonging to two airlines, one based in Europe, and another based in the US, had already been equipped by the end of 2003. On the ground, six Area Control Centres around Europe have followed the lead, taken at the EUROCONTROL's Maastricht Upper Area Control Centre (UAC) some years ago, to equip for CPLDC operations.

The Air-Ground Cooperative ATS (AGC) Programme also produced and processed new operational requirements for Digital Automatic Terminal Information Service (D-ATIS) and Departure Clearance (DCL), resulting in their adoption in EUROCAE documentation. The AGC Programme also built on the Link 2000+ Programme by showing, through the DOVE-1 fast-time and real-time simulation, that substantial benefits can be achieved through use of an extended set of CPDLC and associated datalink services.



ASSESSING AIRPORT CAPACITY

Our airport-related activities incorporate the concept of gate-to-gate. The Commonly Agreed Methodology for Airport Airside Capacity Assessment (CAMACA) was initiated in 2001. It aims to meet the airport-related objectives of the EUROCONTROL European ATM 2000+ Strategy, support the EC Regulation (95/93) on airport slot coordination, and to provide the airport community with a worthwhile decision-making tool for strategic airport planning. CAMACA is composed of three different modules corresponding to the three airside components for runway, taxiway and stand/apron capacity assessment.

During 2003, a simplified version of the CAMACA was also delivered, with the aim of promoting the use of CAMACA and increasing the number of potential users. The real capacity benefit of this activity relating to the implementation of this ECIP objective is already measurable.

The Pan-European Airport Capacity and Delay Analysis function (PACS) successfully delivered capacity assessment for Istanbul-Ataturk, Bodrum, London City, Lisbon and Brussels airports. These studies focused on runway system capacity/delay and ground efficiency/stand throughput analysis, and at the same time quantified the real impact of those airports on the European ATM network.

RUNWAY CAPACITY ENHANCEMENT

There is considerable latent runway capacity available in Europe and the EUROCONTROL Airport Capacity Enhancement project is designed to help unlock this available capacity. A number of manuals have been produced which outline concise steps on how to implement and organise a capacity enhancement initiative at an airport, which will involve air traffic control, airlines and the airport operators. In addition, a manual has been produced on pilot runway occupancy time measurement and improvement – a key issue is runway capacity enhancement. These manuals were validated during a recent exercise at a major airport, where capacity increases were delivered of between 14-17%, depending on the configurations.

MAXIMISING OUR AVIATION FREQUENCY SPECTRUM

Europe's service providers need more air traffic control sectors to meet capacity demand. Every sector needs a frequency, and when 8.33 kHz frequency separation was mandated throughout the whole of the ICAO European Region above FL245 in 1999, frequency problems started to be resolved. The potential number of frequencies available was trebled, and new control sectors started to be introduced.

By the end of 2003, under the 8.33 kHz horizontal expansion programme, 48 of the 70 planned conversions from 25 to 8.33 kHz were achieved. Since the removal of 8.33 kHz exemptions in Belarus, Estonia, Latvia and Lithuania in October 2003, the 8.33 kHz area above FL-245 now comprises 30 States.

Following the conclusion of the ICAO European Air Navigation Planning Group (EANPG) in late 2002, the Agency and key stakeholders launched an 8.33 kHz vertical expansion work programme. The work programme, which will be issued in 2004, foresees a detailed implementation plan for airspace above FL-195 in the ICAO European Region.

COLLABORATIVE DECISION-MAKING (CDM)

The CDM pilot study at Heathrow Airport has now been developed into a low-cost but high-benefit solution for enhancing airport efficiency. In essence, CDM involves the sharing of highly reliable data with those who need it at precisely the right moment, to create common situational awareness and predictability between air traffic management, airport and aircraft operators, the Central Flow Management Unit, ground handlers and other service providers. CDM does not require any large-scale investments, yet its implementation improves punctuality, maximises infrastructure usage and operational efficiency whilst at the same time heightening cost-efficiency. CDM trials continued at a number of other major European airports.

GIVING THE GROUND MORE INFORMATION ON THE AIRBORNE SITUATION

The more that is known about what is going on in the air by air traffic control staff, the more easily and quickly correct and safe decisions can be made and this, in turn, improves productivity. The Mode S Programme will provide, through Downlink Airborne Parameters (DAPs), more information than has hitherto been available to controllers. In March 2003, Belgium, France, Germany, Luxembourg, the Netherlands and Switzerland, (the core area of Europe) mandated the carriage of Mode S Elementary Surveillance airborne equipment for all aircraft flying as GAT (General Air Traffic) in their respective airspace with a transition period up to 31 March 2005. It is also in the core area that air traffic growth and Radio Frequency (RF) pollution are such that the existing Mode-A/C Secondary Surveillance Radar systems begin to create more and more operational problems. The first Mode S ground radar

stations for elementary surveillance have been deployed and are operationally ready, illustrating the ongoing development of an improved European surveillance infrastructure which will improve trajectories and sequencing in the short tem and enable a cost-effective surveillance infrastructure.

WORLD RADIO CONFERENCE

The Agency was entrusted with representing European aviation interests and safeguarding aviation spectrum at the 2003 World Radio Conference. This is of strategic importance for the ECAC aviation community in the global and extremely competitive communications environment.

EFFICIENCY

Cost-efficiency remained a major issue in 2003. In the first half of the year, airlines continued to suffer from the general economic downturn, the ongoing threat of world terrorism, the outbreak of SARS and the situation in Iraq.

As a consequence, cost reduction and providing "value for money" were essential drivers of our EATM Strategy. All direct costs of the service providers and indirect costs, which include the costs of ATM-related delays, flight inefficiency and on-board equipment, needed to be considered and minimised in ATM activities. The overall objective of the Agency in this area was to reduce the direct and indirect ATM-related costs per unit of aircraft operations. The Agency helped to relieve the cost burden by implementing an internal efficiency drive that made cuts in the order of three percent in real terms on capital and operating costs. For the EATM Service Business Unit, the cost savings amounted to € 4 million.

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WORKING TOGETHER WITH STAKEHOLDERS

EUROCONTROL worked closely with partners from across the industry to try to improve matters. An Industry Crisis Monitoring High-Level Group was formed and its recommendations were reviewed by the Provisional Council in November.

Through cooperation and discipline, greater efficiencies in ATM can be achieved for all participants. Joint programmes and cooperation with air navigation service providers on various activities were undertaken in 2003 to generate savings, largely through common procurement, common specifications and best practices in ATM areas as well as specific initiatives to deliver operational savings to airspace users.

ASSESSING THE BENEFITS

Feasibility studies, cost-benefit analyses as well as complete strategic business cases have become a formal requirement and constitute an integral part of the EATM decision-making process. The go/no-go decision for each phase of our activities requires that stakeholders be convinced of the operational benefits before committing to future ATM investments. Also, the ECIP added a formal focus on the economic aspects with the introduction of advanced planning for the implementation of cost-effective capacity. During 2003, an economic assessment model, known as EMOSIA, was developed which will take into account the perspective of different categories of stakeholders in the cost-benefit analyses to improve the quality and transparency of these analyses.

THROUGH COOPERATION AND DISCIPLINE, GREATER EFFICIENCIES IN ATM CAN BE ACHIEVED FOR ALL PARTICIPANTS

DELIVERING RESULTS

One particular cost-effective contribution to European ATM was the European Aeronautical Information Service Database, EAD, which was launched in June 2003 and officially inaugurated in November. EAD provides quality-assured aeronautical information to all who need it, wherever they may be, through rapid on-line delivery systems. The business case for EAD shows a benefit to cost ratio of 4:1 when fully implemented, since it generates significant economies of scale throughout Europe. The project already has 48 organisations signed up to use the data provision service, 23 of which are ECAC data providers. The aim is for all ECAC States to join EAD by 2006. The programme is recognised as an innovative milestone in the provision of reliable, quality-assured aeronautical information right across Europe and beyond. It won the Future Systems Award at ATC Maastricht in 2003.

The introduction of electronic versions of Aeronautical Information Publications (AIP) is another important milestone in improving ATM efficiency. In 2003, the first countries went live with electronic AIPs. The Aeronautical Information Services (AIS) of nearly 20 States have now achieved ISO 9000 certification for their quality management systems. Considerable improvements have also been achieved through adherence to the Aeronautical Information Regulation and Control (AIRAC) system, which ensures synchronicity and timeliness of data publication. Performance improvements in this area have generated savings estimated at € 10 million per annum. The introduction of the AIS AGORA, an Internet-based discussion forum focussed on aeronautical information, has been very successful. The forum, which is restricted to aeronautical information professionals, now has more than 1,800 members.

Improved tools for human resources planning were published to improve human resource management, staff availability and human performance, resulting in better use and adaptability of air traffic management staff, the most significant cost factor in ATM provision costs.

ENVIRONMENT

SUSTAINING THE ENVIRONMENT

Air transport is a growth industry and, increasingly, environmental issues are a concern. A study into the concept of airport environmental capacity identified noise, local air quality, third-party risk and greenhouse gas emissions as some of the key environmental factors influencing efforts to create capacity.

ATM can reduce aviation environmental impact and its potential effect on climate change by allowing air traffic to fly more direct routes and at more fuel-efficient flight levels, which will reduce fuel consumption and aviation emissions. By introducing appropriate procedures around airports, ATM can also help mitigate the effects of aircraft noise on the surrounding community.

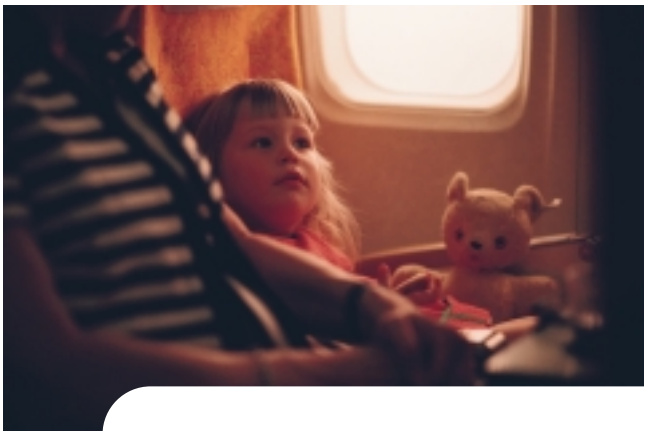
In 2003, a dedicated Environment Domain was created within EATM. It deals specifically with the environmental issues, which are critical in the support of long-term sustainability of air traffic operations in the ECAC States. This Domain will coordinate the Agency's support to Member States, air navigation service providers, aircraft and airport operators, which deal with environmental issues on a continuous basis.

In the first year of its existence, the Environment Domain developed an action plan and initiated discussions with stakeholders on ATM/environment issues. In addition, two new objectives related to environment have been incorporated into the ECIP. Building awareness about environmental issues is also a key activity and plans are in place to build an environmental knowledge repository.

SECURITY

In view of the dramatically changed security situation since September 2001, the EUROCONTROL Agency has developed a set of strategic security initiatives. They revolve around the optimisation of civil/military radar information sharing, the creation of a European Regional Focal Point for ATM information, the transmission of encrypted cockpit voice, flight data and on-board video information, and a review of some specific civil and military ATC procedures and training.

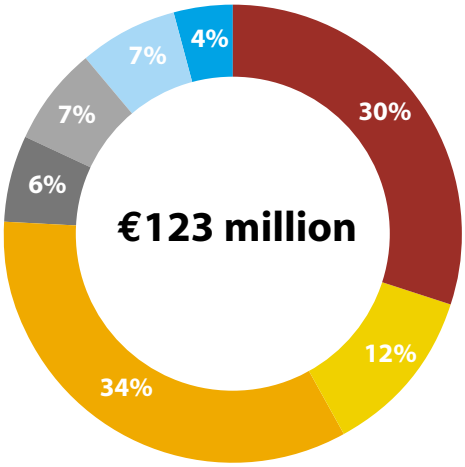
In 2003, an ATM Security Action Plan was developed in close coordination with relevant stakeholders. The feasibility of sharing and processing military sensor information has been successfully demonstrated as well as the feasibility of downlinking on-board video. EUROCONTROL, NATO, EUROPOL and certain Member States have started the joint validation of a new information dissemination system concept to support focal points for ATM information. An initial review was made of civil and military procedures and an initial Security Concept has been developed.



BUDGET

The EATM Budget for 2003 was €123 million (EAD service excluded). About two thirds of this budget was spent on programmes and domains, with more than 10% going to services.

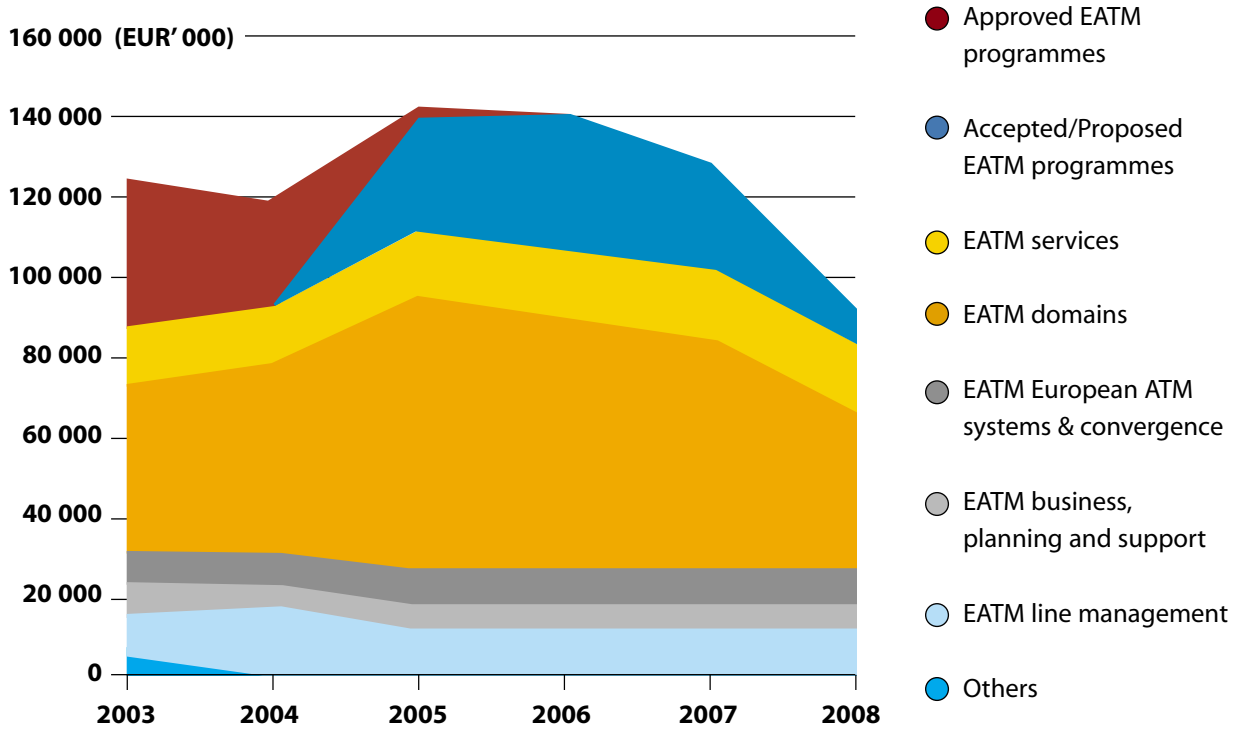
EUROCONTROL EATM 2003 BUDGET (HEADQUARTERS)



- EATM programmes
- EATM services
- EATM domains
- EATM European ATM systems & convergence
- EATM business, planning and support
- EATM line management
- Others

The EATM 5-year Plan includes the contributions to EATM from EUROCONTROL headquarters. As the EATM budget is approved on a year-by-year basis for the following year, it provides only indicative figures.

Programmes are subdivided into two main categories, 'approved' and 'accepted/proposed', thus indicating the different degrees of maturity in the programme's initiative



At the Hub of Air Traffic Management Research

Much of the future vision of European air traffic management is brought to life at the EUROCONTROL Experimental Centre in the form of research activities.

In 2003 the Centre underwent a reorganisation of its research areas in order to better reflect the main developments under way to increase capacity, safety and airport throughput, while strengthening innovative research and working more actively than ever on the impact of aviation on the environment.

Together with its partners, the Centre has a very important role to play in the development of the necessary programmes to prepare the air traffic management system to meet the challenge of accommodating a doubling of traffic by 2020 and beyond.

EUROCONTROL EXPERIMENTAL CENTRE

In 2003 the EUROCONTROL Experimental Centre increasingly took on a leading role in the organisation and management of European ATM research. This development came as a result of stakeholder requests and the need, identified by the 2002 Performance Review Report, to create synergies and a coherent and manageable research and implementation path in order to mobilise and consolidate scarce resources, avoiding unproductive duplication and overlap in European ATM R&D.

As a result, the Experimental Centre actively participated in the development of the research part of the European ATM Master Plan, in line with the ATM 2000+ Strategy and as confirmed by the Advisory Council for Aeronautics Research in Europe (ACARE) in its Strategic Research Agenda (SRA). It did so in close cooperation with the European aerospace supply industry, represented by AECMA.

Furthermore, at the end of 2003 EUROCONTROL and the European Commission signed an Agreement for Cooperation which, inter alia, establishes a Joint Programme Board to reinforce the coordination role assigned to the Agency by the revised Convention. This board will aim to consolidate the ATM research programmes of the two bodies into a single programme in support of the European ATM Master Plan.

In line with the structure of the ATM Master Plan, the Centre was reorganised at the beginning of 2003 to include the following five research areas:

- Network Capacity and Demand Management
- Sector Safety and Productivity
- Airport Throughput
- Innovative Research
- Society, Environment and Economics.

The first three research areas of the Centre's Work Programme contribute directly to the research deliverables of the European ATM Master Plan:

- The Network Capacity and Demand Management (NCD), consistent with the ATFCM action plan and the European Single Sky initiative, covers research on airspace management, demand and capacity management and traffic management issues.

- Sector Safety and Productivity (SSP) is concerned with all aspects of air traffic control related to controller-centred, sector-level planning and separation management functions.

- Airport Throughput (APT) concentrates on the capacity issues facing airports and their immediate environments.

The other two research areas pursue activities considered of strategic importance:

- Innovative Research (INO) investigates and coordinates studies on embryonic topics suggested by the ACARE Strategic Research Agenda.

- Society, Environment and Economics (SEE) addresses public perceptions and expectations concerning the air transport industry. In addition to insight and understanding of the drivers of trends in transport demand, it provides expertise, methods and tools to address the ATM contribution to the impact of air transport on the environment.

Furthermore, in support of research, the Centre has developed key methodologies to improve safety and ensure appropriate validation and technical infrastructures for ATC simulation, experimentation and human factors exploration.

KEY ACHIEVEMENTS

NETWORK CAPACITY AND DEMAND MANAGEMENT (NCD)

Supporting the Air Traffic Flow and Capacity Management (ATFCM) strategic action plan, the objective of this area is to conduct research in key fields such as airspace management, strategic and tactical capacity management, air traffic flow management (ATFM) operations and tactical traffic management.

Although work was not carried out during 2003 in airspace management, significant results were achieved in the other three domains:

Strategic and tactical capacity management

In the context of the Capacity Enhancement Function, the first of a series of Interactive Capacity Workshops was held in October 2003 to provide air navigation service providers with a clearer view of the underlying data and assumptions used by the FAP model. The Workshop proved useful in highlighting the need for an interactive, transparent approach to collaborative capacity planning.

In addition, a new method, proposed by the Capacity Task Force, was developed for assessing ACC capacity (ACCESS), which would be applicable to all ACCs whether or not they were the source of delays, based on a comprehensive simulation of the European ATM network.

Complementing the short-to-medium-term planning activity, the Complexity and Capacity (COCA) study is geared to identifying and evaluating factors related to air traffic control complexity and their links to controller workload. During 2003, aspects of the COCA method were applied by the Performance Review Unit to investigate performance differences between selected US and European air traffic control centres and for benchmarking purposes in the ATM cost-effectiveness reports. COCA will be extended during 2004 to include a functional model of ATC cognitive complexity.

Support to European enhanced flow management operations

Several ATFM assessments were completed, including an improved model for ACC optimal configuration. A slot allocation algorithm alternative to the first-planned-first-served rule was completed and initial tests produced promising results.

The study of a Collaborative Airline Interface with ATFM (CAIA) was concluded through a series of prototyping exercises at airline sites (BA, KLM, SAS, Easyjet, SN Brussels Airlines) resulting in feedback for the design of advanced CFMU interfaces for airlines.

Tactical traffic management

One of the most promising elements of the ATFCM strategy, as underlined by the Performance Review Commission, will be the development and implementation of the Tactical Traffic Management concept. This will improve traffic smoothing performance by complementing the current ATFM system with real-time air traffic synchronisation and dynamic negotiation. Following the 2002 delivery of a draft operational concept, prototypes were produced in 2003 to consolidate this concept by facilitating the identification of appropriate measures and the negotiation and communication of those measures between different centres.

To further strengthen the development of this concept, a TEN-T project was signed in November 2003 with the European Commission, resulting in the project called "Cooperative ATM Measures for a European Single Sky" (CAMES). In cooperation with Skyguide, AENA, DNA and ENAV as well as the CFMU, it will validate the first elements of tactical traffic management concepts based on specific traffic flows. A series of workshops with these key air navigation service providers reviewed ATFM operations in the targeted areas and assessed the suitability of the proposed measures.

SECTOR SAFETY AND PRODUCTIVITY (SSP)

The main objective of the creation of the new SSP research area was to consolidate all aspects of controller-centred sector-level operations. This includes air-ground integration applications such as new ATC spacing instructions and others which may transfer some workload from the ground to the cockpit.

The objectives in this area are to clarify concepts, carry out experiments and studies and examine transition and implementation issues in order to generate data in support of proof of usability and operational coherence, business case development, standardisation and regulation processes, safety assessments and, ultimately, overall implementation decisions.

In 2003, emphasis was placed on the development of an overall integrated sector view rather than a collection of individual independent functions. Involvement in the Gate-to-Gate and OATA projects has supported this.

A large number of experiments and studies (described in the Experimental Centre's 2003 Activity Report) were carried out by SSP in the course of 2003. Some key results were obtained in the following areas:

ASAS Package 1

Among the various ADS-B projects, SSP has taken a particular interest in sequencing and merging. Simulations (both ground and air-side) continued to show positive results for this application, which involves the use of new ATC 'spacing' instructions. The feasibility of the techniques has now been demonstrated in the Terminal Control Area (TMA) and final approach, showing benefits that are recognised both by the controllers and pilots involved in the experiments.

Datalink

Experiments to support initial Link2000+ implementation (from both operational and technical perspectives) have confirmed the feasibility of the initial Link2000+ set of services. Simulations involving more advanced datalink services have clearly shown benefits for some services, but not for others.

Work also continued on new controller tools and the associated changes in controller working methods. Particularly successful in 2003 were a series of live shadow-mode trials involving automated conflict detection. Further studies to develop support for conflict resolution tools demonstrated some new techniques and HMIs associated with an arrival management tool.

AIRPORT THROUGHPUT (APT)

The airport throughput research area (APT) was established in 2003 as part of the Centre's realignment and in response to the prediction that airports are going to become the most constraining factor for European aviation. To address these issues, the area has focused initially on Collaborative Decision-Making (CDM) and Wake Vortex – CDM to provide data commonly usable by all actors at an airport and Wake Vortex to improve runway utilisation.

Wake Vortex

The Time-Based Separations Project reported on runway capacity calculation under various wind conditions, indicating that 2 to 3 landings per hour can be recovered in 15 knots headwind. Controller tools and an initial hazard analysis were delivered, together with a PC demonstrator.

WakeNet 2 Europe Thematic Network promotes wake turbulence research to address existing and foreseeable safety and capacity problems caused by wake turbulence. Results from previous studies showed a major improvement in the knowledge of Wake Vortex phenomenon. WakeNet 2 Europe will provide guidance for complementary research and operational applications.

Leader of the development of operational and system requirements in the field of ATC-Wake, the Centre delivered operational requirements, operational concepts and procedures together with user and system requirements in August 2003. A 15% average increase in runway throughput is expected.

Collaborative Decision-Making (CDM)

CDM pursued the development of more advanced airport CDM applications and support to initial implementation at a number of European airports. Messages to exchange CDM information between the CFMU and the airport and the variable taxi time applications were defined in 2003. Athens, Lisbon and London Heathrow airports took part in implementation trials. Other key airports such as Amsterdam, Paris and Munich have also been discussing CDM with EUROCONTROL and close cooperation is foreseen in 2004.

A cost-benefit analysis study has been commissioned and will, together with the CDM promotional film and Implementation Manual, play an important role in the introduction of CDM at all major airports in the ECAC area.

Cooperation with the University of Aachen has started to map airport landside processes and establish state-of-the-art of research within this domain.

INNOVATIVE RESEARCH (INO)

2003 saw great progress in the objective to strengthen innovative research, with many encouraging results.

Exploration of a new control paradigm based on a large volume of airspace, linked to ACARE proposals, has focused on the shift of controller working practices in an adapted airspace. Simulation has shown subsequent gains in capacity while reducing the conflict-solving workload, confirming the initial hypothesis that larger volumes of airspace offer the possibility for more organised responses to unpredictable events in traffic planning. A follow-up project will concentrate on the synchronisation of traffic, from flow planning to tactical control and on dual-mode of operations: large-volume (super-sector) and city-pair tube-control (sector-less). Five papers were published at international conferences on this topic.

On the advanced technology investigation front, the study into the adaptation of digital watermarking techniques for pilot-controller VHF voice communication has provided remarkable results that could open the door to significant short-term applications. The Aircraft Identification Tag (AIT) study demonstrated that aircraft identification, e.g. call-sign, can be automatically added as a digital signature to a voice air/ground communication without any modification to the existing equipment. Consequently, the aircraft call-sign can be automatically detected through VHF communications, thus enhancing security protection with an encouragingly low message error rates.

Also showing great potential is the study on the applicability of Stereoscopic 3D visualisation and multimedia interaction techniques for future controller working positions. The human-in-the-loop experiment, assessing comparative accuracy and time performance in 2D and 3D stereoscopic environments, has shown that controllers perform quicker with 3D stereoscopic displays, without any detriment to accuracy. This positive result reinforces initial expectations and has orientated the study towards pilot-testing of an application for airport tower control. Eight papers were presented and published at international conferences.

Analytical modelling has recorded a remarkable advance at the theoretical level, incorporating the inclusion of uncertainty in planning estimates. A Markov Decision Programming model was developed from collaboration between the Centre and the University of California at Berkeley applied to small-scale dynamic rerouting problems. Referred to as the "uncertainty region model", it can summarise all uncertainty factors in just one parameter for use in the dynamic replanning process. Pending confirmation with larger-scale problems to validate its applicability in ATM, the results have been extremely promising.

In addition to these encouraging results, valuable progress was made in the definition and control of procedures for the selection of students and studies. The Annual Innovative Research Workshop was attended by more than 50 scientists from over 14 Member States and all were very interested in, and greatly appreciated, our research activities. The Innovative Research Advisory Board welcomed the investigation on Aircraft Identification Tag and recommended several improvements to the concept development and analytical modelling work.

In 2003, four new PhD theses, one university study and two new partnerships with national research establishments were initiated. Thirty-six papers were published in international conferences and journals.

SOCIETY, ENVIRONMENT AND ECONOMY (SEE)

Devised early in 2003, work in the SEE research area is organised around four main threads:

- Noise nuisance around airports;
- Fuel burn and emissions;
- Air quality issues around airports;
- Sustainable aviation.

Noise nuisance around airports

Aircraft noise, despite being rapidly caught up by local air quality, is still the largest source of aviation-related complaints from people living close to airports.

SEE has played a major role in the ECAC Airmod working group responsible for rewriting ECAC Doc. 29 – the guidelines for aircraft noise modelling in Europe, now the "Interim Aircraft Noise Model" for the European Commission Common Noise Policy. The Centre's role has been especially prominent in the design of the noise and performance database that will accompany the new version of this document. To this end, a website has been created that will give registered users access to this data.

Fuel burn and emission
Recent research indicates that the effect of cirrus cloud forming from aircraft contrails could be having a significant effect on global warming and climate change. In this context, the Centre initiated a project late in 2003 called CONTRAILS in cooperation with the European Space Agency (ESA) to identify the relationship between changes in cirrus and air traffic density.

Air quality issues
The issue of airport local air quality is becoming more and more important. In partnership with Lyon St Exupéry and Zurich airports, the Centre focused on establishing a thorough airport emissions inventory database with validation studies and developments of a Geographical Information System (GIS) tool to visualise the three-dimensional distribution of the emissions around an airport.

Sustainable aviation
In a two-phase study into the concept of sustainable development in air transport, the Centre considered in 2003 the notion of "sustainability". In the second and more challenging phase in 2004, the Centre will attempt to identify pricing options and/or regulatory mechanisms consistent with the notion of sustainability, which could foster sustainable development.

Attitudes to Aircraft Annoyance around Airports (5A)
The 5A project looks at how socio-economic, cultural, age, status, education and situational factors modify the way in which noise translates into annoyance among residents around the three study airports: Manchester, Lyon and Bucharest. The attitudinal responses indicated a reasonably high degree of consensus across the three countries.

Flight efficiency and its impact on environment
Direct flight between departure and destination airports offers significant savings in fuel and thus environmental benefits. In conjunction with the Performance Review Unit and the EUROCONTROL Environment Domain, the ENV-KPI project pursued the establishment of indicators of flight efficiency and environmental performance indicators measuring the effectiveness of the ATM system in terms of distance, time, fuel and economic impact of the en-route flight phases.

SUPPORT TO RESEARCH

To support research, the Centre has developed key methodologies (safety, validation) and technical infrastructure (ATC simulation and experimentation platform, human factor laboratory).

KEY METHODOLOGIES

SAFETY

In the wake of the tragic mid-air collision over the Bodensee, the High-Level European Action Group on ATM Safety (AGAS) identified a need for targeted R&D to improve safety in European ATM. Some of the key results obtained in 2003 were:

- The ACAS Monitoring Cell detected a series of incidents relating to the new terminology in TCAS Version 7 which had led to pilot confusion and unsafe action in a number of cases. An explanation of the problem and a warning advisory note was sent out.
- The Centre-developed Automatic Safety Monitoring Tool (ASMT) was requested by the DFS and ENAV and is being delivered. ASMT has now reached the end of its R&D phase and in 2004 the implementation of ASMT across Europe will be led by EUROCONTROL. ASMT is already used by NATS, Bratislava, and Maastricht.
- The Safety Research Team developed a means of using the Target Level of Safety (TLS) in safety cases, a key requirement for ATM industry risk assessment.
- A safety focus has been integrated in six projects in the NCD, SSP and APT research areas. In 2004, this will be increased to twelve projects and include an overall risk picture for SSP's proposed future operational concept. For

NCD, collaboration on investigating complexity and safety for the Maastricht Centre and for APT, safety activities related to continuous approach and ground monitoring systems (ASMGCS).

- In an endeavour to improve the safety culture of the Centre, a safety culture survey revealed a reasonable level of safety understanding but plenty of scope for improvement. Subsequently, a Strategic Safety Research Plan has described how safety should better fit in the Centre's activities. A second safety culture survey will be carried out in 2004, and a Safety Management System will be developed for the Centre.

VALIDATION

A 'Validation Methodology' was reviewed by Gate-to-Gate (G2G) partners and accepted by the European Commission in May 2003.

Further G2G developments resulted in a draft EUROCONTROL Concept Validation Methodology.

The plan for 2004 is to make available a European Concept Validation Methodology that all projects sponsored by EUROCONTROL or the European Commission will be expected to apply.

TECHNICAL INFRASTRUCTURE

HUMAN FACTORS LABORATORY

The human factors laboratory was completed in 2003. It facilitates human factors experimentation at an early stage in the development of new systems and tools. It also offers a prototyping platform and a variety of human factors equipment, such as eye movement tracking and psycho-physiological measurement devices.

As a complement to the lab and in cooperation with the human factor domain, human factors training was given to EUROCONTROL personnel.

ERIS

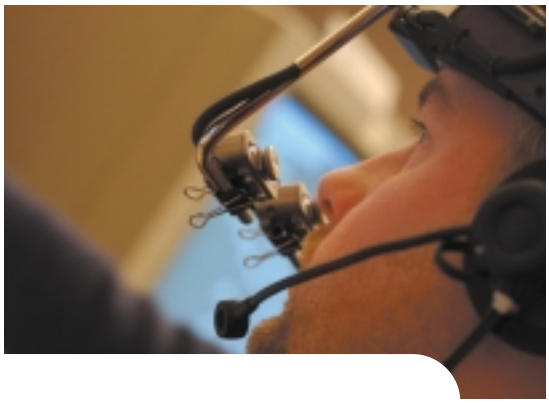
The EATM Reference Industry-based ATM Simulation and Trials Platform (ERIS) Programme provides simulation and trials platforms to support the validation activities of the European Air Traffic Management Plan (EATMP) and the European Commission. ERIS is an important enabler for the EATM Validation Programmes and a link between these and the EC's Applied Research Programmes. ERIS also addresses the need for open systems architecture with which to validate future ATM concepts and to progress from the definition and design phases to implementation.

ESCAPE

ESCAPE is the reference platform for the EUROCONTROL Air Traffic Management Programme. A major target for ERIS in 2003 was to replace the ESCAPE real-time ATM simulator platform with ACE (Avenue-compliant ESCAPE).

ESCAPE has been adapted to support new features, including an industry-supplied Arrival Manager and enhancements to Airborne Separation Assurance System (ASAS), Datalink and Medium-Term Conflict Detection (MTCD).

In October, the Airbus Iron Bird test bed in Toulouse was linked using 'pre-operational' equipment with the ESCAPE in Brétigny for validation of datalink. In November, a live trial of MTCD was run at the Maastricht UAC, considered by its participants to be the most successful trial to date.



MULTI-COCKPIT SIMULATOR

The Multi-Aircraft Cockpit Simulator (MCS) is a sophisticated pilot position developed for the EEC. It allows professional pilots to participate realistically in a simulated ATC scenario. During 2003, MCS was used in two important experiments:

- The Mediterranean Free-Flight (MFF) project's "Air weeks" in February was a distributed simulation with three cockpit simulators (MCS in Brétigny, RFS in Amsterdam, ACS in Rome) connected to an ESCAPE platform running at ENAV in Rome.
- The AVT (ADS-B Validation and Trials platform) project was set up with ESCAPE and MCS to conduct live trials in Arlanda, Sweden. MCS connects directly to ARTAS and its data merges with the live data presented to the controllers.

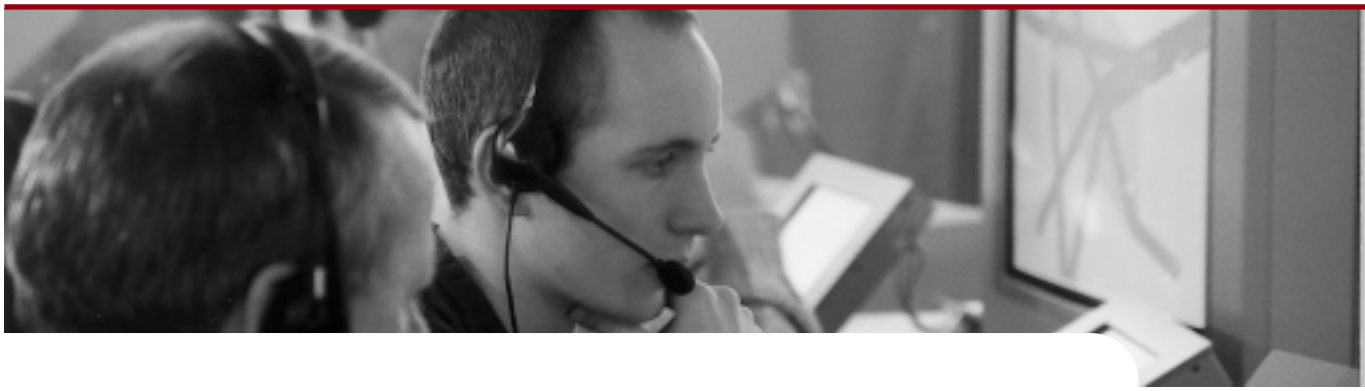
eDEP

The EUROCONTROL Early Demonstration and Evaluation Platform (eDEP) is a low-cost, light-weight, web-enabled ATM simulator platform, offering an ideal environment for research and advanced concept projects to rapidly prototype applications.

In 2003 eDEP was used by the following projects:

- EVP (European Validation Platform): AMAN demonstrator.
- TCAS RA Human Factors experiment.
- CORA2: revisiting the CORA1 operational concept of 'prepared clearance'.
- EMAN: prototype of an en-route traffic sequencing and management tool.
- Super sector: evaluation of the concept of large controller teams collaboratively managing 'super sectors'.
- CARE: human factors experiment evaluating the use of trajectory and conflict uncertainty information.

ians Excellence in Training



The Institute pursued its policy of continuous improvement in 2003 as part of its quality programme to remain a centre of excellence in air traffic management.

Faced with ever-increasing demand for places on its courses, the Institute has provided an effective response by relying on a variety of innovative training methods such as e-learning and providing on-site courses, thereby achieving substantial efficiency increases.

The flexibility and dynamism displayed by the Institute over the last few years will stand it in good stead for the challenges that the future will bring.

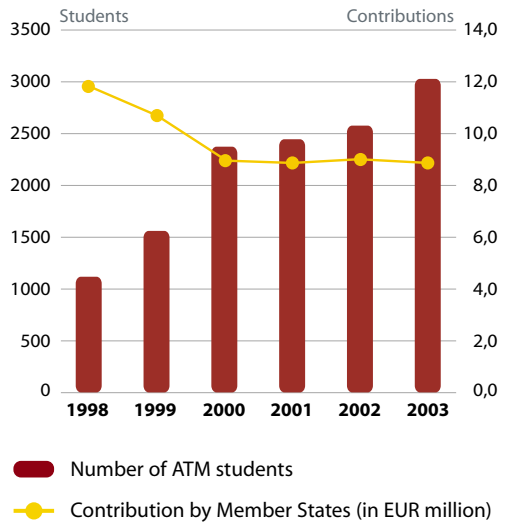
INSTITUTE OF AIR NAVIGATION SERVICES

The mission of the Institute is to provide education and facilitate the transfer of knowledge in the field of air traffic management in an efficient and cost-effective manner. By doing so, the Institute contributes to the improvement and harmonisation of European air traffic management (ATM).

The Institute subscribes to the Agency core goals and values. Knowing that safety is EUROCONTROL's raison d'être, the Institute plays a role in disseminating ATM concepts and projects in order to develop consistent regional safety standards, thereby contributing to worldwide improvements. It also provides training on regulation, for the development of common standards, an essential element of the Single pan-European Sky concept.

Courses, workshops and seminars are designed, developed and delivered in a traditional classroom setting, in ATC simulation facilities or via e-learning. The Institute works in close partnership with training establishments across the 41 ECAC States, helping them to meet their national training requirements. Over the past 35 years, the Institute has trained more than 39,000 students of 85 different nationalities.

The Institute pursues and implements a policy of continuous improvement as part of its quality programme. In 2003, a European Foundation for Quality Management (EFQM) assessment by EUROCONTROL Agency assessors confirmed, with a score of 532 points, that the Institute is improving its quality performance.



The Institute continued to increase its efficiency in the delivery of ATM courses. Since 1998, the number of ATM students has risen from 1,092 to 3,003, while the overall budget decreased by 25%. Similar efficiency increases were implemented in other areas such as ATC ab-initio training. These were achieved by utilising a variety of innovative training delivery methods.

The Institute Management Board (IMB), chaired by the Director General, is responsible for overseeing the direction and strategy of the Institute. At the November 2003 IMB, the Board discussed the vision of the Institute. It confirmed that the Institute should concentrate on the following areas, mainly to:

- continue to support the Agency vision to be "the architect and manager of the pan-European air traffic management network";
- identify how it can support the European Commission, Member States and relevant Agency Bodies in the development of European-wide implementation of regulations;
- seek alternative financing, also through the European Commission, where appropriate;
- support the ATM 2000+ Strategy, in close cooperation with EATM, in order to fulfil its commitment to the Agency objectives. The training will also support the implementation of regulations;
- expand and develop the area of pan-European ATM training in order to meet demand from the Member States. The training is to be delivered in a cost-efficient manner, commensurate with the resources made available, giving the Member States added value;
- continue to provide ab-initio ATC training for Maastricht controllers and, when requested, for Luxembourg controllers;
- develop and provide first class ATC training and act as a role model for others and as a test and development facility for new methodologies, in cooperation with EATM;
- operate a clearing-house function for training resources in Europe, facilitating the efficient use of resources throughout the Member States;
- achieve a leading position in pan-European ATM training development;
- become the European focal point for development and provision of e-learning in the area of ATM training;
- be an attractive centre for workshops and seminars in the ATM sector.

The Director General and the Director of the Institute are advised on training policy and strategy matters by the Training Consultation Group (TCG). The TCG meets twice a year. It is composed of representatives from Members States who have expertise and responsibility on training matters in their own countries.

At its last session, the TCG supported the IMB vision outlined previously. Furthermore, the TCG acknowledged that the Institute was not in a competitive situation with other ATM-ATC training establishments.

CORE BUSINESS ACTIVITIES

The core business of the Institute is the provision of leading-edge training for air traffic management personnel.

The Training Division carries out all core business activities:

- ATM training
- ATC initial training
- Training development and training support to States
- E-learning
- Provision of library and documentation services
- Organisation of workshops and seminars.

In 2003, the number of participants at courses and workshops slightly increased with 3,757 attendees, compared with 3,641 in 2002.

AIR TRAFFIC MANAGEMENT (ATM)

On-site training was provided at customers' premises. The current level of resources makes it possible to meet 50% of on-site course requests. Cooperation with the Central Flow Management Unit (CFMU) proved to be very successful through the delivery of Flow Management Position (FMP) training courses. CFMU training was an excellent example of how traditional training courses can be complemented by distance learning.

In 2003, the Institute ATM Training Programme included several courses responding to Member States requests for assistance with the introduction of ESARRs:

- Review and development of new courses in the area of safety management and safety regulation.
- Competency training for air traffic controllers.

The course for On-the-Job-Training Instructor (OJTI) remained very popular. To reduce the course participants' time spent in Luxembourg, the initiative was taken to develop a Blended OJTI course: the combination of a distance-learning module, followed by a one week traditional training module at the Institute. The first course was successfully delivered in November 2003.

Initial contacts with the Safety Regulation Unit and the mandate received from the Provisional Council on safety regulation training have indicated the urgent need for safety regulation training in Europe. Discussions with the Safety Regulation Unit on how to respond to these requirements have started.

ORGANISATION OF WORKSHOPS AND SEMINARS

In 2003, the Institute hosted about twenty ATM-related workshops and seminars.

These included:

- RNAV in Terminal Airspace
- A-SMGCS
- Aeronautical Information Management
- Environment Domain Workshop

CENTRAL EUROPEAN AIR TRAFFIC SERVICES (CEATS)

The Institute continued to support the CEATS Programme. Training courses were developed for future instructors and delivered in various locations.

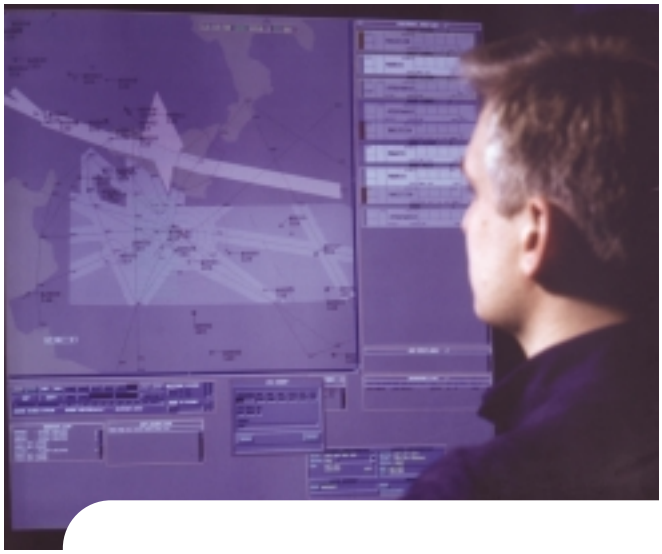
AIR TRAFFIC CONTROL (ATC)

The demand for ab-initio training for Maastricht was adjusted to cope with OJT constraints in the operations room.

Three intakes totalling 48 students underwent various stages of training. These three groups recorded 1,042 student weeks and 420 instructor weeks. The average pass rate for ab-initio training was 88%.

A total of 14 students from Bosnia and Herzegovina and Luxembourg completed ATC Training in Area Radar Control, Aerodrome Control Procedural Approach Control and Approach Radar Control. This mix of training totalled 391 student weeks and 118 instructor weeks.

During 2003, all training content delivered by the ATC Training Unit continued to be subjected to a rigorous mapping process in order to align it with Common Core Content guidelines in accordance with ESARR5.



The basic part of Initial Training was further refined and a new version of the Part Task Trainer has been commissioned and is under development.

The concept of the Multi-Media Classroom continued to generate increased interest from Member States. The ATC Unit and the e-learning unit provided those stakeholders who have expressed interest with the required support.

The E-Learning Unit and the ATC Training Unit combined to embark on a project which will produce 10 ATC Refresher Training modules. These modules will reside on the Institute server and will be available to all ECAC Member States, enabling them to satisfy parts of specific regulatory requirements.

TRAINING DEVELOPMENT AND HARMONISATION UNIT

The Training Development and Harmonisation Unit concluded successfully and on time the EATMP Human Resources Programme, stage 1, started in 2000. A special Programme Steering Group officially closed down the Programme, having endorsed all outstanding deliverables. A full set of high-grade training deliverables is now available for ECAC-wide harmonisation and implementation. It encompasses:

- Common Core Content and Training Objectives for Air Traffic Controllers, Basic and Rating*.
- Common Core Content and Training Objectives for Basic AIS Training, Phase 1 and 2*.
- Guidelines for a Common Level of Technical Training for Air Traffic Safety Electronics Personnel, Basic and Qualification*.
- Computer/Web-Based Training packages consistent with Air Traffic Controllers' Common Core training objectives including a Radar Skills Part-Task-Trainer.
- Continuation Training Deliverables, covering Operational Competency Assessment, Refresher and Emergency Training, Licensing Management, OJT and Management Training for Supervisors.
- Proficiency Tests in the English Language for Air Traffic Controllers (PELA), featuring a new Web-based administration.
- Training Plans facilitating the implementation of Air Traffic Controllers' Common Core training, both basic and all ratings.
- Computer-based ATM question bank.

The Common Core Content for Air Traffic Controllers deserves special attention, as ESARR5 has made this deliverable mandatory, giving it the status of a standard. A number of regional Information Sessions on Common Core Contents and ESARR5 have been organised in coordination with the Safety Regulation Unit and Stakeholder Implementation Service to help the implementation. All 41 ECAC States were invited, 26 attended.

The Training Development and Harmonisation Unit has, however, also prepared for the future by planning Domain Activities for the forthcoming year, including a feasibility study for a new Human Resource programme with major training contents.

* The same methodology has been applied for all three categories of staff.

PROVISION OF LIBRARY AND DOCUMENTATION SERVICES

The Training Documentation Service provides to the Member States a common source of documentation in the area of ATM training at the Institute, offering a cost-efficient solution, especially for smaller Member States.

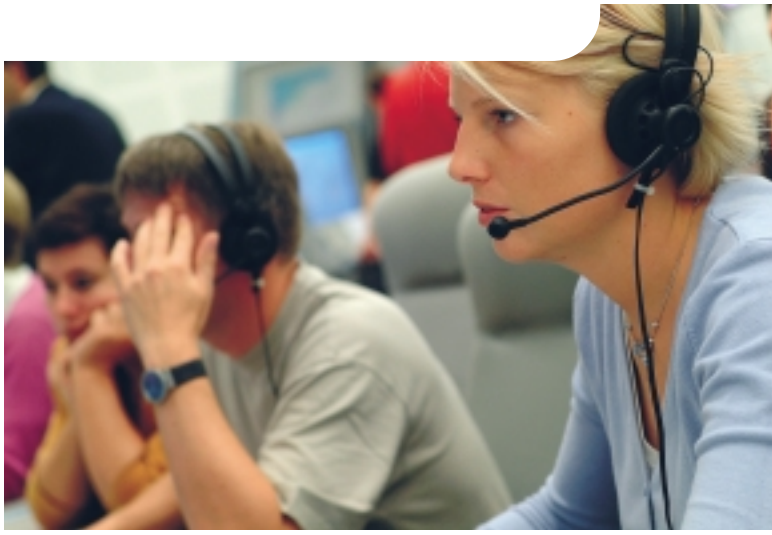
The Institute library is part of the EUROCONTROL library network. It allows for remote access to customers via the Extranet.

E-LEARNING

E-learning provides services to the other training units of the Institute and directly online.

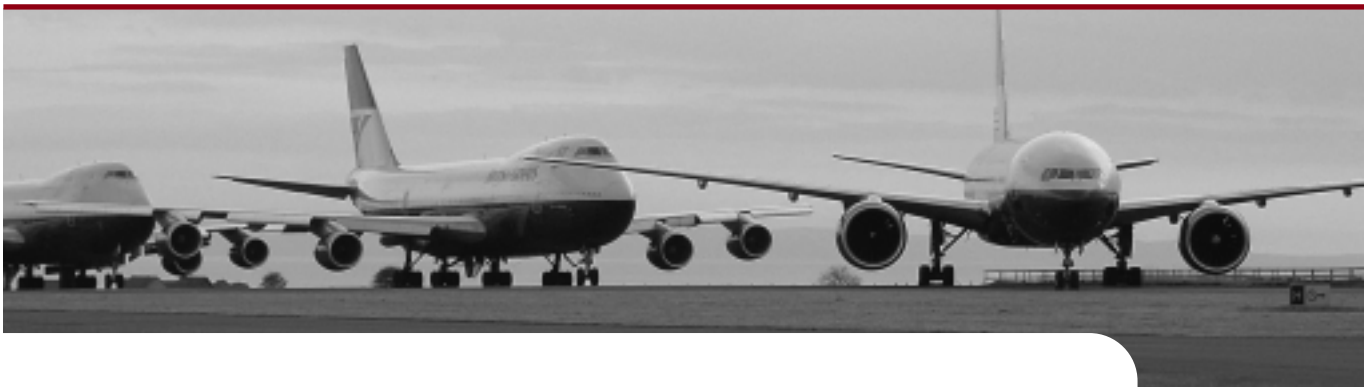
The Learning Management System has now been fully operational for a year and the numbers of users and the volume of content continues to expand. At the end of 2003, there were 1,400 active students enrolled on e-learning courses. There was a total of 65 individual modules online, on average one module equates to one hour of study. At the end of 2003, students had completed a total of 3,464 modules.

As mentioned earlier, a significant step has been the development and introduction of a blended learning course for OJTI. Originally, OJTI was a two-week classroom course. The theoretical study is now carried out by e-learning, following which the student attends a one-week, classroom-based course. This provides cost-saving advantages to the Member States and also gives students time to study quite complex theories at their own pace.



cfmu

Balancing Demand and Capacity



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2003 saw air traffic once again setting record-breaking figures and substantial savings being made as a result of sharp reductions in delays.

This is a most encouraging indication that the confidence established between the Central Flow Management Unit (CFMU) and its partners has allowed an adequate balance to be found between demand and supply.

The air traffic management system needs to be operated as an effective network. In this respect, collaborative decision-making played an increasingly important role in 2003.

The CFMU continued to expedite traffic flows by adapting constantly to the changing circumstances and traffic demand, adopting the necessary pre-tactical and tactical measures and operating in close coordination with all its partners in the air traffic management network.

CENTRAL FLOW MANAGEMENT UNIT

The principal objectives of the Central Flow Management Unit (CFMU) have always been to protect air traffic services against the over-delivery of aircraft, while at the same time enabling aircraft operators to carry out their flight operations with the minimum of disruption. During 2003 the level of traffic returned to record breaking figures, signalling an end to the depression experienced by the aviation industry following the September 11 attacks and the subsequent SARS problem. This return to overall growth was matched by record low levels of delay, a clear indication that the efforts being undertaken by all concerned are succeeding and a reminder that, with continued growth being forecast, these efforts must continue to succeed.

Although the basic objectives of flow management, which of course concern safety and efficiency, remain unchanged, the manner in which they are achieved is constantly evolving in order to provide a more accurate, efficient and cost-effective service. A consolidated Air Traffic Flow and Capacity Management (ATFCM) Strategy has been proposed in which it is emphasised that air traffic flow management must not be restricted to slot allocation mechanisms but should also be extended to the optimisation of traffic patterns and capacity management.

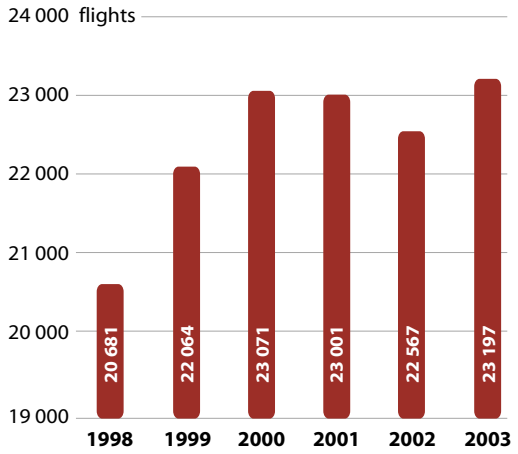
In addition to the CFMU's developments to improve its own processes, the global ATM environment in which the CFMU operates is also evolving and, given the CFMU's centralised, pan-European role, it is all the more important that the CFMU systems are capable of adapting to new requirements, allowing the CFMU to integrate its services more easily within the developing, collaborative, ATM environment, to the benefit of all concerned.

AIR TRAFFIC FLOW MANAGEMENT

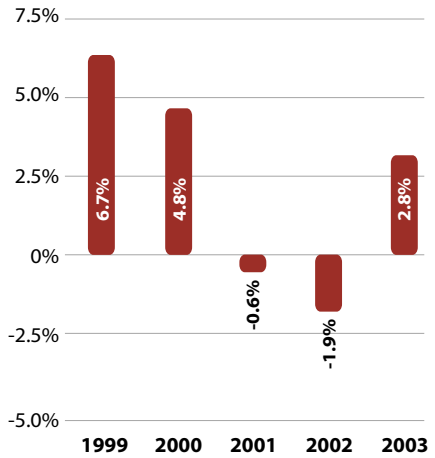
The EUROCONTROL Provisional Council requested that the average delay per flight during the 2003 summer season (May-October) should not exceed 2.8 minutes per flight. Furthermore, the average delay caused by en-route regulations should not exceed 2.1 minutes. This is known as the "delay target".

The traffic forecast for the ECAC area for 2003 predicted a 2.2% increase while the delay forecast, derived from the traffic forecast, predicted 1.1 minutes delay per flight, of which 0.5 minutes would be attributable to en-route delays. This is known as the "delay forecast".

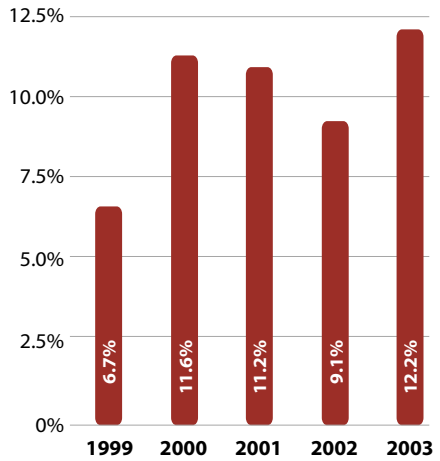
AVERAGE DAILY TRAFFIC TREND



YEARLY TRAFFIC VARIATION



TRAFFIC VARIATION SINCE 1998



The actual traffic variation from May to October 2003 showed a 2.2% increase over the same period the previous year, in line with the prediction. The average delay was 1.8 minutes per flight, of which 1.2 minutes were attributable to en-route delay.

The results for the summer 2003 period were therefore better than the target set by the Provisional Council but worse than the predicted figures. It should, however, be noted that the total delay for summer 2003 was 25% less than the same period in 2002.

If we make a trend summary by comparing summer 2003 figures with those of 1998, traffic has increased by 12.5% while the total delay has decreased by 58.5%. Given the rule of thumb that, at constant capacity, a 1% increase in traffic corresponds to a 5% increase in delay, we can conclude that since 1998 the ATC system has been able to absorb a 24% increase in traffic for the same amount of delay.

The summer period is known to ATFM users as the most congested period of the year. A yearly report will not therefore bring a lot of new information. Nevertheless, it is important to report on a yearly basis firstly for statistical reasons but also to provide exhaustive reporting on ATFM operations. The winter period is not exempt from special events, such as severe weather conditions, that might heavily impact ATFM delays.

YEARLY TRAFFIC GROWTH

The decline in the daily traffic observed during 2001 and 2002 was fully recovered in 2003 with an increase of 2.8% compared to 2002. The average of 23,197 flights per day was even slightly higher than the 2000 figure.

The yearly variation chart contrasts the considerable reduction in air traffic up to and including 2002 with the noticeable recovery recorded in 2003. It shows in particular that traffic in 2003 is 0.5% higher than in 2000.

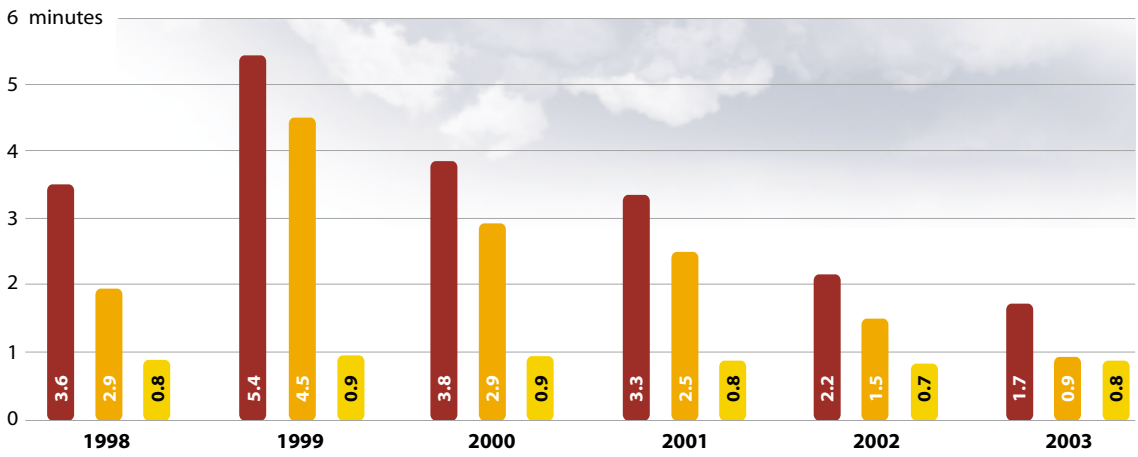
YEARLY DELAY PER FLIGHT

The 2003 average delays were well within the targets set by the EUROCONTROL Commission, with 1.7 minutes per flight instead of 2.8 minutes for the total delay and 0.9 minutes instead of 2.1 minutes for the en-route delay.

The 2003 average delay was 20% lower than the 2002 value, contrasting positively with the 2.8% increase in number of flights.

ATFM delay per flight
En-route delay per flight
Airport delay per flight

TREND IN THE AVERAGE DAILY ATFM DELAY PER FLIGHT



ASSISTANCE WITH "SPECIAL EVENTS"

A 'special event' is any unforeseen event which temporarily causes a reduction in capacity of sufficient magnitude to require flow management assistance. There can be many causes of "special events", ranging from a failed luggage conveyor belt to industrial action or adverse weather conditions.

The handling of special events is an integral part of the work and the CFMU has always assisted the air navigation service providers (and indirectly the airport authorities, handling agents and of course aircraft operators) in coping with special events. It is, however, worth noting that as traffic increases so too does this aspect of the work. A relatively small disruption, whatever the cause, is more likely to have a significant effect when traffic levels are high.

During 2003, flow management regulations were implemented for a total period of 230,670 hours, of which 136,043 hours or 59% was due to special events whereas in 2002 special events accounted for 50% of the total regulation period.

ATFCM OPERATIONAL DEVELOPMENTS

The evolution of the pre-tactical phase within the Network Management Cell (NMC) of the CFMU Flow Management Division continued. The cell now has 5 network specialists who not only assist the network managers in the creation of the tactical plan but also carry out ATFCM simulations. These are very important when assessing the effectiveness of ATFCM measures both in the pre-tactical phase but also in the more strategic planning phase of airspace changes. Air navigation service providers have found this approach particularly helpful and CFMU is receiving more requests for this type of assistance.

It became apparent that the skills and knowledge acquired in the NMC had to be migrated into the tactical phase of ATFCM operations. The Tactical Network Coordinator (TNC) position was created to assist in this and is responsible for the global effectiveness of the ATFCM system within the tactical area of operations.

The use of teleconferencing and e-conferencing as an important media for Collaborative Decision-Making (CDM) continued. In winter 2003, a weekly teleconference/e-conference addressing the traffic for the ski season was added to the SW Axis and North Atlantic Daily conferences. Some tangible benefits were derived from this process as regards the presentation of traffic and the reduction of delays in comparison with previous seasons.

Extensive utilisation of scenarios, including flight level capping, alternative routing or rerouting has continued. These are on the whole advisory. There have been significant reductions in delays in 2003 but aircraft operators are now beginning to address the issue of service quality in terms other than delay. As a result, we can expect more criticism of such techniques as level capping, early descents, etc.

The "abuse" of the system through false Estimated Off Block Times (EOBTs) that was reported in last year's report was resolved through the CDM process and resulted in a trial procedure at Herakleon airport throughout the summer of 2003. Initial results were positive although the process was very resource-hungry. The trial will be continued, and possibly extended to other airports in 2004.

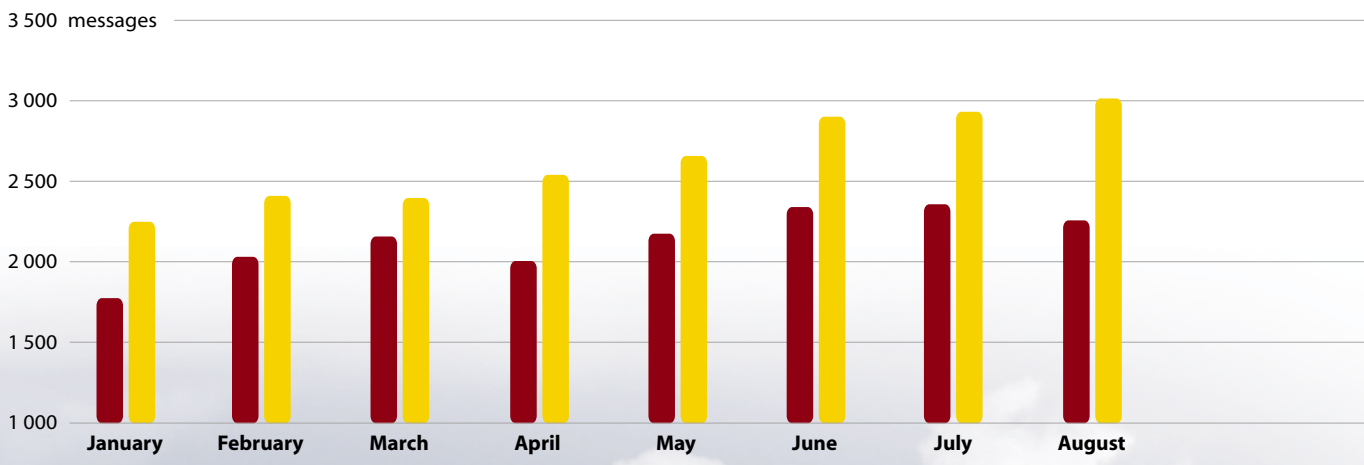
CFMU CLIENT CONNECTIONS

The CFMU clients, primarily aircraft operators, airport handling agencies and air navigation service providers can access the CFMU systems either via the Internet or a dedicated network. The number of clients with online access is constantly increasing, particularly since the introduction of ETFMS and the associated increase in accuracy of real-time data. In September 2003, there were 1,659 active user accounts, which by February 2004 had risen to 1,916 – an average increase of 3% per month.

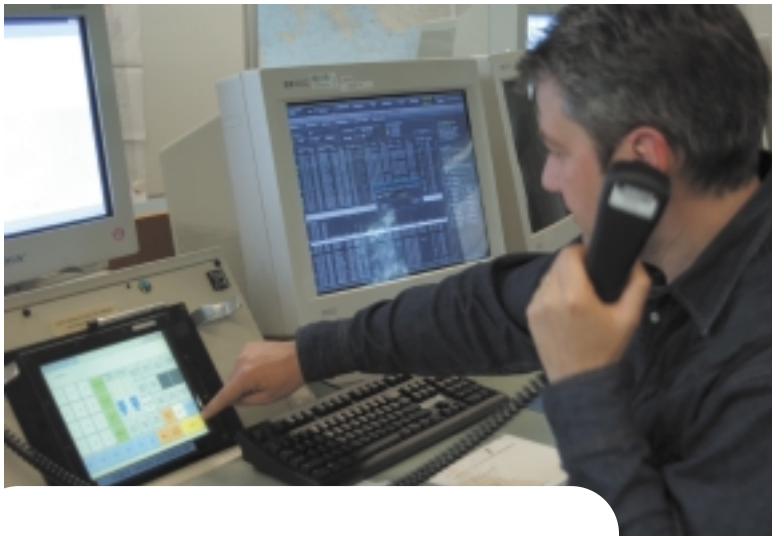
FLIGHT PLAN TRAFFIC

The general increase in air traffic during 2003 was also reflected in the number of flight-plan-related messages processed by the IFPS system and of course the resulting increase in workload. The two IFPS Units processed a total of almost 14 million flight-plan-related messages during 2003, an increase of 5.68% compared with 2002. The number of flight plans generated from RPL has increased slightly, its percentage remaining at just under 50%.

DAILY AVERAGE MANUAL PROCESSING LOAD PER MONTH IN 2003



In 2003, 81% of the messages received by IFPS were processed automatically, a slight increase compared to 2002. It is worth noting that as the complexity of the operational environment increases (routing restrictions, FUA, 8.33kHz, RVSM, etc.) so too does the workload for anyone attempting to file a valid flight plan and of course for the IFPS operator whose task it is to correct errors. The automatic processing rate should therefore always be considered as a consequence of this complexity.



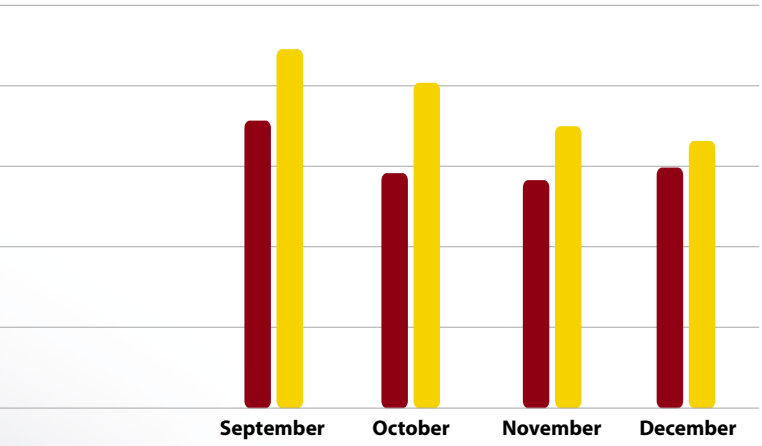
CFMU SYSTEMS DEVELOPMENT

The area from within which CFMU is receiving radar-derived data for its Enhanced Air Traffic Flow Management System (ETFMS) has continued to expand throughout 2003 and now covers 30 FIR/UIRs with further expansion due to continue throughout 2004. The provision of ETFMS data to service providers and airports will begin during 2004 as part of the continuing development of CDM solutions.

During 2003, the CFMU systems further evolved in the direction of offering more services to the remote user community. A significant part of the 2003 development effort was spent on the development of an improved interface to the CFMU systems. The improved interface, known as CHMI, will provide a dynamic map display on which routes and other environment data can be displayed and will remain valid in real time. This facility will be made available during 2004, after which new functionalities will be added, such as flight plan filing assistance, taking advantage of the dynamic graphic display capabilities.

Another step in the same direction was the introduction of the CFMU Interactive Reporting facility (CIR), which gives online access to a great variety of reports based on the information stored in the CFMU data warehouse.

Another major milestone was the introduction of the new Unix-based Environment system which offers new facilities for ATS data maintenance and an improved user interface. An important side effect for cost saving is that, with the start of operations of the new Environment system, the last milestone in the mainframe phase-out programme was achieved and the equipment could be switched off early in 2004.



CRCO

A Fair and Efficient Charging Mechanism

An efficient air traffic management system requires an efficient funding mechanism – for EUROCONTROL this is a major element in its operation. One of the most important instruments for guaranteeing the funding of en-route air navigation facilities is the route charges system, which the EUROCONTROL Central Route Charges Office (CRCO) operates on behalf of its Member States.

During 2003 the CRCO collected charges on behalf of 31 Member States and the number of non-EUROCONTROL States using CRCO's services continued to grow.

Mindful of its duty, the CRCO continued throughout 2003 to perform its mission in a spirit of transparency, fairness and financial prudence.

CENTRAL ROUTE CHARGES OFFICE

The EUROCONTROL Member States established the Central Route Charges Office (CRCO) to operate, on their behalf, a harmonised, regional en-route charges system. This system contributes to the funding of the European Air Traffic Management (ATM) system, whilst at the same time facilitating consultation with the airspace users.

The CRCO's mission is to provide its stakeholders with an efficient cost-recovery system that funds air navigation facilities and services and supports ATM developments. The strategy pursued to achieve this mission is "sustainable growth", embracing four objectives:

- integration of the CRCO's developments into the Agency strategy;
- guidance to the system's stakeholders in the reassessment of the principles;
- enhancement of the quality of the services provided;
- reduction of the administrative unit rate.

In addition to its core task, the establishment, collection and disbursement of en-route charges to Member States, the CRCO offers additional services such as the billing and collection of terminal charges. Separately, non-EUROCONTROL States can also benefit from the CRCO's expertise in billing and collecting air navigation charges on the basis of a bilateral agreement.

During 2003, the number of participating States in the EUROCONTROL route charges system increased to 31. Albania was technically integrated into the route charges system with effect from 1 July 2003.

MAIN ACTIVITIES

MULTILATERAL AGREEMENT RELATING TO ROUTE CHARGES

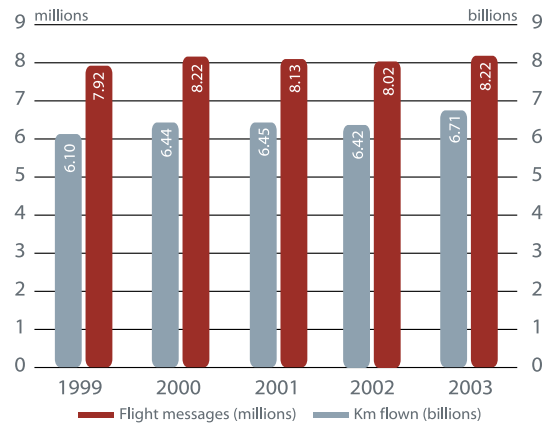
The route charges system's operations during 2001 and 2002 were marked by the global downturn that affected the air transport industry. For two consecutive years, traffic remained almost stable. 2003 was a year of gradual recovery. The number of IFR flights, distances and number of service units in the airspace of the participating States increased by 2.5%, 4.7% and 5% respectively in 2003 compared to 2002 figures.

In its constant drive for improvement, the CRCO devoted considerable effort to cost control – expenses increased by 2.3%, very slightly above the estimated inflation for 2003 – and to the enhancement of its customer services.

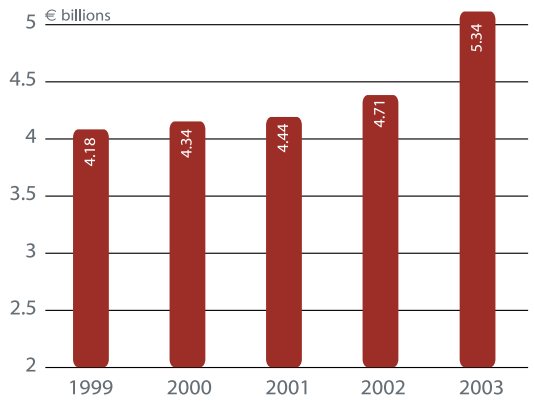
ETNA (Extranet to National Administrations)

The CRCO made available a secured Internet site allowing Contracting States of the Multilateral Route Charges System to access confidential information via the Internet. ETNA became fully

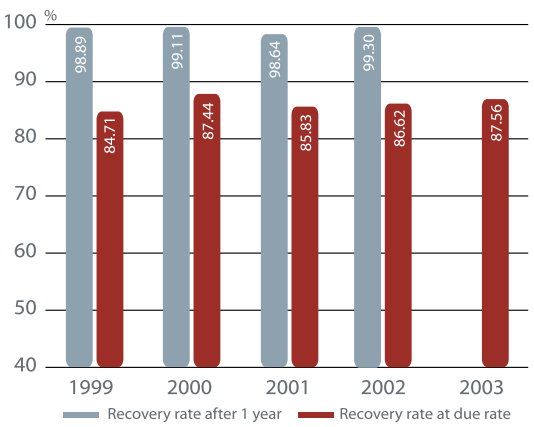
FLIGHT MESSAGES AND KILOMETRES FLOWN



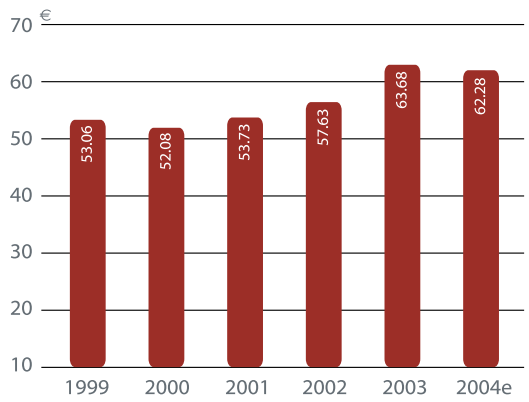
AMOUNTS BILLED



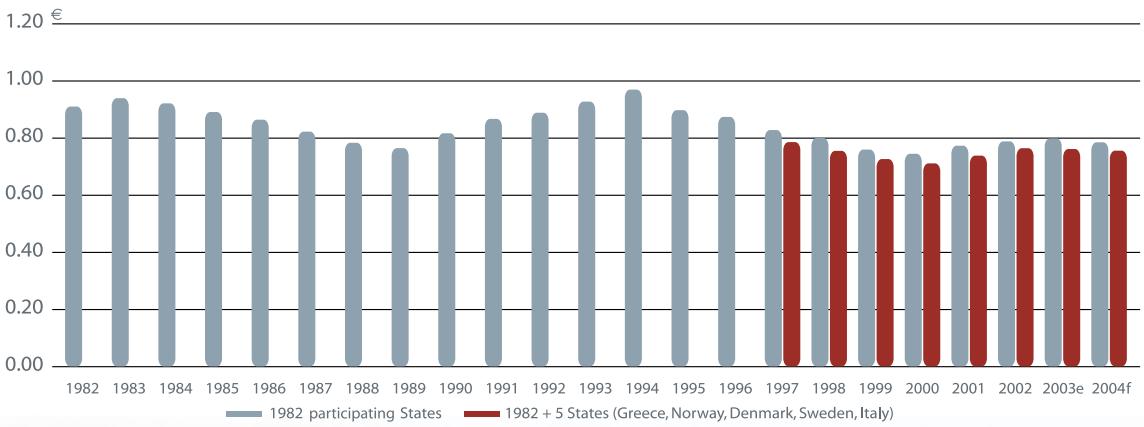
RECOVERY RATE



AVERAGE WEIGHTED NATIONAL UNIT RATE



DEFLATED COST PER KILOMETRE – INDEX 100 IN 2000



Costs are actual between 1982 and 2002 and forecast for 2003 and 2004. They are deflated by the ECU/Euro price index (index 100 in 2000) published by the Statistical Office of the European Communities (EUROSTAT).
The graph shows a slight decrease in the unit cost per kilometre in 2004 after the increase observed in 2001, 2002 and 2003. Although 2003 and 2004 figures are still estimates, it seems that unit costs expressed in real terms are setting at levels well below the peaks observed in 1983 and 1994.

operational at the end of 2003 with the publication of documents issued by all CRCO Units.

Improvements at the CRCO

- A plan of action to reinforce IT security was drafted in 2003. The benefits are being reaped in 2004.
- The disaster recovery site has been tested and is operational. It will allow the core CRCO operations to be performed in the event of a major disaster.
- The Business Continuity Plan was defined in 2003. 2004 will be devoted to finalising the plan, performing tests and organising crisis management.

BILATERAL AGREEMENTS RELATING TO TERMINAL CHARGES

EUROCONTROL has concluded bilateral agreements relating to terminal charges with Denmark, France, Italy, Ireland and Moldova. Any EUROCONTROL Member State may avail itself of terminal charges billing and collection services.

The total amount of terminal charges billed in 2003 was €292 million – corresponding to 2 million flights.

BILATERAL AGREEMENTS RELATING TO AIR NAVIGATION CHARGES

In 2003, EUROCONTROL operated bilateral agreements relating to air navigation charges with seven EUROCONTROL non-Member States, namely Belarus, Bosnia and Herzegovina[1], Latvia, Lithuania, the Ukraine[2], Uzbekistan and Morocco. Air navigation charges comprise route charges, and optionally, terminal charges. In 2003, terminal charges were billed on behalf of Lithuania, the Ukraine and Belarus.

The resources required for operating the bilateral agreements are funded by the States concerned, without any financial contribution from EUROCONTROL Member States.

The total amount of air navigation charges billed in 2003 was USD 196 million, corresponding to 665.000 flights.

ACHIEVEMENTS (MULTI-LATERAL AGREEMENT)

FLIGHT MESSAGES PROCESSED AND DISTANCES FLOWN

Over 8.2 million flight messages (IFR flights only) were processed in 2003, which represents an increase of 2.5% on 2002.

The number of kilometres recorded in the airspace of the Member States for the calculation of route charges in 2003 was 6.7 billion kilometres, which represents an increase of 4.7% on 2002.

AMOUNTS BILLED

The amounts billed to users for flights performed in 2003 totalled €5.34 billion, marking an increase of 13.3% on 2002. This was mainly due to the increase in the unit rates applied by the participating States throughout the route charges system (see graph entitled "Average weighted national unit rate") as well as the increase in the number of service units.

RECOVERY RATE

The medium-term recovery rate for 2002, measured on 31 December 2003, was 99.30%, showing an increase over the previous year (98.64%). The recovery rate at due date increased from 86.62% to 87.56% in 2003.

AVERAGE WEIGHTED NATIONAL UNIT RATE

The average weighted national unit rate for the Member States, calculated by dividing the sum of the costs chargeable to users by the sum of chargeable service units, increased in 2003 to €63.68. The 2004 estimate is €62.28.

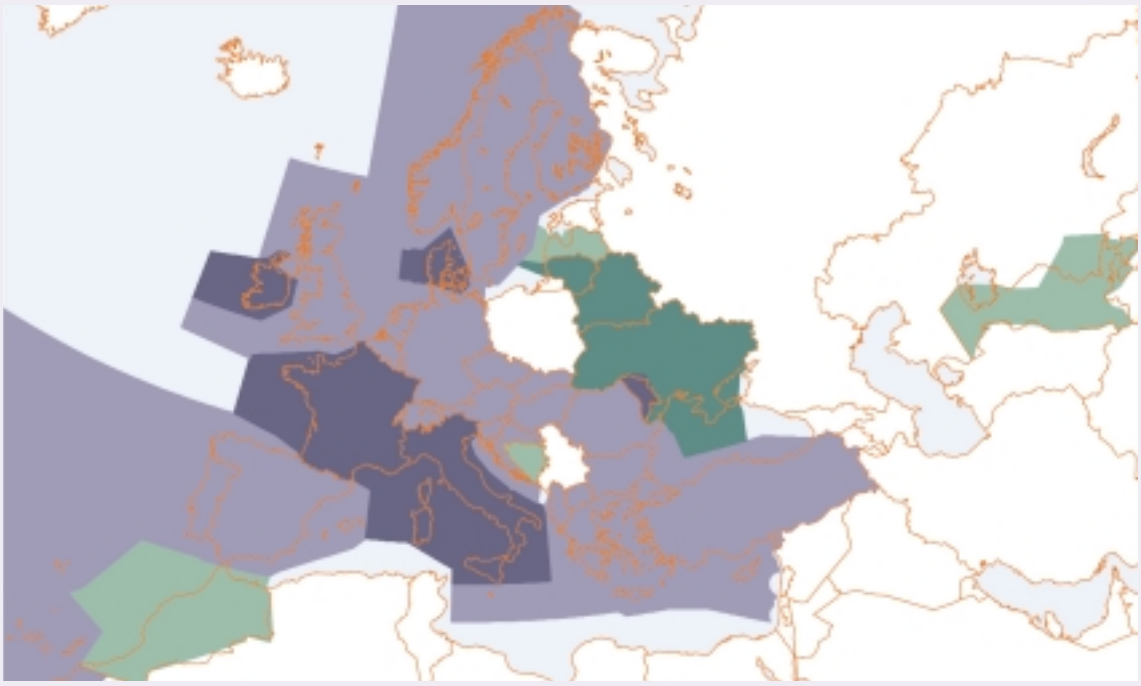
COST PER KILOMETRE (LONG-TERM SERIES – DEFLATED COST)

The graph opposite shows the trend in the unit cost per kilometre flown expressed in real terms (deflated costs) for 11 Member States (so-called "1982 States", i.e. Belgium, Luxembourg, Germany,

[1] became a Member of EUROCONTROL on 1 March 2004
[2] joined EUROCONTROL on 1 May 2004

France, United Kingdom, the Netherlands, Ireland, Switzerland, Portugal, Austria, Spain, representing 71% of EUROCONTROL Route Charges in 2003) and for 16 States ("1982 States" + Greece, Norway, Denmark, Sweden and Italy, representing 88% of the EUROCONTROL route charges in 2003) of the EUROCONTROL route charges system for each year between 1982 and 2004.

EUROCONTROL CHARGING AREAS 2003



"The boundaries depicted are only indicative and have no official political meaning."

- Participating States
- Participating States having a bilateral agreement for terminal charges
- Non-EUROCONTROL Member States having a bilateral agreement for route charges
- Non-EUROCONTROL Member States having a bilateral agreement for air navigation charges

mas uac

Cross-Border Air Traffic Control

Safety remained the number one priority of the Maastricht Upper Area Control Centre. During 2003, work continued to put in place a formally documented safety management system, using EUROCONTROL ESARRs as a reference.

The Centre handled 1,243,794 flights, an increase of 5.2% over 2002, while average delay per flight decreased by 9.6 % from 0.74 minutes in 2002 to 0.67 in 2003 – a testament to the achievements of the Centre in developing new capacity-enhancing programmes. In parallel, increasingly innovative and proactive safety initiatives were introduced.

MAASTRICHT UPPER AREA CONTROL CENTRE

EUROCONTROL's Maastricht Upper Area Control Centre (UAC) lies at the hub of Europe's busiest and most complex air traffic area. Since 1972 the Centre has provided non-stop air traffic control (ATC) services to civil aircraft in the upper airspace of Belgium, the Netherlands, Luxembourg and the North-West of Germany. This area is a crossroads for aircraft flying into and out of Europe's largest airports – London, Paris, Frankfurt, Amsterdam, Copenhagen and Brussels. Air traffic is not just busy, it is also extremely complex, with a large number of climbing and descending flights. To cope with these complex patterns of air traffic, demand and airspace architecture the Centre is organised on a European, rather than a national, basis. With the European Commission proposing to implement the Single European Sky initiative by the end of 2004, Maastricht UAC is a working example of how European cooperation, both at a civil and military level, can translate into capacity and safety benefits for all.

TAKING SAFETY TO NEW LEVELS

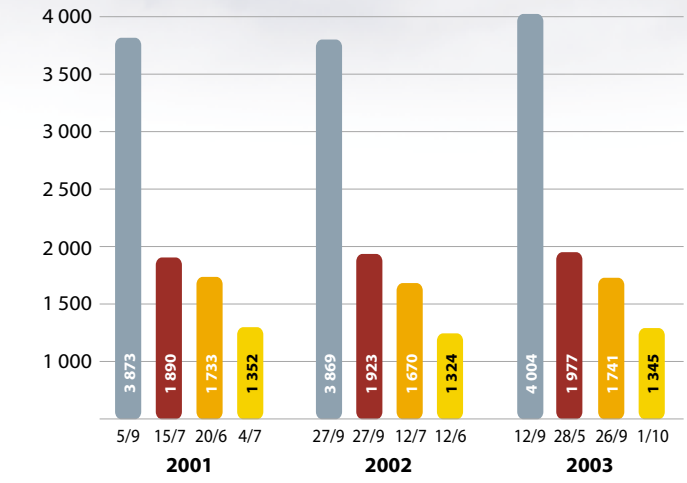
The EUROCONTROL Safety Policy aims to ensure that safety excellence is a core element of the Agency's mission and that the risk of an aircraft accident are minimised as far as possible.

During 2003, work continued to put in place a formally documented Safety Management System (SMS), using the EUROCONTROL Safety Regulatory Requirements (ESARRs) as a reference. Progress was made on updating internal safety structures, using innovative techniques. For example, an external audit was carried out on compliance by the Centre with ESARR3 ("Safety Management Systems in ATM") by national regulators attending the Agency's Safety Regulation Unit ESARR training course. Throughout the year, work continued to define and develop the requirements for compliance with all ESARR standards.

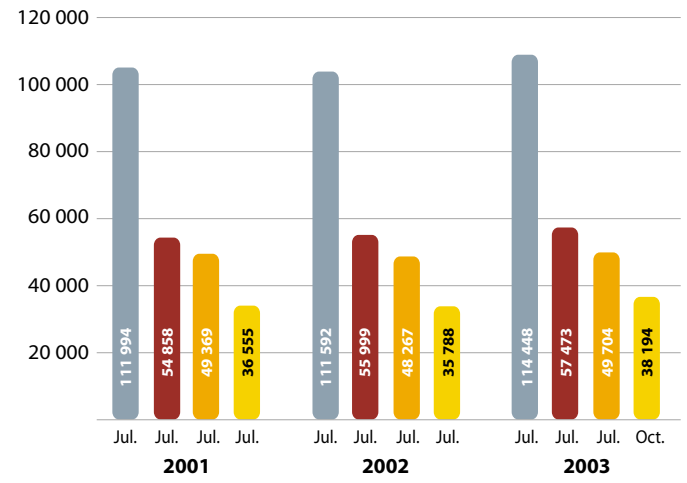
An internal study commissioned after the Überlingen mid-air collision reported in 2003 that the procedures in force at the Centre were appropriate. Meanwhile, the Centre is determined to strive to further improve its current practices, and is developing increasingly innovative proactive and reactive safety initiatives.

The RISC (Recommendations from Incidents and Safety Concerns) group has started work. This is a monthly meeting of representatives from operations, training and safety management areas, along with human factors experts from EATM, routinely meeting to re-examine reported incidents and propose recommendations. RISC is particularly focused on human factors, providing an almost "peer-review" process which helps increase its acceptance value by operations staff.

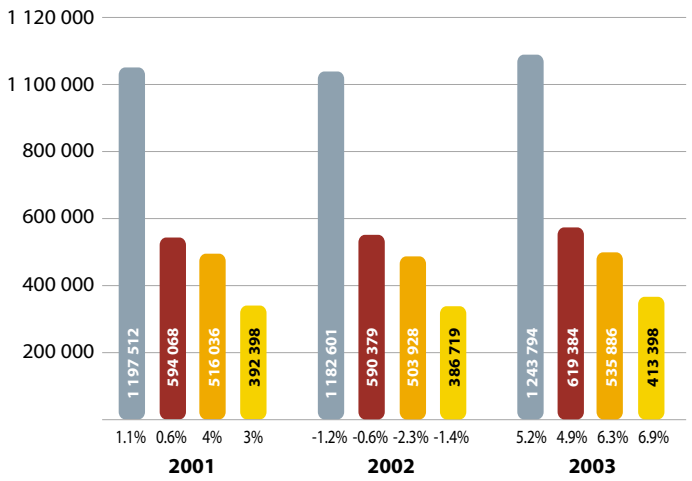
DAILY TRAFFIC PEAKS



MONTHLY TRAFFIC PEAKS



ANNUAL TRAFFIC



The Centre's ATM Safety Monitoring Tool (ASMT) also became operational during 2003. A result of collaboration between the EUROCONTROL Experimental Centre (EEC) and Maastricht UAC, the ASMT detects and records online occurrences within the framework of specified parameters, classifies them and stores the relevant data in a database. In December 2003, the ASMT software was reconfigured to refine RVSM operations – most notably to cut down the number of false alarms generated by a lowering of the separation distances between aircraft. Work was also underway during 2003 to prepare for the introduction of a new software version of the ASMT in the first half of 2004. This version has new capabilities, e.g. the potential to extend the scope of ASMT to the detection of ACAS-RA, STCA and airspace penetration safety occurrences. These improvements will provide the staff concerned with safety improvements through a better geographical or time-related picture of critical areas in the increasingly busy and complex air traffic environment above Maastricht.

Closer cooperation with the EUROCONTROL Experimental Centre Safety Learning Project was initiated through the analysis of related incidents and the identification of patterns. In theory, it should be possible to prevent incidents from occurring by proactively using experience gained in projects ranging from the design of HMI tools to airspace complexity.

- Total traffic
- Brussels sector group
- Hanover sector group
- Deco (Delta/Coastal) sector group

WORKING WITH NEIGHBOURS ON CONTINGENCY PLANNING

During 2003, the Four-States stakeholders and Maastricht UAC continued to develop their contingency strategies in conformity with ICAO regulations, so that neighbouring centres could be considered as support centres in case of a catastrophic failure of the Maastricht UAC.

In particular, operational and engineering staff at Maastricht and Karlsruhe Centres shared contingency requirements so that if Maastricht UAC could no longer function, its neighbour could in the future take over, with reduced capacity, the management of relevant sectors. Centre staff also started work on a study to consider converting part of the old operations room to a fallback operations room.

A crisis management exercise was commissioned in November 2003 to identify potential risks and solutions related to the legal and institutional arrangements governing the Centre.

TRAFFIC IS GROWING AGAIN

In 2003, the Maastricht Centre managed 1,243,794 flights, an increase of 5.2% over 2002. The peak day was 12 September, when 4,004 flights were processed through the Centre's airspace.

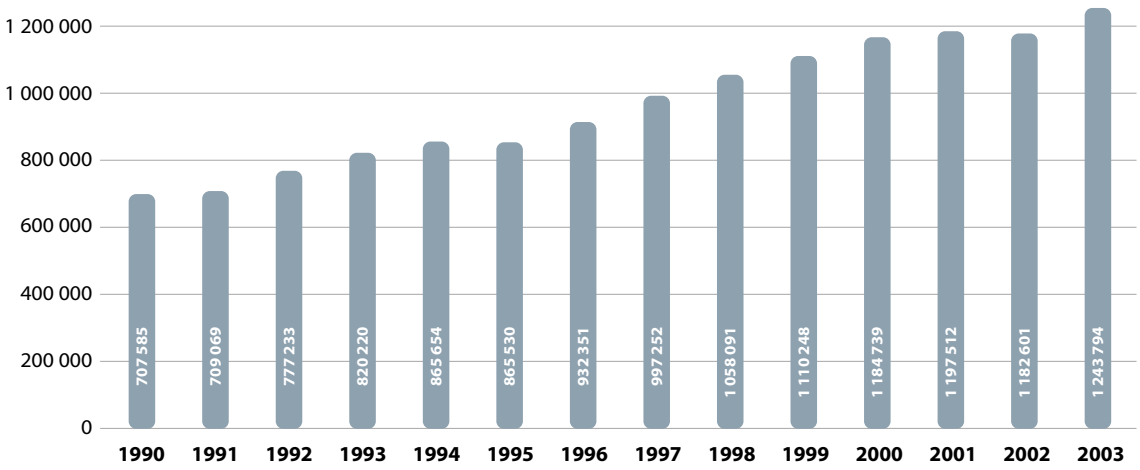
The number of delayed flights increased by 5.1% at the same rate as overall traffic – but the total duration of delays was further reduced in 2003, by 4.9%. This means the average delay per flight decreased from 0.74 minutes in 2002 to 0.67 in 2003 – or from 44 to 40 seconds. The average delay per delayed flight decreased from 14.0 minutes in 2002 to 12.7 minutes, while the percentage of delayed flights remained the same, at 5.29%.

The Brussels sector group handled 40% of the traffic load, the Hanover sector group 34% and the Deco (Delta/Coastal) group 26%. In terms of aircraft numbers, the Brussels sector group handled 619,384 aircraft (an increase of 4.9%), the Hanover sector group 535,886 (up 6.3% on 2002) and the Deco sector group 413,398 (an increase of 6.9%).

Traffic rises at the Centre were considerably higher than the European average. During 2003, traffic in 41 of Europe's largest States rose by 2.8% over 2002, to 8,466,966 flights.

The Centre's average delay per flight – 0.67 minutes – was also considerably lower than the European average (1.7 minutes).

1990 - 2003 TRAFFIC TRENDS



CAPACITY MOVING AHEAD OF TRAFFIC GROWTH

Overall, the Centre recorded a capacity increase of over 5% for the year and a crucial 4.4% for the busy summer period (May to October).

A number of important internal capacity-enhancing programmes helped boost the capacity total. A new, improved link to the CFMU, combined with better communications between flow and supervising staff and more flexible working conditions for operational staff allowed capacity planners to better balance resources, and traffic loads.

The new operations room delivered a capacity increase of 3% during 2003. The new ODS system allows for capacity management tools to be more easily applied to flight plan management techniques and for a more flexible approach to sectorisation.

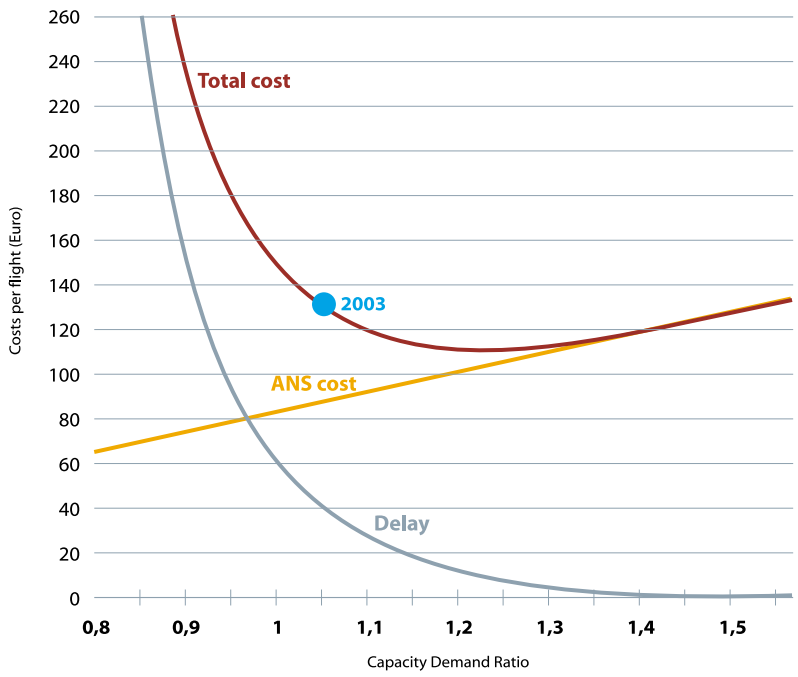
Other capacity gains made in 2003 included the final "fine-tuning" of operational improvements following the introduction of RVSM in November 2002.

RE-DESIGN OF NEIGHBOURING AIRSPACE IMPACTS THE CENTRE'S CAPACITY PLANS

These improvements were to some extent adversely affected by the New Organisation Nattenheim (NEON) programme, which on 27 November 2003 led to a major consolidation of military airspace above Germany and called for an ATM reorganisation. This area directly abuts the Centre's airspace and the changes were felt particularly keenly in the Brussels Olno and Luxembourg sectors, where working procedures and routes had to be adapted.

Planning for this change meant that temporary capacity reductions were implemented in the Brussels sector group to maintain controller workload below the critical load threshold. To mitigate this effect on users, rosters were adapted and teleconference meetings with neighbouring units intensified. Before the NEON reorganisation took place, a series of fast-time and real-time simulations were organised with the support of controllers from the centres concerned and these helped determine the best possible way to implement the new airspace structure.

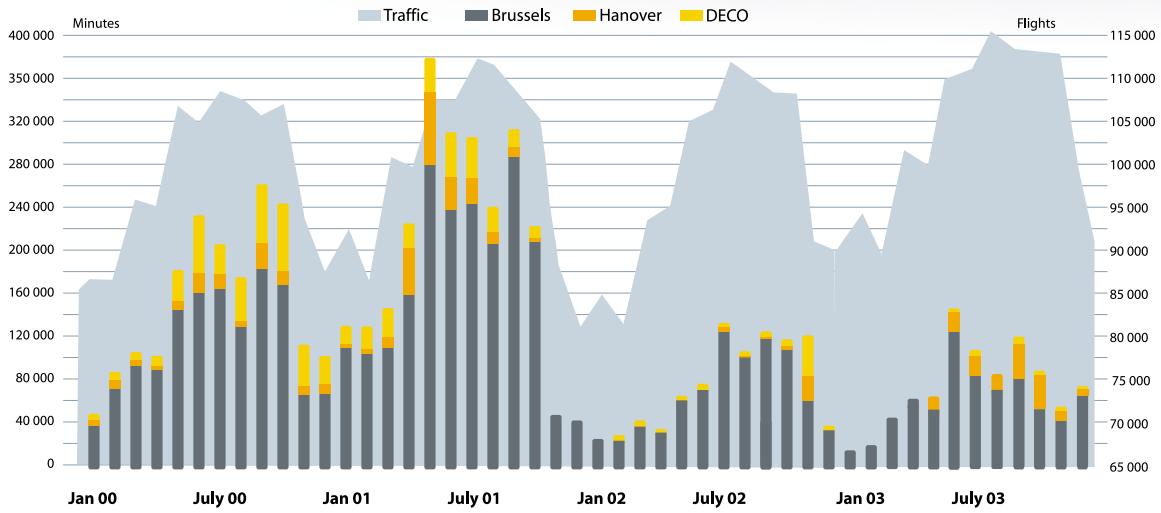
OPERATING POINT IN 2003



The total Air Navigation Service (ANS) cost is obtained by adding delay costs to direct ANS costs. It is based on a standard methodology developed by the Performance Review Commission.

The total ANS cost per flight passing Maastricht UAC in 2003 is in the order of € 131. Research into prepara-tory work for the 2004-2008 Capacity Enhancement Plan shows the Centre operates close to the optimum operating point at the borderline between cost efficiency and delays.

DELAY TREND OVER THE PAST FOUR YEARS



There were other airspace re-designs in neighbouring areas. At the end of March 2003, the North Sea Redesign project was implemented, altering almost all routes over the North Sea and introducing a new partner, the Scottish ACC. This three-year-long project is an excellent example of a successful collaborative exercise involving a large number of partners – including the Agency's CFMU unit, ATM service providers in Norway, Denmark, the Netherlands and UK, plus military partners. The new redesign should lead to more capacity and flexibility to cope with traffic increase.

CONSULTING PARTNERS

Air navigation service providers do not work in splendid isolation. From day-to-day operations to strategic planning, their work now increasingly involves a web of partnership programmes with airline customers, airports, industry and other major stakeholders in the ATM industry. For the Centre, 2003 was a particularly important year for collaboration. The introduction of the NEON programme and the impact of transferring to the ODS system in 2002 were key elements in forging new relations with partners and customers.

The regular Northern Axis Teleconference meetings were intensified in the run-up to the launch of the NEON programme. These developed into important contact points with neighbouring units, stakeholders and customers, allowing all sides to flexibly manage flight schedules around areas of disruption and then generating feedback from previous operations. Other groups within the EUROCONTROL Organisation (e.g. the Directors of Operations Meetings) provided an excellent regular forum for discussions between partners.

PLANNING FOR THE FUTURE

During 2003, the Centre produced its 2004-2008 Business Plan, which lays the foundations for the Centre's financial and operational future.

Given that a return to stronger air traffic growth is predicted from 2004 onwards, the Centre plans to deliver significant capacity increases for the years ahead. The capacity growth of the entire Maastricht UAC is expected to be 40% in summer 2008 compared to summer 2002 figures. The 2004-2008 Business Plan identifies a series of measures to meet precise performance enhancement targets.

The overall average annual increase of cost requirements in the period 2003-2008 is 3.9%, resulting in a downwards unit cost trend for the airspace user. For 2004, the Centre reduced its internal and external staff budgetary requirements by 5%.

The Business Planning process is supported by well-defined operational and financial metrics: Key Performance Indicators (KPIs) are used for internal and external benchmarking purposes. In addition to these global indicators, the various departments have defined Divisional Performance Indicators. Some 60 KPIs are regularly monitored to map changes in key aspects of Maastricht UAC's service provision and delivery. Centre and divisional indicators cover the main areas of safety, capacity, efficiency, and customer satisfaction. KPIs are produced monthly to monitor past performance against targets and to forecast anticipated changes.

SETTING NEW STANDARDS OF QUALITY MANAGEMENT

In 2003, a Quality Manager was appointed to oversee the establishment of quality management at the Centre. Demonstrating technical and operational competence and the suitability of service providers through a quality management system will be a pre-requisite to comply with the Single European Sky (SES) requirements.

Maastricht UAC plans to achieve the ISO 9001 Certification by the end of 2005. Introducing a formal quality management system will bring increased efficiency and transparency to relations between divisions at the Centre and contribute to improved services. The Centre is also committed to continuous improvement through regular performance reviews and external audits.

In 2003, parallel activities (e.g. staff satisfaction survey) continued to support Agency's objectives relating to the achievement of EFQM (European Foundation for Quality Management) business excellence.

UPDATING THE CENTRE'S CNS/ATM TECHNOLOGY AND INFRASTRUCTURE

Data-link services back on track

The Maastricht Centre has had a key role in developing within Europe one of the potentially most important new technologies aimed at dramatically cutting pilot and controller workload while improving safety. Air/Ground Datalink (AGDL) – also known as controller/pilot data-link (CPDLC) communications – were re-introduced in June 2003, following the development of a new Human-Machine Interface in the new operations room. The technology is based on both ATN and FANS protocols. The first FANS CPDLC exchange with a Lufthansa aircraft took place from the new operations room on 18 June 2003. The first ATN-certified aircraft, a Boeing 737 flown by SAS, began operational CPDLC communications trials with the Centre in December 2003. The new system will extend the functionality of the data link service and increase the number and type of messages which can be transmitted automatically. The number of airlines signing up to the project is expected to grow in 2004.

Enhancing and supporting the performance of the Operator Input and Display System

During 2003 a number of important changes were made to the way the ODS suite was supported and enhanced. The Centre's own support staff took over responsibility from the suppliers for maintenance of the equipment, setting up in the process a series of internal support procedures based on new quality management processes. Eight new software enhancements were developed and delivered.

ATM Surveillance Tracker and Server moves to a second phase

ARTAS became fully operational in May 2001 while the important second phase became operational on 11 February 2003. This has provided a higher level of accuracy and integrity, as well as paving the way for integrating data from the next generation of surveillance systems such as Mode-S and Automatic Dependent Surveillance. Work also began on developing a set of new gateway functions, collectively called

the ART DACO programme, to allow ARTAS to interface via a data-flow controller with other systems. Technical specifications were drawn up with the aim of signing a contract in early 2004.

New Flight Data Processing System

The new Flight Data Processing System (N-FDPS) is the most fundamental technical enhancement to the Centre's safety, capacity and efficiency-enhancing capabilities since the ODS Programme. On 29 April 2003, the Centre signed a €39 million agreement with Spanish systems provider Indra ATM to provide a new FDPS to start operation in November 2007. The contract foresees a major option for another €9.5 million for the development of an eFDPS-compliant version to be completed by mid-2009. This is the largest contract the Centre has placed in 30 years.

The new FDPS will include at least all the functionalities available from the current FDPS by 2007, aim at additional functionalities to cope with 2007 traffic levels and be capable of evolving towards eFDPS-compliance, including interoperability.

During 2003, Centre staff successfully demonstrated that the new system will be able to integrate fully with the ODS architecture. Work also concentrated on the development of a controller working position Human-Machine Interface to ensure that controllers will be able to benefit from the functionalities offered by the new system.

Automatic processing of flight plan messages

The Centre continued to develop its system for automatically processing flight plan messages – a system which substantially reduces the workload in the operations room. In August 2003, 78 % of all flight plan messages were automated.

Another major development in this area was the introduction of a system to process safety-critical messages up to ten minutes earlier, reducing the number of messages which need urgent attention by up to 60%, leading to important improvements in controller workload.

Mode-S: a new type of radar

During 2003 a feasibility study was carried out to examine some of the technical challenges in meeting the implementation date for elementary Mode-S (31 March 2005), so when the first Mode-S radar signals are received they can be processed by the new ARTAS version and displayed seamlessly on the new ODS workstations. The Centre has been working as part of the European Mode-S steering group with ATC service providers from Germany, the Netherlands and Switzerland to examine the benefits and challenges of the programme.

A new future for the old operations room

To keep pace with traffic and systems development, Maastricht UAC is growing. Increasing numbers of controllers, trainees and support staff need to be accommodated. At the same time, the increased focus on safety has called for additional requirements in terms of training and certification of operational and technical staff. With the new ODS operations room now firmly established, the Centre has put in place plans to optimise the space which has become available in the former operations room. During 2003, Centre staff completed the technical specification and pre-engineering phase of the programme to refurbish the former operations room to accommodate new training systems, test/development equipment and incident investigation workstations. This involved planning for the complete renewal of the technical infrastructure, including air conditioning and ventilation systems, with a view to having the refurbished room gradually repopulated with improved test and training

facilities, part of which will become operational by the end of 2004. At a later stage, this room will host in-house contingency sectors.

Green light for the building extension project
For the past few years, a temporary structure has been used to house many staff, the life of which was extended following the crisis which hit the air transport industry after the events of 11 September 2001. In 2003, practical work began on planning a new, permanent extension. The pre-design phase of the building was completed and various permission requests submitted to local authorities. The new extension will add 2,500m^2 of additional working space over four floors and should be ready by September 2005.

INNOVATION: TAKING ATM INTO THE FUTURE

The Maastricht Centre has for many years played a key role in validating and prototyping new technologies, which have already improved safety, capacity and airspace efficiency.

Validation work on a Medium-Term Conflict Detection (MTCD) tool was started towards the end of 2003 – in both active and passive modes – with very positive feedback from controllers and training staff. MTDC is part of the European-wide EATM initiative, with initial units installed in Malmö and Rome. With its highly complex traffic patterns, Maastricht UAC offers perhaps the greatest operational challenge to the MTDC project managers. The Centre's engineers are working on improving the ODS Human-Machine Interface to integrate MTDC and to ensure it will be an integral element within the new FDPS.

What will twenty-first century ATM technology really be able to achieve? The Centre is attempting to answer this complex question through the Maastricht ATC New Tools and Systems (MANTAS) project, a radical new approach to designing a set of concepts for the Centre's next generation of ATM equipment and operational concepts. The core of the programme, developed during 2003, has been to take the controllers' perspective on future technological and operational developments as a guideline for user requirements while providing a framework against which new programmes can be measured and applied. This approach has been applied to a wide number of programmes under way, or planned, including the new FDPS project. The MANTAS project will be subject to a feasibility study based on simulations during 2004.

PREPARING FOR THE SINGLE EUROPEAN SKY

Preparations for the implementation of the Single European Sky legislative package included work on future common requirements, e.g. regulatory arrangements, safety and quality requirements, certification, cost efficiency, reporting systems, technical and operational competence etc. The key requirement to playing a major role in the future Single European Sky environment will be the ability to show the Centre can perform to some the highest levels of business efficiency.

During 2003, the Centre also examined the impact of new Single European Sky Regulations on operations, in particular compliance issues. A Single European Sky Steering Committee was set up to closely monitor developments, the implementation of action plans and to proactively develop a position on problems and opportunities emerging from the Single European Sky package.

A PRODUCTIVE AND COST-EFFICIENT CENTRE

During 2003, the results of several benchmarking studies became available, inter alia the ATM Cost-Effectiveness (ACE) Benchmarking Report. The Centre's productivity was confirmed to be above average in Europe and its overall operations were deemed cost-efficient. Work to improve further productivity and cost efficiency, to contain further support costs and optimise roster flexibility will continue in the future.

The year 2003 was marked by an important programme of cost-cutting measures which led to an overall reduction of 5% in expenditure on internal staff and external support. Total budget expenses were kept at the level of 2002.

In 2003, Maastricht UAC produced a total of 4.6 million service units (+7.2%) and 1,243,794 flights (+5.2%). The cost per flight in 2003 amounted to €89.4 (+3.2%) and the Maastricht UAC equivalent unit rate to € 24.2 (+1.2%). The total cost for ANS provision (including delay cost) was €131 per flight (-1.3%).

ceats

Regional Air Traffic Control

A new air traffic control centre is being developed to cover the upper airspace of eight States in Central Europe – Austria, Croatia, Bosnia and Herzegovina, the Czech Republic, Hungary, the northern part of Italy, Slovakia and Slovenia.

Known as CEATS (Central European Air Traffic Services), the project will bring a streamlining of air traffic control service provision and a pooling of expertise. Airspace design in this area will not be constrained by national boundaries. This will guarantee all users maximum efficiency at minimum cost, while at the same time safeguarding the required level of safety.

CENTRAL EUROPEAN AIR TRAFFIC SERVICES

Launched in June 1997 by the Transport Ministers of the then 28 EUROCONTROL Member States, CEATS (the Central European Air Traffic Services) anticipates the development of a joint regional control centre for the upper airspace of eight countries – Austria, Bosnia and Herzegovina, the Czech Republic, Croatia, Hungary, the northern part of Italy, Slovenia and Slovakia.

Thereafter, it was agreed that the services and facilities at the Centre would be provided and operated in accordance with an Agreement to be concluded between EUROCONTROL and the eight national Contracting Parties concerned.

The CEATS Agreement acknowledges the need for cooperation in the provision of air traffic services within the airspace of the national contracting parties in order to guarantee all airspace users maximum efficiency at minimum cost, while at the same time safeguarding the required level of safety and contributing to the creation of a uniform European ATM system.

Additional facilities already exist, or are being set up, to support the development and future operation of the CEATS Upper Area Control Centre:

- the CEATS Strategy Planning and Development Unit (CSPDU), located in Prague, Czech Republic (operational since 1 November 1999);
- the CEATS Research, Development and Simulation Centre (CRDS), located in Budapest, Hungary (operational since 1 July 2001);
- the CEATS Management Office, located in Brussels, Belgium (operational since 1 September 2002);
- the CEATS Training Centre, which will be located in Forli, Italy;
- the CEATS Upper Area Control Centre (CEATS UAC), in Vienna, Austria.

The Upper Area Control Centre in Vienna will provide air traffic services in the upper airspace of the national contracting parties. Furthermore, eight States will make available, for joint use, their national installations, air-ground equipment and ground-ground communications facilities.

2003 highlights:

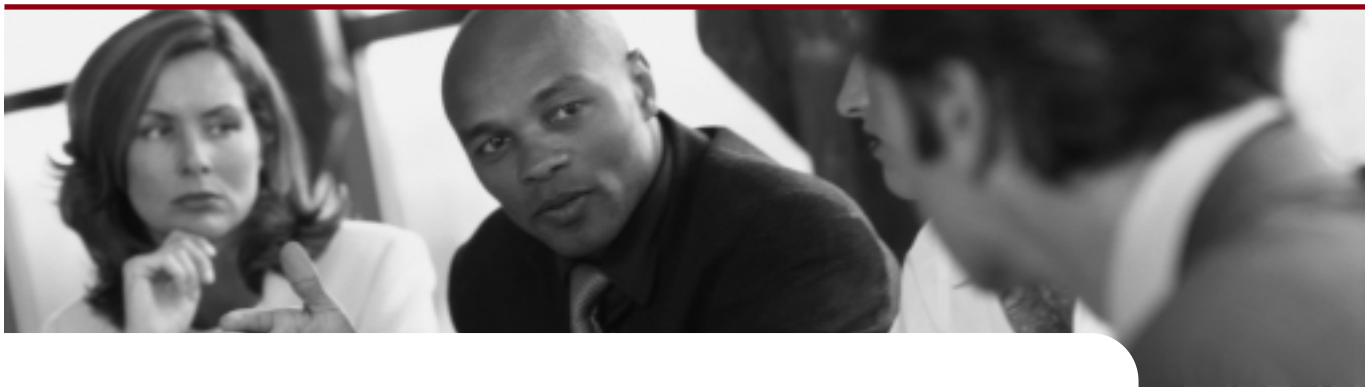
- Progress was made on the ratification of the CEATS Agreement, with Austria being the fourth country to complete the ratification process, following the Czech Republic, Hungary and Slovakia. A considerable effort was made to prepare the pending ratifications. It is expected that this will bear fruit during 2004. Achieving this target will enable the

Agency to proceed with the acquisition activities relating to the building and the systems which will support the Centre's operations.

- Bosnia and Herzegovina actively participated in various CEATS fora, following the successful restructuring of its CAA. The country is now working on a strategic plan in order to fully integrate the CEATS activities.
- The staff of the CEATS Programme Directorate has progressively been recruited, reaching its full complement at the office in Prague (CSPDU), the simulation centre in Budapest (CRDS) and the CEATS Management Office (CMO) in Brussels.
- Many of the deliverables of the Programme Definition Phase were produced and are undergoing review; some of the important ones, e.g. the Operational Concepts and Operational Requirements Documents, were validated. The Programme Definition Phase is expected to be completed by mid-2004.
- Communications regarding the CEATS Programme were significantly intensified among the main stakeholders: the CEATS States, service providers and international organisations representing the future staff of the Centre. The CEATS Chief Executives' Standing Conference (CCESC) was set up to involve the decision-makers of all air navigation service providers in the development and implementation of CEATS. The CEATS Programme Directorate also improved communication with international associations, unions such as IFATCA, ETF and ATCEUC and with the European Commission.
- The initial version of the CEATS Business Plan, providing the Programme costs and projections for the initial years of operation of CEATS UAC, was produced by the Business Plan Task Force. The process of collecting data from all CEATS air navigation service providers to allow a Global Cost Reassessment, a task entrusted to the Agency by the ad hoc ministerial resolution of June 2001, will be completed in early 2004.

dhr

A Highly-Skilled Multicultural Force



The EUROCONTROL Agency recognises the importance of maintaining and developing the unique skills and expertise of the Organisation's 2,000 staff members. Great efforts are therefore being made to attract and retain high-qualified staff who are able to respond flexibly to the changing requirements of the air transport industry.

This challenge was successfully met in 2003, with a more flexible employment policy in place, a well-balanced manpower management policy being implemented and a reliable job management mechanism nearing completion.

In 2003 the Agency welcomed 97 new staff, while 41 officials retired.

HUMAN RESOURCES

2003 HIGHLIGHTS

2003 was an important milestone on the way to modernise and update the Agency's Human Resources System.

After almost 40 years the salary system's adjustment mechanism expired on 30 June 2003. As in the European Union, this method links salary adjustments to the development of cost-of-living in the countries of the Agency's duty stations and to the development of salaries in the public services in the EU Member States. In parallel to a comprehensive reform of human resources management in the European Union, EUROCONTROL undertook in 2003 a thorough analysis of the potential impact of the EU reform on EUROCONTROL.

This was supposed to serve as a basis and as an input to a Task Force composed of Member States, the Agency and social partners to be convened for 2004. Initial discussions on the future salary adjustment method were driven by legal requirements for such a method, the wish for a cost-efficient mechanism, continuous stability of the system and, furthermore, to recruit and retain excellent staff on a broad geographical basis.

A second highlight was the effort for preparing a pension reform. A Pension Scheme Task Force worked throughout 2003 in order to finalise the details for a comprehensive reform to avoid a collapse of the existing system which would have endangered, not only the human resources system but the Agency's system as a whole. Towards the end of 2003, the Task Force was completing its work of proposing the setting up of a pension fund, adjustments to the pension benefits, the system of reimbursement of taxation and actuarially balanced contribution by staff and the Agency.

A third highlight was the establishment of the first HR Business Plan with a scope of five years (2003-2007). It defined vision, mission, values, business environment, strategy objectives, action programmes and key performance indicators of Human Resources Management in EUROCONTROL.

The main objectives for the five year period are to complete institutional adjustments (employment conditions, staff regulations) for a modern, effective, cost-efficient and stable framework for attracting and retaining competent staff. Furthermore, as everywhere, processes need to be revised and the "service culture" to be strengthened.

WORKFORCE

In 2003 EUROCONTROL, had a highly skilled and multicultural workforce of 2137 staff from 35 nationalities, complemented by 680 persons providing external support. They were

distributed over seven duty stations: Brussels (Headquarters), Brétigny, Budapest, Luxembourg, Karlsruhe, Maastricht and Prague.

Despite increasing tasks and responsibilities the workforce remained stable even though, due to continued cost and budgetary pressure, a number of restrictions concerning the filling of existing posts had to be implemented throughout the Agency.

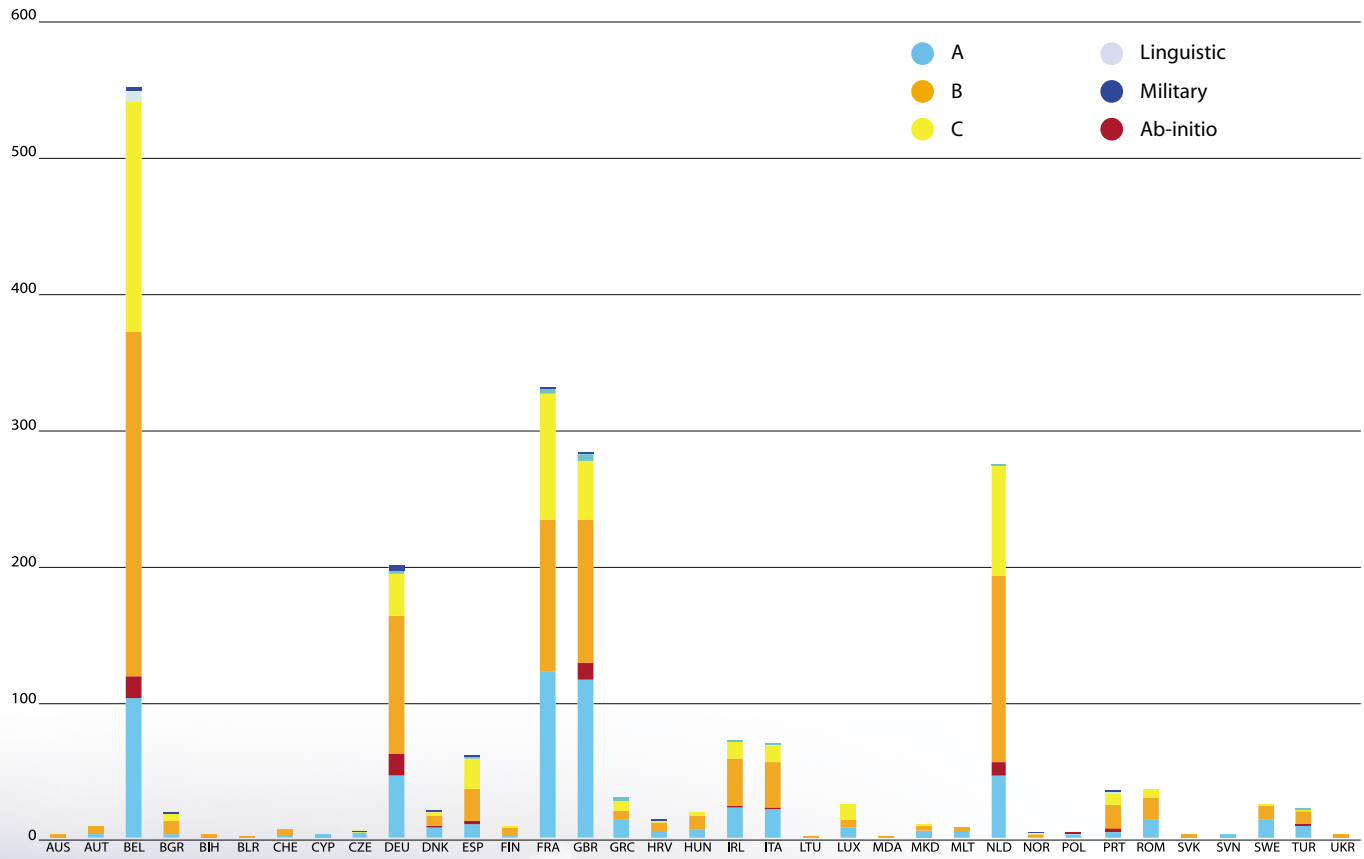
In 2003, this has also been a year of increased effort for more efficiency and cost-effectiveness. General reorganisations paved the way for more focus on core tasks and efficiencies. A lot of effort was spent in the support of Member States and social partners to adjust the staff complement by an ad-hoc measure for the early departure of a certain number of staff. This would have lead to increased cost-efficiency and an adjustment of the age profile which would have been useful for certain business areas. As one State was opposed and unanimity is required, the proposal was not accepted.

OTHER HUMAN RESOURCES INITIATIVES

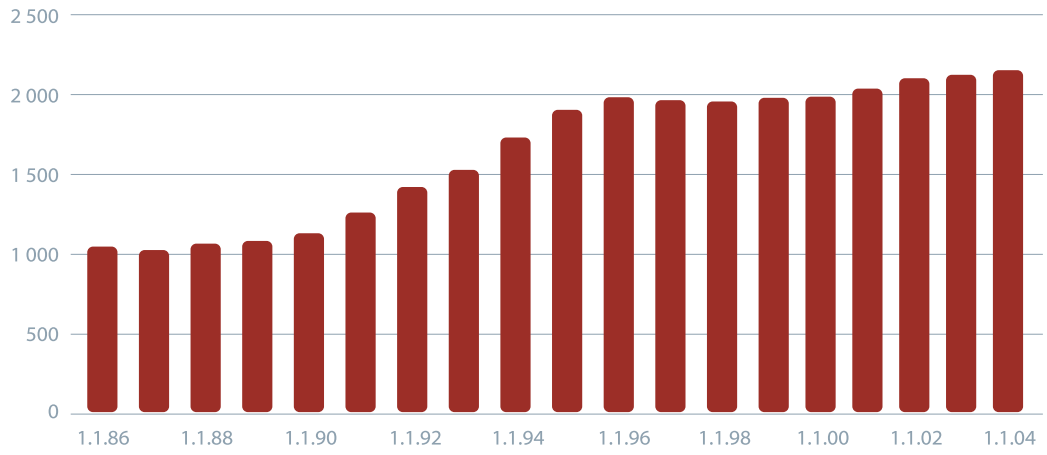
A number of other important proposals were agreed and implemented in accordance with the Business Plan:

- A major initiative was taken for investments in staff and staff training. A new corporate management training programme was agreed for roll-out in 2004. This programme would establish a common understanding of management and the Agency's business objectives; it would improve the competencies and skills in the areas of people and project related management; it would also consolidate the use of resources in this area and further improve career management at EUROCONTROL.
- A transition plan 2003-2005 and detailed guidelines to the Manpower Management Policy were enabled and implemented. This will provide the right balance between staff and contractor effort and help to concentrate staff resources on core activities of the Agency.

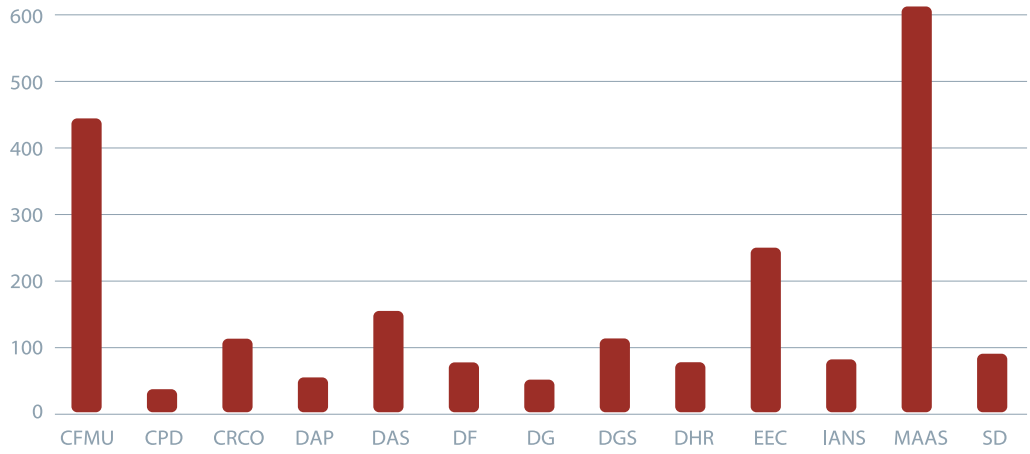
BREAKDOWN OF SERVING STAFF BY NATIONALITY AND GRADE



TREND OF SERVING STAFF COMPLEMENT



BREAKDOWN OF SERVING OFFICIALS BY DIRECTORATE



- The concept of internal mobility was strengthened so as to enhance experience, knowledge and expertise within the workforce. The interest in increased possibilities for internal mobility has been substantial.
- Administrative barriers discriminating against internal candidates for recruitment were removed allowing staff to apply for all positions without restrictions.
- The in-house social security system was substantially improved through a dedicated improvement programme, reviewing all processes, costs and resources. The implementation of this improvement programme leads to significant increase of efficiency in this area.
- The automisation of HR processes has progressed substantially. A system based on Peoplesoft software and adjusted to the EUROCONTROL needs provided an excellent framework for an Agency-wide decentralised homogeneous way of managing human resources. New tools for training and payroll were under development.
- A number of administrative processes (flexitime, monitoring of absenteeism, safety and prevention at work) were reviewed and improved.
- A staff satisfaction survey showed the satisfaction of staff above average, especially in relation to working conditions. It also showed (as in other organisations) the need to review communication, leadership and career management.

Ext Rel

A Culture of Cooperation

More than ever, EUROCONTROL's experience and expertise in finding common solutions to Europe's aviation problems has become a very valuable asset. Evidence of this is the fact that new States apply every year to become members of the Organisation.

States recognise the benefits to be derived from being part of EUROCONTROL and participating and contributing to the development of the future Europe-wide air traffic management system.

In 2003 EUROCONTROL continued to forge close links with various aviation organisations and States by concluding a number of international agreements. Most importantly, EUROCONTROL signed a Cooperation Agreement with the Arab Civil Aviation Commission (ACAC) and two Memoranda of Cooperation with NATO and the European Commission respectively.

EUROCONTROL believes that cooperation between States and among all aviation organisations remains the best way to meet the needs of all parties involved, beginning with those of the travelling public.

EXTERNAL RELATIONS

2003 saw many advances in EUROCONTROL's external relations. This can be ascribed to far-reaching developments in Europe's strategic ATM environment and to the increasing magnitude and complexity of the tasks undertaken by the Agency over the years.

A large number of agreements were signed between EUROCONTROL, Member States and international organisations. This is proof positive of the Organisation's developing maturity and competence; it is also an encouraging sign for EUROCONTROL's future growth.

During the year, Memoranda of Cooperation were signed with both the European Commission and NATO.

Through the Memorandum of Cooperation signed with the European Commission, EUROCONTROL will contribute to the Single European Sky regulations, on which agreement was reached at the beginning of 2004. The Memorandum will ensure that the two organisations can make best use of their experience, expertise, and competences, while avoiding any duplication or overlap. The Memorandum constitutes the basis for closer future cooperation between these two organisations. It is an opportunity for them to rationalise their activities and pool the necessary resources. In so doing, they will develop new technologies and enhance the existing resources – political, operational, technical and financial – which are necessary to ensure that the increase in traffic in the medium and long term will be safe, orderly and cost-efficient.

The conclusion of a Memorandum of Cooperation with NATO highlights the ever-increasing importance of civil and military cooperation in ATM. The Agreement provides a framework for further developing the existing cooperation between the two organisations. It reinforces EUROCONTROL's unique position as a civil and military forum for European air traffic management matters.

In the course of 2003, the Agency continued to initiate contacts with potential Member States in order to encourage them to apply for accession. This is part of a key external relations policy objective of the Agency – to mirror ECAC membership. Advice on all stages of the application and ratification procedures was given to a number of States. Effort was also devoted to the preparation of the accessions of those States who would be joining EUROCONTROL soon after: Bosnia and Herzegovina, Ukraine, Poland and Serbia and Montenegro.

In 2003 the Agency also continued its activities in connection with the ratification of the revised

Convention. Member States which have not yet ratified are provided with advice and assistance with a view to harmonising and coordinating the national and international aspect of the ratification procedures. By May 2004, 19 States had ratified the revised Convention.

Furthermore, the Agency assists Member States in developing their ATC systems and provides them with any assistance they may require. In this connection, special agreements for the provision of support by EUROCONTROL were signed in 2003 with Albania, Belgium, Croatia, France, Slovakia, Spain and Sweden.

In view of the fact that air traffic management is a cross-border activity, and taking into account the rapid changes in the European and global ATM environment, the Agency cannot ignore developments in countries or regions beyond the ECAC area. In this respect, the Cooperation Agreement concluded in 2003 with the Arab Civil Aviation Commission (ACAC) was of particular importance. The purpose of this Agreement is to establish a framework for mutual cooperation in civil aviation with a view to establishing effective and structured regional developments.

In 2003, EUROCONTROL and the European Community also concluded a Grant Agreement for a project geared to strengthening the institutional and operational structure of the aviation sector in south-eastern Europe. Funded by the European Community's Assistance for

Reconstruction, Development and Stabilisation (CARDS) Programme in the Balkans, the project represents a great opportunity to enhance the ATM system in this crucial area of Europe, to the benefit of the entire continent.

EUROCONTROL's core activities involve seeking solutions to European air traffic management problems. This is a task that goes beyond national and indeed continental borders. It requires close coordination and cooperation, together with the highest possible degree of alignment between a range of systems and procedures. 2003 was most gratifying in this respect. Nevertheless, the Agency's need to intensify its efforts in the field of external relations will become even greater in the years ahead.

CORPORATE GOVERNANCE

EUROCONTROL is committed to base its decision-making and monitoring processes on the principles of good corporate governance.

Transparency is of prime importance to the Organisation. This is recognised in the Agency's Mission Statement, Contract Regulations, Financial Regulations, and in its financial reporting to, and working arrangements with EUROCONTROL's Member States, its stakeholders and the Audit Board.

LEGAL BASIS

The EUROCONTROL Organisation was established by the EUROCONTROL International Convention relating to Cooperation for the Safety of Air Navigation of 13 December 1960, subsequently amended on 12 February 1981.

In 1997 the amended Convention was revised to take into account changes in the political and operational environment of air traffic management. The revised Convention will enter into force after ratification by all the Member States. As of 31 May 2004, 19 States have ratified the revised Convention.

GOVERNANCE STRUCTURE

The Organisation is organised into in three bodies, including two governing bodies, the Commission and the Provisional Council, and one executive body, the Agency. The governance structure also comprises specialist bodies reporting to or advising these three bodies (see structure on page 13).

The Organisation comprises three main bodies:

- the EUROCONTROL Commission, in which the Member States are represented at ministerial level;
- the Provisional Council, in which the Member States are represented at the level of Director General of Civil Aviation. (The European Community is in the process of joining EUROCONTROL and is also represented in the Provisional Council).
- the Agency.

The Commission, as part of its main functions, formulates the Organisation's general policy and is its decision-making body. The latter includes the regulatory function, i.e. taking decisions that bind Contracting Parties. Furthermore, it approves the Annual Budget of the Agency, the Five-Year Programme, the Contract Regulations, Financial Regulations and Staff Regulations, the appointment of the Director General and Directors and it gives a final ruling on the Agency's Annual Accounts.

The **Provisional Council** is responsible for the implementation of the Organisation's general policy, as established by the Commission. It also supervises the Agency's work. It acts in an advisory capacity to the Commission and prepares all measures to be taken by the Commission for the accomplishment of its tasks. It meets regularly, at least three times a year. It makes recommendations to the Commission on the approval of the yearly Budget, on the maximum amount of debt that the Agency can take in the year and on the appointment of the Director General and Directors. It approves contracts exceeding €1 million. Representatives of organisations which can contribute to the work are invited to attend Provisional Council sessions with observer status.

The Director General and the Directors attend the meetings of the Provisional Council and of the Commission, but with no voting rights. Therefore, the governing bodies of the Organisation do not include any executive director.

The institutional structure of the Organisation also includes a number of bodies reporting to the Provisional Council or to the Commission, via the Provisional Council, that monitor transparency in the Organisation's work, supervise operations in specific areas of the Agency, facilitate dialogue and coordinate the work programmes in certain domains. These are the enlarged Committee for Route Charges, the Maastricht Coordination Group, the Central European Air Traffic Services Coordination Group, the Performance Review Commission, the Safety Regulation Commission, the Audit Board, the Civil/Military Interface Standing Committee, the Regulatory Committee and the Standing Committee on Finance.

The Standing Committee on Finance was set up in November 2003 to replace the Advisory Financial Group. It is an expert Committee of the Provisional Council, to which it provides advice and submits recommendations on all budgetary and financial issues affecting the Organisation.

The **Agency** is responsible for the performance of the tasks prescribed by the Convention or entrusted to it by the Commission or the Provisional Council. Under the revised Convention, the Director General is exclusively responsible for the executive management of the EUROCONTROL Agency. The Agency Directors meet once a month in the General Meeting of Directors. There is a Management Board for each Business Unit, composed of the Director General and several Directors, meeting twice a year. The Management Boards are in charge inter alia of reviewing Business Plans and the performance of units against their Business Plans. Business Plans are approved by the Director General.

In addition, a number of advisory bodies[1] made up of qualified experts from the Member States have been created to assist the Director General in his management of the Agency.

INTERNAL CONTROL

Executive responsibility for an effective system of internal control is vested in the Director General. The purpose of the system is to ensure that the Agency objectives will be achieved in an efficient and economical way, and in compliance with EUROCONTROL's regulations. However, such a system is designed to manage rather than eliminate the risk of failure to achieve business objectives.

The Agency's internal control system comprises, inter alia, the following elements:

- Financial, Contract and Staff Regulations;
- Annual Budget and Five-Year Programme;

[1] **Advisory bodies**

ARTF	Administrative Reform Task Force
PSTF	Agency Pension Task Force
DSC	Dynamic Management of the European Airspace Network Stakeholders Steering Committee
EAG	European ATFM Group
TCG	Training Consultation Group
ECCG	Experimental Centre Consultation Group
ACG	ATM/CNS Consultancy Group

- Business Plan for each Directorate;
- Decisions of the Director General or Directors, organising the Agency, allocating specific responsibilities and delegating powers;
- An accounting system;
- Segregation of duties between the functions of fund managers, authorising officers, accountants and treasurers;
- Corporate risk management processes (see below);
- An internal audit function (see below);
- Performance measurement systems and activity reports;
- Statutory reporting. Annual Accounts (see below).

Corporate risk management

The Agency has designed systems to identify, assess and, where necessary, take action to counteract or mitigate risks associated with its activities. These risk management systems are designed to enable the Agency to anticipate risks and manage them carefully, in the pursuit of its goals. Corporate-wide guidance on risk management has been developed. Risk management is an integral part of the management activities and is being integrated in the business planning process.

In 2003, the EUROCONTROL Audit Board reviewed the Agency's risk management processes and (while identifying further improvements, which the Agency is now implementing) concluded that the Agency has a generally sound basis and approach towards risk management. The Agency will continue to review and improve its corporate risk management process during 2004.

Internal audit

The Agency has an Internal Audit Unit, whose mission is to recommend to Agency management an effective system of internal controls, designed to help meet the Agency's objectives. Its scope includes inter alia the reliability and integrity of financial and operational information, the effectiveness and efficiency of operations, the safeguarding of assets, compliance with laws, regulations and contracts, and the assessment of risk management processes.

The Head of Internal Audit, whose appointment by the Director General is approved by the Provisional Council and the enlarged Committee for Route Charges, reports direct to the Director General. He/she may bring matters which in his/her view are significant to the attention of the Audit Board, the Provisional Council and the enlarged Committee.

Statutory reporting. Annual Accounts

The Agency produces Budgetary Accounts presenting the execution of the Budget and Financial Accounts, showing the financial position and the financial performance of the Agency. The Budgetary and Financial Accounts are produced in accordance with the principle of a true and fair view.

The Accounts of the Agency and of the Route Charges System are audited by the Audit Board, assisted in this task by external consultant auditors. The Annual Accounts, including the audit opinion, are submitted to the Commission, via the Provisional Council. The Commission gives a final ruling on the Accounts and decides on the discharge to be given to the Director General, in respect of his financial and accounting management.

EXTERNAL AUDIT: THE AUDIT BOARD

The Audit Board examines and reports annually on the Agency Accounts and on the Route Charges System Accounts and reports to the Commission, via the Provisional Council, or via the enlarged Committee where the financial management of the Route Charges System is concerned. In addition, the Audit Board carries out reviews concerning the level of transparency of the Agency's procedures and decisions.

The Audit Board is totally independent of the Agency. It has its own financial resources approved by the Commission. To carry out its activities, the Audit Board may draw on the sup-

port and advice of additional national audit experts or firms of auditors.

It is composed of six Members designated by six Contracting States, on a rotating basis, for a period of four years. The Rules of Procedure of the Audit Board stipulate that its Members shall be professional auditors. The Members of the Audit Board are not paid by the Agency, but are refunded in full for their travel expenses.

APPOINTMENT OF STAFF AND REMUNERATION

Agency staff are appointed by the Director General, following the recommendation formulated to him, as a result of a rigorous recruitment and selection procedure, involving Selection Boards, with participation of representatives from Management and the Staff Committee.

In accordance with the Staff Regulations of the Agency, any staff member wishing to perform any professional external activity must gain the prior approval of the Director General, and further measures are in place to manage potential conflicts of interests of Agency staff.

The system of staff remuneration, including that of the Director General and the Directors, is approved by the Commission. This system, which until June 2003 had been linked to the European Commission method, is currently under review by the Member States. The Agency remuneration system encompasses and establishes all salary payments to the staff in line with the public-sector nature of the Agency – there are no bonuses or discretionary payments to staff.

FINANCIAL MANAGEMENT

The Agency is committed to transparency, accountability and cost-efficiency in the utilisation of the resources at its disposal for the benefit of the entire airspace users community. During 2003, the Agency, in close consultation with auditors, Member States and the rest of its stakeholders, achieved significant improvements in various aspects of its financial management.

Details of the financial information for the year are set out in the account starting on page 96.

BUDGET PREPARATION – INVOLVEMENT OF MEMBER STATES

The documentation provided to the Member States to screen the yearly budget has been improved, including a functional presentation of the Budget

The Provisional Council approved in November 2003 the Advisory Financial Group's Report on the Budgetary Processes, AFG-BP. This was the result of a thorough analysis, over a period of two years, by experts from the States and the Agency, on all aspects related to the Agency budgetary cycle, from the elaboration of the first draft budget, to the rendering of the Annual Accounts. The main features of this report include:

- A new parameterisation system for the Agency Budget and Five-Year Programme, aiming to provide planning stability and long-term predictability of the budget, for the benefit of the Agency and the Member States.
- Creation of the Standing Committee on Finance (SCF), reporting direct to the Provisional Council, which replaces the AFG and is vested with higher degrees of responsibility and organisational visibility.
- Approval of the Basic Financial Information Package, a series of standard reports which will increase the consistency and traceability of the financial information to be provided for future budgetary discussions.

IMPROVED ELABORATION AND REPORTING OF THE AGENCY PART OF THE COST-BASE

The two historical assets databases held by the Agency for more than thirty years, used for the Agency Accounts and the elaboration of the cost-base respectively, have been merged into a single database, following an analysis of their respective differences. Along with a new software tool, the single database has allowed the Agency to improve the accuracy in its amortisation forecast for future years.

The cost-base is now directly derived from the accounting data.

As a result of a more efficient process, the Agency annual cost-base can now be estab-

lished faster and included in the documents submitted before the end of March to the Audit Board, along with the draft Agency Annual Accounts.

Following the discussions held at the enlarged Committee in November 2003, the Agency is now implementing the recommendations which were put forward by the Audit Board in its Report of 27 June 2003 on the 'establishment of the EUROCONTROL cost-base'. These included, inter alia:

- The introduction of a new accounting process for VAT.
- An enhanced general presentation which:
  - shows the ECAC receipts as a deduction of the total cost-base to be apportioned among the States;
  - suppresses the under-utilisation factor;
  - includes the loan interest actually paid, instead of a notional calculation.
- The introduction of standard tables, demonstrating the reconciliation of the forecast cost-base with the final cost-base and linking the final cost-base to the Agency's Annual Accounts.
- The procedure for establishing the cost-base in respect of the Agency Internal Tax imposed on staff salaries has been submitted for study by a Task Force comprising the States, airspace users and the Agency (TOIT). This Task Force has already delivered its report and its recommendations have been endorsed by the enlarged Committee

INCREASED READABILITY AND TRANSPARENCY OF THE AGENCY ANNUAL ACCOUNTS

The Agency Annual Accounts have been significantly simplified and as a result they are more focussed, and the quality of the information contained has improved (financial performance statements and consolidated Accounts, a new cash-flow statement, etc.). As is the normal practice in most public and private companies, the Annual Accounts also contain the Audit Certificate for the first time.

DISCONTINUATION OF THE PRACTICE OF CAPITALISATION OF REVENUE EXPENDITURE

In 2003, the Agency aimed to obtain the Member States' commitment to reinforce the link between the yearly charges through amortisation of the cost-base and the debt service payments with a view to maintaining the alignment between the total residual value of the Agency's fixed assets and the total debt.

As a further step in this process of increased transparency, the Agency initiated in late 2003 a study on the applicability to the Agency accounting of the International Accounting Standards (IAS), to align itself with the obligations imposed on air navigation service providers under the EC Single European Sky Regulations. In parallel, the Agency continued to maintain close relations with the financial and accounting services of the European Commission to follow up the developments taking place there. It is the Agency's intention to submit, in due course, a proposal for the consideration of the Standing Committee on Finance/Provisional Council.

INCREASING ATTENTION TO CORPORATE GOVERNANCE

In line with best practice, the Agency Annual Accounts now include a statement on the corporate governance of the Organisation and Agency.

The Agency is also paying increased attention to risk management and giving due care to implementing the Audit Board Report in this respect. A relevant statement on risk management will be included in the 2003 Annual Accounts.

In addition, the Agency is making steady progress in its journey to excellence, through the implementation of the EFQM model across all its units. Business Plans are produced for all Business and Support Units, throughout the Agency. A Business Plan for the Agency is being developed and will be linked to the Agency Strategy, currently under discussion by the Provisional Council.

ACTIONS TO IMPROVE COST-EFFICIENCY

The Agency has continued to reduce the portion of its total costs which is dedicated to support activities (overhead), thus increasing the resources devoted to the delivery of its main services and programmes.

The Agency has carried out a review of its support processes in search of synergies and consolidation of activities throughout the various units. Some tangible results have been obtained in financial management Agency-wide, as a result of the Efficiency Initiative adopted by the Director General.

The Agency has published a new full set of rules for improved management of its external support (time-based contractors), which aim to ensure the achievement of value-for-money.

Considerable work has been done in the analysis of potential for the outsourcing of services.

A LONG-TERM SOLUTION TO THE OUTSTANDING ISSUE OF THE PENSION SCHEME

In coordination with Member States and staff, the Agency has put forward a Global Solution on Pensions, which includes, among other measures, the creation of a Pension Fund and an agreement on the issue of national taxation on pensions. The proposal, which has already been presented to the Provisional Council, is now heading towards its final stages of formal approval.

SEARCH FOR ALTERNATIVE SOURCES OF FINANCING

The Agency has continued to work on studies to analyse the possibility of financing a number of its services by a method different from the traditional contributions.

An initial study containing a categorisation in clusters of the various Agency services was presented and endorsed by the ACG.

Further analyses were performed on the issue of the CFMU Alternative Financing. As an intermediate step, and in order to increase the cost transparency to the stakeholders, a new Part in the Budget (Part IX) has been created and is now fully operational. Further progress towards a more independent financing system is now subject to the ratification of the revised Convention.

FINANCIAL INFORMATION

FOREWORD

In the increasingly complex and challenging environment in which EUROCONTROL operates, cost-effective methods and practices are vital to the smooth operation of the Agency and the efficient conduct of EUROCONTROL's international affairs.

ANNUAL ACCOUNTS

In accordance with its Financial Regulations as amended in 2002, the Agency publishes its 2003 Annual Accounts by 30 June 2004. These accounts include the opinion of its external auditors, the EUROCONTROL Audit Board.

The financial information that follows is a summary of the data that are included in the Annual Accounts.

FINANCING MECHANISM

The annual budget of the Agency is established on the basis of the cash flows needed to support planned expenditure. It is subdivided into Parts, which each have their own financing mechanisms.

CHART 1

Chart 1 shows the financing mechanism of Parts I, II, III and VI of the budget.

- **Part I** includes the European Air Traffic Management Programme (EATM), the Central Flow Management Unit (CFMU), the Experimental Centre (EEC), the Training Institute (IANS), the Performance Review Unit (PRU), the Safety Regulation Unit (SRU), the Regulatory Unit (RU), together with all the support services. It is mainly financed by contributions from the 31 Member States (operational expenditure) and bank loans (capital expenditure) with some minor receipts for special services provided on request.

- **Part II** includes the Central Route Charges Office (CRCO), which is financed from a handling charge on the route charges collected via the system.

- **Part III** includes the Maastricht UAC, which is owned and operated by EUROCONTROL on behalf of Belgium, Germany, Luxembourg and the Netherlands. It is financed by contributions from these four States and, for a part of the capital expenditure, pre-financed by Part I.

- **Part VI** includes the Central European Air Traffic Services (CEATS) project, which is financed by contributions from the participating States, i.e. Austria, Croatia, the Czech Republic, Hungary, Italy, Slovakia and Slovenia and by bank loans for the capital expenditure.

CHART 1: STATEMENT OF SOURCES AND APPLICATION OF FUNDS IN 2003 (in € '000)

PART I: EATM, CFMU, EEC, IANS, PRU, SRU, RU and support services

Operating expenditure financed by contributions from 31 Members States

Opening Balance
In favour of States (01.01.03) **3 768**

Sources of funds +

Contributions received

France	53 215	16.7%
Germany	52 218	16.5%
United Kingdom	51 333	16.1%
Italy	33 666	10.6%
Spain	25 843	8.1%
Turkey	10 831	3.4%
Netherlands	9 120	2.9%
Belgium	8 919	2.8%
Switzerland	8 361	2.6%
Austria	8 073	2.5%
Sweden	7 923	2.5%
Portugal	7 562	2.4%
Greece	6 165	1.9%
Remaining States	35 491	11.0%

319 020

Applications of funds –

Staff expenditure (net)	182 886	56.7%
Repayment of loans	90 741	28.1%
Operating expenditure (net)	35 184	10.9%
Interest paid on loans	13 890	4.3%

322 701

Closing Balance (31.12.03) =

Balance in favour of States **87**

Capital expenditure financed by bank loans

Opening Balance (01.01.03)
Loans still to be drawn down against 2002 expenditure **-52 339**

Sources of funds +

Drawdown of loans	100 000	99.9%
Sale of assets	106	0.1%

100 106

Application of funds –

Capital expenditure: tangible	26 203	28.6%
Capital expenditure: intangible	65 573	71.6%
Pre-financing MUAC investments	-296	-0.2%

91 486

Closing Balance (31.12.03) =

Loans still to be drawn down against 2003 expenditure **-43 719**

Budget Performance (in € '000)

	Actual	Budget	%
Expenses financed by contributions	322 701	327 757	98.5%
Expenses financed by bank loans	91 486	97 350	94.0%

The closing balance in favour of States as at 31.12.03 will be deducted from the contributions to be paid by the States in 2004

The amount of loans still to be drawn down against 2003 capital expenditure will be drawn down during 2004

CHART 1 (cont'd)

PART II: CRCO

Operational and capital expenditure financed by handling charges taken on the route charge system

Opening Balance (01.01.03)

Due to Part I **- 5 262**

Sources of funds **+**

Transfer to Part I from Handling charges on Route Charges **22 941**

Application of funds **–**

Staff expenditure (net)	12 529	67.3%
Operating expenditure (net)	5 370	28.3%
Capital expenditure	710	3.8%

18 609

Closing Balance (31.12.03) **=**

Balance due to Part I **- 930**

CHART 1 (cont'd)

PART III: Maastricht UAC

Operational expenditure financed by contributions from the 4 Member States

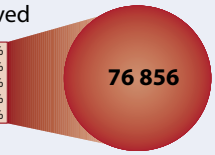
Opening Balance (01.01.03)

In favour 4 States	3 131
In favour Germany OAT	127
Balance in favour of States	**3 258**

Sources of funds +

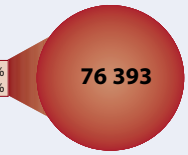
Contributions received

Germany GAT	31 422	40.99%
Belgium	25 331	32.95%
Netherlands	16 358	21.42%
Luxembourg	783	1.01%
Germany OAT	2 962	3.63%



Application of funds –

Staff expenditure (net)	69 948	91.6%
Operating expenditure (net)	6 445	8.4%



Closing Balance (31.12.03) =

In favour 4 States	3 585
In favour Germany OAT	136
Balance in favour of States	**3 721**

Capital expenditure financed by contributions from the 4 Member States and by prefinancing from Part I

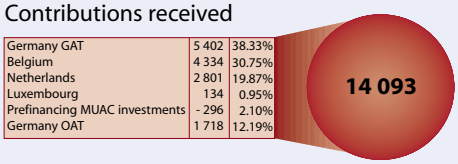
Opening Balance (01.01.03)

In favour 4 States	0
Due by Germany OAT	- 240
Balance due by Germany OAT	**- 240**

Sources of funds +

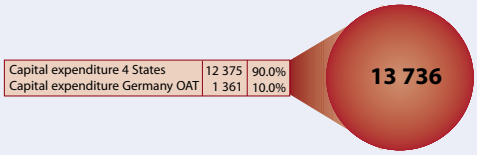
Contributions received

Germany GAT	5 402	38.33%
Belgium	4 334	30.75%
Netherlands	2 801	19.87%
Luxembourg	134	0.95%
Prefinancing MUAC investments	- 296	2.10%
Germany OAT	1 718	12.19%



Application of funds –

Capital expenditure 4 States	12 375	90.0%
Capital expenditure Germany OAT	1 361	10.0%



Closing Balance (31.12.03) =

In favour 4 States	0
In favour Germany OAT	117
Balance in favour of Germany OAT	**117**

The closing balance in favour of States as at 31.12.03 will be deducted from contributions to be paid by the 4 States and by Germany OAT during the year 2004

CHART 1 (cont'd)

PART VI: CEATS

operational expenditure financed by contributions from the 7 CEATS Member States

Opening Balance

In favour of States (01.01.03) **458**

Sources of funds +

Contributions received

	Amount € '000	%
Hungary	2 228	21.1%
Austria	2 436	23.1%
Slovenia	334	3.2%
Czech Rep.	1 834	17.4%
Italy	1 794	17.0%
Slovak Rep.	673	6.4%
Croatia	1 243	11.8%

10 542

Application of funds –

Staff expenditure (net)	5 120	56.9%
Operating expenditure (net)	3 874	43.3%

8 998

Closing Balance (31.12.03) =

Balance in favour of States **2 002**

Capital expenditure financed by bank loans

Opening Balance (01.01.03)

Loans still to be drawn down against 2002 expenditure **- 682**

Sources of funds +

Drawdown of loans **0**

Application of funds –

Capital expenditure intangible	1 080	66.8%
Capital expenditure tangible	540	33.2%

1 625

Closing Balance (31.12.03) =

Loans still be drawn down against 2002 and 2003 expenditure **- 2 307**

The amount of loans still to be drawn down against 2002 and 2003 Capital expenditure will be drawn down during 2004

CONSOLIDATED BALANCE SHEET

The consolidated balance sheet comprises the assets and liabilities of all EUROCONTROL Parts (including PART I, PART II (CRCO), PART III (MUAC), PART IV (Special annexes), PART V (Sickness Fund), PART VI (CEATS), PART VII (Unemployment Fund) and PART VIII (Pension Fund).

Assets (in € '000)

	2002	2003
Intangible fixed assets	164 220	159 350
Tangible fixed assets	259 029	262 730
Work in Progress	34 242	18 493
Total fixed assets	**457 491**	**440 573**
Current assets	835 107	929 167
Total assets	**1 292 598**	**1 369 740**

Liabilities (in € '000)

	2002	2003
Net financial position	35 079	28 168
Liabilities with banks	387 602	396 555
Current liabilities	869 917	945 017
Total liabilities	**1 292 598**	**1 369 740**

Commitment to long-term financial equilibrium

In 2003, EUROCONTROL continued to pursue a policy of financial equilibrium by aligning as much as possible:

- its liabilities with banks including both current liabilities (€396.6 million) and future liabilities in respect of 2003 budgetary year (i.e. €43.7 million), in total €440.3 million;
- its total fixed assets (i.e. €440.6 million), which will be recovered in the subsequent years, through the EUROCONTROL cost-base mechanism.

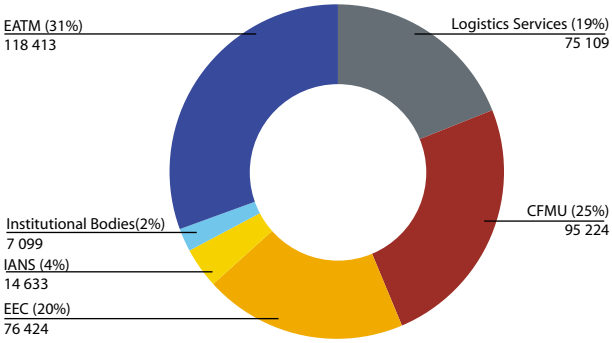
In this way, EUROCONTROL ensures that there are sufficient assets to be recovered by the route charges system to repay the debt with the banks.

Current assets and liabilities

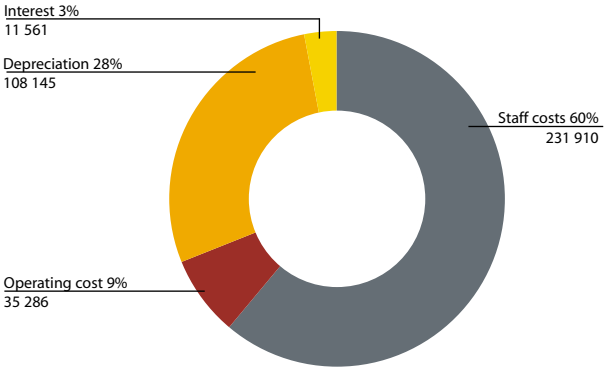
The current assets and liabilities are mainly generated by CRCO activities (debtors with the users and creditors with the Member States).

EUROCONTROL COSTS

Cost of Part I per establishment in 2003 (in €'000)



Cost of Part I breakdown by type in 2003 (in €'000)



In accordance with ICAO rules, each Member State includes its own share of EUROCONTROL's costs in its individual cost-base. Although there is therefore no separate EUROCONTROL cost-base or unit rate as such, the Agency is very conscious of the cost pressures to which users are subject.

1. Cost of Part I: EATM, CFMU, EEC, IANS, PRU, SRU, RU and Support Services

EUROCONTROL costs (Part I) represent some 8% of the total en-route costs.

The trend in EUROCONTROL's charges to the airspace users is measured by the two following variables:

- **the cost per kilometre overflown** (which is the approach adopted by the Performance Review Unit).

  The EUROCONTROL cost per kilometre represents around 5 euro cents per kilometre overflown. It has to be underlined that, in nominal terms, 2003 costs remain at the level of 1996 while, in real terms, 2003 costs represent only 88% of those of 1996.

- **the cost per service unit** (being the combination of distance and aircraft weight used for charging purpose).

  The cost per service unit in 2003 is EUR 4.40 per service unit charged in the Route Charges System. The cost in 2003 represents, in real terms, about 90% of that of 1996.

Trend of total costs (Part I) in € '000

	1996	1997	1998	1999	2000	2001	2002	2003
Staff costs (gross)		168 683	166 070	175 578	195 636	204 982	218 520	231 910
Operating costs		27 448	23 102	18 789	22 173	33 642	35 320	35 286
Depreciation		46 945	59 329	69 915	81 162	79 246	96 866	108 145
Interest		17 001	17 190	14 726	16 604	14 046	12 821	11 561
Total EUROCONTROL cost	**232 919**	**260 077**	**265 691**	**279 008**	**315 575**	**331 916**	**363 527**	**386 902**
% i/i-1		11.7%	2.2%	5.0%	13.1%	5.2 %	9.5%	6.4%
Total en-route costs	**2 952 354**	**3 590 179**	**3 851 008**	**4 213 444**	**4 501 196**	**4 826 986**	**4 918 849**	**4 939 938**
%i/i-1		21.6%	7.3%	9.4%	6.8 %	7.2 %	1.9%	0.5%
Part of EUROCONTROL	**7.9%**	**7.2%**	**6.9 %**	**6.6 %**	**7.0 %**	**6.9 %**	**7.4%**	**7,8%**

Trend of cost per km (Part I)

	1996	1997	1998	1999	2000	2001	2002	2003
Total EUROCONTROL cost (€ '000)	**232 919**	**260 077**	**265 691**	**279 008**	**315 575**	**331 916**	**363 527**	**386 902**
Total kilometres flown (million)	4 122	5 018	5 567	6 099	6 435	6 448	6 415	6 713
Nominal unit cost (€/km)	0.0565	0.0518	0.0477	0.0457	0.0490	0.0515	0.0566	0.0576
Deflation factor applied		1.7%	1.3%	1.2%	2.1%	2.1%	2.2%	2.1%
Real unit cost (€1996/km)	**0.0565**	**0.0509**	**0.0463**	**0.0439**	**0.0460**	**0.0473**	**0.0508**	**0.0507**

Trend of cost per service unit (Part I)

	1996	1997	1998	1999	2000	2001	2002	2003
Total cost (€ '000)	**232 919**	**260 077**	**265 691**	**279 008**	**315 575**	**331 916**	**363 527**	**386 902**
Total number of service units (million)	**54.5**	65.0	71.0	77.9	82.4	82.5	82.0	87.9
Nominal cost (€/service unit)	**4.27**	4.00	3.74	3.58	3.83	4.02	4.43	4.40
Deflation factor applied		1.7%	1.3%	1.2%	2.1%	2.1%	2.2%	2.1%
Real unit cost (€1996/ service unit)	**4.27**	**3.94**	**3.63**	**3.44**	**3.60**	**3.70**	**3.99**	**3.87**

2. Cost of Part III – Maastricht UAC

In accordance with ICAO rules, the 4 Member States include their own share of the Maastricht UAC costs in their individual cost-base.

3. Cost of Part VI – CEATS

So far, there has been no cost-base for CEATS. CEATS Member States include in their own cost-base the contributions that they pay to EUROCONTROL (i.e. EUR 10,542,000 in 2003).

4. Cost of Part II – CRCO

Part II does not generate costs to be charged to the cost-base of Member States, since the costs of the service are recovered through a handling charge which is levied from every bill recovered through the system. This charge is around 0.40% of the total amount billed.

Trend of total costs (Part III – Maastricht UAC) in € '000

	1997	1998	1999	2000	2001	2002	2003
Staff costs	57 178	59 660	64 310	69 244	80 782	88 263	92 841
Operating costs	3 998	3 970	4 560	5 389	5 424	3 506	3 093
Depreciation	5 453	6 336	7 456	7,857	8 820	9 343	11 916
Interest	2 441	2 440	2 055	2 019	1 623	1 444	2 329
Total cost	**69 070**	**72 406**	**78 381**	**84 509**	**96 649**	**102 556**	**110 179**
% i/i-1		4.8%	8.3%	7.8%	14.4%	6.1%	7.4%

ACRONYMS & ABBREVIATIONS

2D	Two dimensional
3D	Three dimensional
5A	Attitudes to Aircraft Annoyance Around Airports project

A

AAS	Advanced Airspace Scheme
ACAC	Arab Civil Aviation Commission
ACARE	Advisory Council for Aeronautics Research in Europe
ACAS	Airborne Collision Avoidance System
ACAS RA	ACAS Resolution Advisory
ACC	Area Control Centre
ACCESS	ACC Assessing Capacity method
ACE	AVENUE-compliant ESCAPE
ACE	ATM Cost-Effectiveness report
ACG	ATM/CNS Consultancy Group
ACS	Advanced Cockpit Simulator
ADS	Automatic Dependent Surveillance
ADS-B	ADS-Broadcast
AEA	Association of European Airlines
AECMA	European Association of European Aerospace Industries
AENA	Aeropuertos españoles y Navegación aérea (E)
AFG	Advisory Financial Group
AFG-GB	AFG's Report on the Budgetary Processes
AFN	Airspace, Flow Management and Navigation Domain
AGC	Air-Ground Cooperative ATS Programme
AGAS	High Level European Action Group for ATM Safety
AGDL	Air-Ground Data Link
AIP	Aeronautical Information Publication
AIRAC	Aeronautical Information Regulation and Control
AIS	Aeronautical Information Services
AIT	Aircraft Identification Tag
ANSP	Air Navigation Service Providers
APT	Airport Throughput research area (EEC)
ARN	ATS Route Network
ARTAS	ATM Surveillance Tracker and Server System
ARTF	Administrative Reform Task Force
ASACT	Air Safety and Air Traffic Control project

ASAS	Airborne Separation Assurance Systems
A-SMGCS	Advanced-SMGCS
ASMT	ATM Safety Monitoring Tool
ATC	Air Traffic Control
ATCA	Air Traffic Control Association, Inc.
ATCEUC	Air Traffic Control European Unions Coordination
ATFM	Air Traffic Flow Management
ATFCM	Air Traffic Flow and Capacity Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATS	Air Traffic Services
AUS	Australia
AUT	Austria
AVENUE	ATM Validation Environment for Use towards EATMS
AVT	ADS-B/TIS-B Validation Test bed project

B

BEL	Belgium
BGR	Bulgaria
BIH	Bosnia and Herzegovina
BLR	Belarus

C

CAIA	Collaborative Airline Interface with CFMU
CAMACA	Commonly Agreed Methodology for Airport Airside Capacity Assessment
CAMES	Cooperative ATM Measures for a European Single Sky
CARDS	European Community's Assistance for Restructuring, Development and Stabilisation Programme
CARE	Cooperative Actions of Research and Development in EUROCONTROL
CCESC	CEATS Chief Executives' Standing Conference
CDM	Collaborative Decision-Making
CEATS	Central European Air Traffic Services
CESC	Chief Executive Standing Conference
CFMU	Central Flow Management Unit
CHE	Switzerland
CIR	CFMU Interactive Reporting facility
CMIC	Civil/Military Interface Standing Committee
CMO	CEATS Management Office
CNS	Communications, Navigation, Surveillance
COCA	Complexity and Capacity study
CORA	Conflict Resolution Assistant
CPD	CEATS (Budapest and Prague)

CPDLC	Controller/Pilot Datalink Communication
CRCO	Central Route Charges Office
CRDS	CEATS Research, Development and Simulation Centre (Budapest, Hungary)
CSPDU	CEATS Strategic Planning and Development Unit (Prague, Czech Republic)
CYP	Cyprus
CZE	Czech Republic

D

DAP	Downlinked Aircraft Parameter
DAP	Directorate ATM Programmes
DAS	Directorate ATM Strategies
D-ATIS	Digital-ATIS
DCL	Departure Clearance
DEU	Germany
DF	Directorate Finance
DFL	Division Flight Level
DFS	Deutsche Flugsicherung GmbH
DG	Directorate-General (European Commission)
DG	Director General (cabinet)
DGS	Directorate of the General Secretariat
DHR	Directorate Human Resources
DNA	Direction de la Navigation Aérienne
DNK	Denmark
DOVE	Datalink Operational Validation Experiments
DSC	Dynamic Management of the European Airspace Network Stakeholder Steering Committee

E

EAD	European AIS Database
EAG	European ATFM Group
EANPG	European Air Navigation Planning Group (ICAO)
EATM	European ATM
EC	European Community/Commission
ECAC	European Civil Aviation Conference
ECCG	Experimental Centre Consultation Group
ECIP	European Convergence and Implementation Plan
ECU	European Currency Unit
EEC	EUROCONTROL Experimental Centre
eDEP	Early Demonstration and Evaluation Platform
eFDPS	European Flight Data Processing System
EFQM	European Foundation for Quality Management
EIS	EATM Implementation Support Services

EMAN	En-route Traffic Sequency and Management Tool
ENAV	Ente Nazionale di Assistenza al Volo
ENPRM	EUROCONTROl Notice of Proposed Rule-Making
EOBT	Estimated Off Block Time
EPIC	EUROCONTROL Publication and Information Centre
ERIS	EATM Reference Industry-based ATM Simulations and Trials Platform Programme
ESA	European Space Agency
ESARR	EUROCONTROL Safety Regulatory Requirement
ESCAPE	EUROCONTROL Simulation Capability And Platform for Experimentation
ESIMS	ESARRs Implementation Monitoring and Support Programme
ESP	Spain
ETF	European Transport Federation
ETFMS	Enhanced Tactical Flow Management System
ETNA	Extranet to National Administrations
EU	European Union
EUR	Euro
EUROCAE	European Organisation for Civil Aviation Electronics
EUROPOL	European Law Enforcement Organisation
EUROSTAT	Statistical Office of the European Communities
EVP	European Validation Platform

F

FAA	Federal Aviation Administration (USA)
FANS	Future Air Navigation Systems
FAP	Future ATM Profile
FDPS	Flight Data Processing System
FIN	Finland
FIR	Flight Information Region
FL	Flight Level
FMD	Flow Management Division
FMP	Flow Management Position
FRA	France
FUA	Flexible Use of Airspace

G

G2G	Gate-to-Gate
GAT	General Air Traffic
GBR	United Kingdom
GIS	Geographical Information System
GRC	Greece

H

HiRIS	Human Resources Information System
HMI	Human-Machine Interface
HR	Human Resources
HRS	Human Resources Programme (EATM)
HRV	Croatia
HUN	Hungary

I

IANS	Institute of Air Navigation Services (Luxembourg)
IAS	International Accounting Standards
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IFATCA	International Federation of Air Traffic Controllers' Associations
IFPS	Initial Integrated Flight Plan Processing System
IFPU	Integrated Initial Flight Plan Processing Unit
IFR	Instrument Flight Rules
IMB	Institute Management Board
INO	Innovative Research
IRL	Ireland
ISO	International Organisation for Standardization
IT	Information Technology
ITA	Italy

J

JAA	Joint Aviation Authorities

K

KPI	Key Performance Indicator

L

LCIP	Local Convergence and Implementation Plan
LTU	Lithuania
LUX	Luxembourg

M

MADAP	Maastricht Automatic Data Processing and Display System
MANTAS	Maastricht ATC New Tools and Systems
MAS UAC	Maastricht Upper Area Control Centre
MATSE	ECAC Transport Ministers Meeting on the Air Traffic System in Europe
MCS	Multi-Aircraft Cockpit Simulator
MDA	Moldova
MFF	Mediterranean Free Flight
MIDS	Multi-Function Information Distribution System
MKD	former Yugoslav Republic of Macedonia
MILHAG	Military Harmonisation Group
MLT	Malta
MODE S	Mode Select (SSR Selective Interrogation Mode)
MTCD	Medium-Term Conflict Detection

N

NATO	North-Atlantic Treaty Organization
NATS	National Air Traffic Services (UK)
NCD	Network Capacity and Demand Management
NEON	New Organisation Nattenheim programme
N-FDPS	New FDPS
NLD	the Netherlands
NMC	Network Management Cell
NOR	Norway

O

OAT	Operational Air Traffic
OATA	Overall ATM/CNS Target Architecture
ODS	Operator Input and Display System
OJT	On–the-Job-Training
OJTI	On-the-Job-Training Instruction

P

PACS	Pan-European Airport Capacity and Delays Analysis function
PELA	Proficiency test in the English language for ATC
POL	Poland
PRC	Performance Review Commission
PRR	Performance Review Report

PRT	Portugal
PRU	Performance Review Unit
PSTF	Agency Pension Task Force

R

RA	Resolution Advisory
RC	Regulatory Committee
R&D	Research and Development
RF	Radio Frequency
RFS	Research Flight Simulator
RISC	Recommendations from Incidents and Safety Concerns
RNAV	Area Navigation
ROM	Romania
RPL	Repetitive Flight Plan
RU	Regulatory Unit
RVSM	Reduced Vertical Separation Minimum/Minima

S

SARS	Severe Acute Respiratory Syndrome
SCF	Standing Committee on Finance
SD	Senior Director
SEE	Society, Environment and Economics
SMGCS	Surface Movement Guidance and Control System
SMS	Safety Management System
SRA	Strategic Research Agenda
SRC	Safety Regulation Commission
SRU	Safety Regulation Unit
SSAP	Strategic Safety Action Plan
SSP	Sector Safety and Productivity
STCA	Short-Term Conflict Alert
SVK	Slovakia
SVN	Slovenia
SWE	Sweden

T

TCAS	Traffic Alert and Collision Avoidance System
TCG	Training Consultation Group
TEN-T	Trans-European Transport Network
TIS	Traffic Information System

TIS-B	TIS-Broadcast
TLS	Target Level of Safety
TMA	Terminal Control Area
TNC	Tactical Network Coordinator
TREN	Directorate-General for Energy and Transport, European Commission
TUR	Turkey

U

UAC	Upper Area Control Centre
UIR	Upper Flight Information Region
UKR	Ukraine
USD	US dollars

V

VAT	Value Added Tax
VHF	Very High Frequency
VFR	Visual Flight Rules

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