member of FABEC

EUROCONTROL

# MAASTRICHT UPPER AREA CONTROL CENTRE ANNUAL REPORT 2014

DELIVERING VALUE TO THE NETWORK

# FAST FACTS

| | 2010 | 2011 | 2012 | 2013 | 2014 | Trend 2013/2014 |
|---|---|---|---|---|---|---|
| **Safety indicators** | | | | | | |
| **Category A and B infringements** (caused by MUAC) | 2 | 7 | 2 | 1 | 2 | |
| **Financial indicators** | | | | | | |
| **Total fixed-assets at year end** ([1]) (Net book value) (€ M – €2014) | 83.2 | 83.1 | 82.3 | 78.1 | 73.4 | –6.1% |
| **Capital expenditure at year end** (€ M – €2014) | 11.6 | 8 | 10.7 | 12.9 | 5.3 | –59.1% |
| **Total costs** (€ M – €2014) | 150.5 | ([6]) 123 | 145.3 | 137.6 | 145.3 | 5.6 % |
| Staff costs | 119.1 | 110.9 | 121.5 | 115 | 123.6 | 7.4 % |
| Non-staff operating costs | 13.5 | 13.3 | 13.2 | 12.9 | 12 | –7 % |
| Depreciation | 16.8 | 11.1 | 10 | 9.1 | 9.3 | 2.4 % |
| Cost of capital | 1.1 | 1.3 | 0.7 | 0.6 | 0.5 | –10.8 % |
| Exceptional reduction | | – 13.5 | | | | |
| **Cost-efficiency indicators** ([2]) | | | | | | |
| **Inflation rate (Netherlands)** | + 0.9 % | + 2.5 % | + 2.8 % | + 2.6 % | + 0.3% | |
| **Total economic cost/flight-hour(€2014)** ([3]) | 289 | 252 | 269 | 257 | 289 | 12.5 % |
| **Financial cost/flight-hour** (€2014) ([4]) | 277 | 242 | 259 | 239 | 247 | 3.4 % |
| **MUAC-equivalent unit rate** (€2014) ([5]) | 25.8 | 22.3 | 23.9 | 21.8 | 22.5 | 3.2 % |
| **Productivity** (composite flight-hour per air traffic controller-hour on duty) | 1.85 | 1.95 | 1.94 | 1.99 | 1.96 | –1.5 % |
| **Movements** | 1 522 410 | 1 607 817 | 1 605 505 | 1 631 895 | 1 671 185 | 2.4 % |
| **Flight hours** | 543 140 | 564 053 | 560 102 | 574 812 | 587 342 | 2.2 % |
| **Service units** | 5 822 523 | 6 115 411 | 6 070 939 | 6 322 585 | 6 473 244 | 2.4 % |
| **Punctuality** (% of unimpeded flights) | 99.7 % | 99.8 % | 99.7 % | 99.5% | 98.9% | |
| **Average delay/flight** (minutes) | 0.05 | 0.04 | 0.04 | 0.07 | 0.17 | |
| **Number of employees** (31 December) | 686 | 684 | 672 | 642 | 624 | –2.8 % |

([1]) **Total fixed assets** including work in progress.

([2]) **Cost-efficiency indicators** are calculated on the basis of the cost-base.

([3]) **Total economic cost per flight-hour**: key performance indicator used for ATM cost-effectiveness (ACE) benchmarking. It is the sum of ATM/CNS provision costs and ATFM delay costs per composite flight-hour. This indicator enables the trade-offs between cost and capacity performance to be measured.

([4]) **Financial cost per flight-hour**: ATM/CNS service provision cost per composite flight-hour.

([5]) The key performance indicator for cost effectiveness defined in the Single European Sky (SES) II Performance Regulation is the unit rate. Since the unit rate is calculated on the basis of consolidated costs and production at national level, the concept of a **MUAC-equivalent unit rate** has been introduced as a performance indicator. This indicator takes into account the specific MUAC costs and production. "Equivalent" indicates that the calculation does not take the full cost of MUAC service provision into account; EUROCONTROL support costs and the cost of using CNS infrastructure, which is made available free of charge by the Four States, are not included.

([6]) This figure takes into account the exceptional reduction due to the implementation of accrual accounting and revalorisation of fixed assets on 2011 costs.



# CONTENTS

# MUAC PROFILE

The Maastricht Upper Area Control Centre (MUAC) is an international non-profit air navigation service provider, operated by EUROCONTROL on behalf of four States – Belgium, Germany, Luxembourg and the Netherlands.
MUAC ensures that aircraft flying in the upper airspace (above 24,500 feet or 7.5 km) over Benelux and north-west Germany can do so safely and efficiently.
To manage this busy and complex airspace, MUAC is organised on a multinational, cross-border basis. It is a working example of how European cooperation, both at a civil and military level, can result in safety, capacity and efficiency benefits for all.
MUAC is uniquely positioned to provide sustainable air navigation services in a large airspace block, satisfying customer expectations and increasing air traffic demand.



## CONSOLIDATING AIRSPACE ACROSS NATIONAL BORDERS

For more than 40 years, MUAC has played a pivotal role in integrating European airspace on a functional basis, driven not by national boundaries, but by the operational requirements of international traffic flows.

Thanks to its provision of seamless air navigation services to the upper airspace (above 24,500 feet) of Belgium, north-west Germany, Luxembourg and the Netherlands, MUAC enjoys a leading position in the core area of Europe. In order to maintain this position, it continuously strives to deliver safe, efficient, cost-effective and impartial cross-border air navigation services in a dynamic air transport marketplace.

By co-locating a Deutsche Flugsicherung (DFS) unit (Lippe Radar) which controls military operations over north-west Germany on MUAC's premises, the States have ensured high levels of cooperation and coordination between civil and military air traffic control.

To further improve safety and efficiency, the MUAC Air Traffic Control system has been deployed across different Royal Netherlands Air Force sites. The Shared ATS System (SAS) aims to ensure that all parties have a clear and up-to-date picture of the air situation in the Netherlands, and that synergies are exploited to the maximum extent to improve safety and efficiency. Furthermore, since May 2015, military traffic above 24,500 feet in the Amsterdam FIR is handled on a 24/7 basis by MUAC as General Air Traffic.

MUAC also provides correlated flight data to Belgium's Belga Radar Air Traffic Control Centre at Semmerzake.

One of MUAC's flagship activities is the development and implementation of leading-edge infrastructure and technology solutions to ensure that customers and stakeholders benefit from the highest levels of performance. MUAC's active involvement in SESAR (Single European Sky ATM Research) is instrumental in meeting this objective.

## MISSION AND VISION

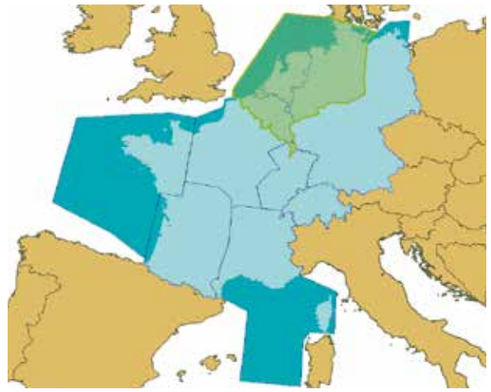
MUAC's mission is to provide cross-border Air Traffic Management (ATM) to civil and military airspace users, and to develop, integrate and provide state-of-the-art systems and services. Its priority is to offer customer-oriented, innovative and tailored services based on safety, quality and cost efficiency, and its challenge is to explore partnerships which support a diversification of advanced systems and services. The engagement and passion for performance of its staff are its strengths.

MUAC's vision is to be recognised as an outstanding ATM service provider and to drive the future of European ATM.

Over 17% of all European flights use MUAC's airspace.

## GEOGRAPHICAL SCOPE

The area of responsibility of MUAC in Belgium, Germany, Luxembourg and the Netherlands consists of the Brussels UIR (Upper Information Region), the Amsterdam FIR (Flight Information Region) and the Hannover UIR from flight level 245 to flight level 660.



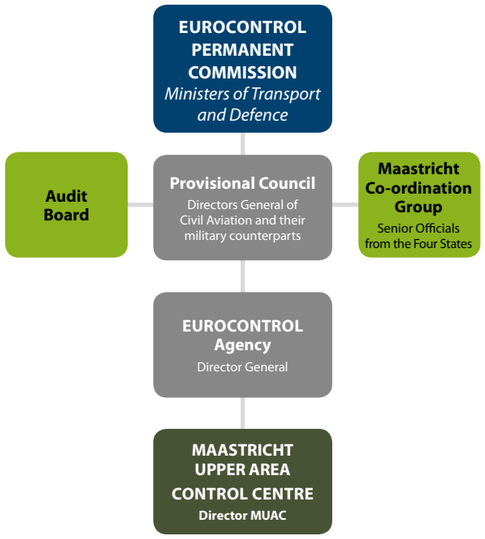
The MUAC area of responsibility is a complex and dense airspace in the close vicinity of major airports, including Amsterdam, Brussels, Copenhagen, Düsseldorf, Frankfurt, London and Paris. MUAC interfaces with a large number of civil and military area control centres and upper area control centres.

## CORPORATE GOVERNANCE

MUAC is operated by EUROCONTROL on behalf of Belgium, Germany, Luxembourg and the Netherlands on the basis of the Agreement relating to the Provision and Operation of Air Traffic Services and Facilities by EUROCONTROL at the Maastricht Upper Area Control Centre (the "Maastricht Agreement"), signed on 25 November 1986. EUROCONTROL is an international organisation established under the EUROCONTROL Convention of 13 December 1960, subsequently amended on 12 February 1981.

In line with Article 15 of the EUROCONTROL Amended Convention, air traffic services at MUAC are undertaken in accordance with the national regulations in force in the respective territories and airspaces concerned.

The Maastricht Co-ordination Group was established to facilitate decision making by determining a common position for the Four States (Belgium, Germany, Luxembourg and the Netherlands) in all matters relating to the operation of air traffic services at MUAC. Day-to-day responsibility for operations has been delegated to the Director of MUAC by EUROCONTROL's Director General. Each of the Four States retains its own regulatory competence.




## REGULATION

In addition to the international regulatory regime, air navigation service provision at MUAC is subject to four national regulatory regimes, each specifically defining applicable rules and regulations. Over recent years, regulation and oversight of MUAC have been exercised in a coordinated manner by the Four States.

## SUPERVISION AND OVERSIGHT

Further to the adoption of Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the Single European Sky (the framework Regulation), each of the Four States has established National Supervisory Authorities (NSAs). In Belgium it is the Belgian Supervisory Authority for Air Navigation Services (BSA-ANS); in Germany, the Federal Supervisory Authority for Air Navigation Services (BAF); in Luxembourg, the Civil Aviation Authority (CAA Luxembourg) and in the Netherlands, the Human Environment and Transport Inspectorate (ILT) of the Ministry of Infrastructure and the Environment.

The Four States' NSAs have created two bodies to support the oversight of MUAC: the **NSA Committee**, representing all four NSAs, and having a coordination and advisory role for the relevant national decision-making authorities on oversight issues; and the **Common Supervisory Team**, composed of personnel from the cooperating NSAs, who have an executive role in performing document examinations, audits and inspections.

## DESIGNATION OF MUAC AS AN AIR TRAFFIC SERVICE PROVIDER

In accordance with Article 8 of the Regulation (EC) No 550/2004 of the European Parliament and of the Council of 10 March 2004 on the provision of air navigation services in the Single European Sky (the service provision Regulation), EUROCONTROL was designated as an air traffic service provider in the Netherlands, by amendment to the Aviation Act in October 2007. Belgium, Germany and the Netherlands maintain the designation of EUROCONTROL as an air traffic service provider as per the Maastricht Agreement and the relevant national laws.

## CERTIFICATES

In line with Single European Sky legislation, MUAC holds the certificate for the provision of air navigation services in the European Community. The certificate was granted in 2006 by the Netherlands' Transport and Water Management Inspectorate and Directorate General for Civil Aviation and Freight Transport.

In 2009, the Belgian Supervising Authority for Air Navigation Services certified MUAC for the provision of unit and continuation training for air traffic controllers and training to act as on-the-job training instructor, competence examiner and/or competence assessor to deliver air traffic services. This certificate was updated in 2011 pursuant to Commission Regulation (EU) No 805/2011.

MUAC also holds ISO 9001:2008 certification for the provision of ATM services, consistent with international standards, including the procurement, integration and maintenance of technical systems, and the provision of ATM specific training. The certificate was re-issued on 8 December 2014 and is valid until 14 December 2017.

## CONTROLLER LICENSING

Since March 2010, the Belgian Civil Aviation Authority has been the licence-issuing authority for air traffic controllers and student air traffic controllers at MUAC. MUAC controllers hold a Belgian ATC licence for the delivery of services in Belgian, Dutch, German and Luxembourg airspace. The licences are issued in accordance with Commission Regulation (EU) No 805/2011 of 10 August 2011, which lays down detailed rules for air traffic controllers' licences and certain certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council.



## MAASTRICHT COORDINATION GROUP

**BELGIUM**

**Head of Delegation**

| | |
|---|---|
| Patrick VANHEYSTE | Federal Public Service for Mobility and Transport<br>**Representing the Four-State NSA Committee** |

**Other participants**

| | |
|---|---|
| Theo NSENGIMANA | Belgian Civil Aviation Authority |
| Maj. Tom VAN HEUVERSWYN | Belgian Armed Forces – Air Component |
| Christian BERLANGER | Belgocontrol |

**GERMANY**

**Head of Delegation**

| | |
|---|---|
| Dirk NITSCHKE | Federal Ministry for Transport, Building and Urban Affairs |

**Other participants**

| | |
|---|---|
| Nancy SICKERT | Federal Ministry of Transport, Building and Urban Affairs |
| Col. Ralf RADDATZ | Federal Ministry of Defence |
| Lt. Col. Heinrich WÖLPERN | Federal Ministry of Defence (until October 2014) |
| Lt. Col. Volker EDEN | Federal Ministry of Defence (from October 2014) |
| Prof. Dr. Nikolaus HERRMANN | Director of the National Supervisory Authority |
| Andreas PÖTZSCH | Deutsche Flugsicherung |

**LUXEMBOURG**

**Heads of Delegation**

| | |
|---|---|
| Claude LUJA | Ministry of Transport, Directorate of Civil Aviation<br>**Chair of the Maastricht Coordination Group during 2014 (ad interim)** |
| Christiane WEIDENHAUPT | Ministry of Transport, Directorate of Civil Aviation (from September 2014)<br>**Chair of the Maastricht Coordination Group during 2014 (from September 2014)** |

**Other participants**

| | |
|---|---|
| Claude WAGENER | Ministry of Transport, Directorate of Civil Aviation (until September 2014) |

**NETHERLANDS**

**Heads of Delegation**

| | |
|---|---|
| Jacqueline PRINS | Ministry of Infrastructure and the Environment (until September 2014) |
| Eric DE VRIES (ad interim) | Ministry of Infrastructure and the Environment |

**Other participants**

| | |
|---|---|
| Lt. Col. John VAN BOMMEL | Royal Netherlands Air Force (until June 2014) |
| Lt. Col. Leon CREMERS | Ministry of Defence (from June 2014) |
| Bert ROLVINK | Luchtverkeersleiding Nederland |

**OBSERVERS**

| | |
|---|---|
| Volker DICK | Staff Commitee |
| Frederic DELEAU | Staff Committee (from December 2014) |

## MANAGEMENT

**Director General of EUROCONTROL**

Frank BRENNER

**MUAC Board**

| | |
|---|---|
| Jac JANSEN | Director |
| Ian MIDDLETON | Head of Operations Domain |
| Peter NAETS | Head of Engineering Domain |
| Chris STADLER | Head of ATM Services Delivery |
| Razvan MARGAUAN | Head of Strategy and Priority Management (until 15 September 2014) |
| Niels LOKMAN | Head of Strategy and Priority Management (from 1 June 2015) |
| Bart VANDERSMISSEN | Head of Change Management |
| Flemming NYRUP | Head of Performance Management |
| Robin HICKSON | Head of Stakeholder Management |
| Onno REITSMA | Head of Support Services Delivery |

# MCG CHAIRMAN AND DIRECTOR GENERAL'S STATEMENT

## CLAUDE LUJA

## FRANK BRENNER

We are happy to report that over the past business cycle, MUAC's performance in the European ATM landscape remained strong. Excellent services were delivered despite soaring and unpredicted traffic increases, geographical traffic fluctuations as well as other disruptions beyond MUAC's control. At the close of Reference Period 1 (RP1), MUAC made a substantial contribution towards meeting the Single European Sky targets as set out in the FABEC Performance Plan and the national plans for the period 2012-2014.

During the reporting period, the results of the second phase of the Study on a new institutional model for MUAC, launched under the auspices of the Four States, became available. The Study recommended that while there was no clear performance benefit in separating MUAC from the EUROCONTROL Agency, it was desirable for MUAC to be given greater managerial autonomy and flexibility within EUROCONTROL and to improve transparency of costs.

Therefore, a clear focus of the year was to address the issue of transparency of cost allocation between Parts I (the all-States budget) and III (the MUAC budget) of the EUROCONTROL Budget.

The Study furthermore confirmed that MUAC should evolve further on as an ATM Data Service Provider and that entrusting MUAC with the service provision for Operational Air Traffic (OAT) in the Hannover UIR would present clear advantages both for the German State and for MUAC. Accordingly, Germany and EUROCONTROL launched the approval process in 2014 after which both parties will begin negotiations on the integration road-map.

In response to the Netherlands' Airspace Vision which aims to enhance civil/military cooperation and contribute to the more efficient management of European airspace, the Netherlands and EUROCONTROL agreed that the best option would be for MUAC to provide air traffic services and facilities for OAT in the upper airspace of the Amsterdam FIR.

There is no doubt that integrating civil/military services in the Amsterdam FIR and the Hannover UIR will bring significant benefits to States, service providers and airspace users alike. Moreover, it is fully in line with the ambitions of the Single European Sky. The Four States therefore strongly support these projects and their objectives.

FABEC is still not delivering the desired effects on performance, but solutions to the identified issues are being developed so that strategically vital developments can proceed in the interests of the whole aviation community.

Reference Period 2 comes with new challenges for MUAC, particularly with regards to capacity and cost. MUAC has the right culture to face these challenges and is well placed to overcome them. We encourage the MUAC management and employees to keep up the good work in meeting performance targets and delivering tangible value to the network.

# DIRECTOR'S STATEMENT

## JAC JANSEN

I am pleased to report that during 2014 MUAC delivered outstanding results - matching demand with output in what was an extremely challenging year.

The overall safety performance was positive: two Category B incidents with a MUAC contribution were recorded while the effectiveness of the safety management system was maintained.

The business cycle was marked by stronger-than-expected air traffic growth and major fluctuations in traffic patterns, in particular in the western part of the airspace. Adverse weather, industrial action in neighbouring airspace and major military activity required the application of ATFM protective measures which impacted service delivery. Despite the aforementioned challenges, the results achieved for safety, capacity, cost-effectiveness and horizontal flight efficiency were encouraging, making it possible for us to meet our targets.

A large number of programmes at operational, technical and managerial levels were developed and implemented throughout the year to help ensure that our consistently high level of performance was maintained.

Traffic levels increased remarkably by 2.4% on the previous year and an all-time high of over 1.6 million flights was reached. Punctuality remained excellent with 98.9% of flights unimpeded. The average delay per flight was 0.17 minutes. Several airspace design initiatives, technical upgrades and partnerships enabled increases in capacity.

The total economic cost per flight-hour (€2014) was €289 – 12.5% up on 2013. In addition, total service provision costs were €145.3 million - 5.6% up on 2013, and back to 2012 levels. Controller productivity remained best-in-class, with 1.96 composite flight-hour per controller-hour on duty – a slight decrease from 2013. Employee numbers fell to 624 – 2.8% down on 2013.

A number of cost reduction processes have begun to pay dividends and I expect them to continue achieving greater efficiencies and further cost savings in the future. However, an appropriate balance must be found to facilitate the necessary investment in future technological improvements, safety enhancements and participation in key SESAR validations.

In 2014, flight-efficiency programmes continued to deliver tangible benefits to airspace users. Direct route usage at the strategic level generated savings in the order of 850,800 NM for aircraft operators, equating to 5,105 t of fuel and 17,016 t of $CO_2$ compared to the previous fixed-route network. At the tactical level, the allocation of direct routes resulted in a total flight distance reduction of 6,758,963 NM (or 4.5 NM on average per flight), saving more than 40,550 t of fuel and reducing $CO_2$ emissions by 135,179 t. The provision of free route airspace reports to aircraft operators resulted in savings of millions of euros in 2014 by enabling those operators to reduce the amount of fuel carried on each flight as well as by reducing miles flown. For several airlines, total usage of free routes was above 90%. In the MUAC airspace this resulted in a reduction of the planned route extension from 2.02% in 2013 to 1.88% in 2014, equating to a 7.4% reduction in horizontal route extension of the last filed flight plan trajectory compared to the great circle.

In addition, the success of the Free Route Airspace Maastricht and Karlsruhe (FRAMaK) project has not only had a beneficial impact on aircraft operators, it has also enabled MUAC and Karlsruhe UAC to exceed the EU-mandated great circle deviation percentages for the first Single European Sky reference period. Current deviation runs at 1.7%, significantly lower than the 4.65% EU requirement.

I am proud to submit this report as it highlights the successful initiatives that have contributed to our strategy and performance. I am confident that everyone at MUAC will continue to strive to maintain our market-leading position in the core European area and will look forward to contributing further to the efficiency of the network.

# 2014 HIGHLIGHTS

## JAN

The Netherlands and EUROCONTROL sign a Declaration of Intent to investigate the feasibility of the co-location of military personnel of the Royal Netherlands Air force at MUAC, and the feasibility of further integrated civil/military service provision.

## FEB

In order to increase capacity and flexibility further, an additional sector is opened in the Brussels Sector Group – the Luxembourg High Sector.

## MAR

The second initial fourth dimension (i4D) test flight crosses MUAC airspace successfully, trialling the technology to connect aircraft and ground systems to optimise the aircraft trajectory in three dimensions plus time.

## APR

The London Heathrow XMAN trial begins. It aims at reducing the aircraft holding time at congested airports by lowering their cruising speed during the final en-route phase of flight.

The Central Supervisory Section (CSS) is completed, ensuring greater safety, efficiency and flexibility in the operations room while reducing the number of supervisory functions by centralising management responsibilities.

## MAY

For the 11th consecutive year, the ATM Cost-Effectiveness (ACE) 2012 Benchmarking Report confirms MUAC as one of Europe's best-performing air navigation service providers with the highest controller productivity.

## JUN

The results of the Study on a new institutional model for MUAC become available. The Study provides a set of clear recommendations for the further evolution of MUAC.

## SEP

The Just Culture Policy is signed. It aims to promote a culture of openness, trust and fairness and paves the way for the deployment of a non-punitive reporting system which aims to improve safety further by learning from errors.

## OCT

As part of a cooperation within FABEC, the French Ecole Nationale de l'Aviation Civile (ENAC), the training institute of Direction des Services de la Navigation Aérienne (DSNA) and MUAC sign a 10-year controller training agreement.

## DEC

The Free Route Airspace Maastricht and Karlsruhe (FRAMaK) project delivers a total of 466 direct routes in the upper airspace controlled by MUAC and the Karlsruhe UAC, creating a large-scale, cross-border direct route network over Belgium, most of Germany, Luxembourg and the Netherlands.

The Variable Division Flight Level is further deployed in the western part of the airspace, covering Dutch and north-west German airspace, the so-called DECO sectors. The vDFL concept allows for a more flexible and dynamic distribution of traffic between upper and lower sectors (from 24,500 feet to UNL) with a view to increasing efficiency.

MUAC is awarded ISO 9001:2008 re-certification.

## DELIVERING VALUE TO THE NETWORK

# MANAGEMENT REPORT

# KEY RESULTS

The business cycle was marked by stronger-than-expected air traffic growth and major fluctuations in traffic patterns, in particular in the western part of the airspace. Furthermore, adverse weather, industrial action in neighbouring airspace and major military activity required the application of ATFM protective measures which impacted service delivery. Despite the aforementioned challenges, the results achieved for safety, capacity, cost-effectiveness and horizontal flight efficiency were encouraging, making it possible for MUAC to meet all set targets.



## Key results vs RP1 targets at a glance

| | 2012 | 2013 | 2014 |
|---|---|---|---|
| **SAFETY** | | | |
| | Not applicable in RP1 | | |
| **CAPACITY** | | | |
| Average delay per flight in minutes | TARGET: 0.22<br>√ RESULT: 0.04 | TARGET: 0.24<br>√ RESULT: 0.07 | TARGET: 0.20<br>√ RESULT: 0.17 |
| **ENVIRONMENT** | | | |
| Reduced route extension | Not applicable at single ANSP level<br>TARGET: Reduce the route extension by 5% from 2011 to 2014, i.e. from 1.95% in 2011 to 1.86% in 2014.<br>√ RESULT: within the FABEC area the difference between the distances actually flown and the great circle distance was 1.72% in 2014. | | |
| **COST-EFFICIENCY** | | | |
| | Considered at national level (see below) | | |

## Key results vs business plan targets at a glance

| | 2014 |
|---|---|
| **SAFETY** | |
| | TARGET: Effectiveness of Safety Management – Achieve a minimum level 4 (or 80%) in each of the 11 study areas; improve Safety Culture from level 3 to level 4.<br>√ RESULT: the overall level of 80% was met, although some individual areas deteriorated. |
| **CAPACITY** | |
| Average delay per flight in minutes | TARGET: 0.20<br>√ RESULT: 0.17 |
| **ENVIRONMENT** | |
| Reduced route extension | Not applicable at single ANSP level (see table above) |
| **COST-EFFICIENCY** | |
| MUAC equivalent unit rate (€ 2014)<br><br>For RP1, MUAC was exempted from the traffic volume risk | This is a monitoring value and no target was set in the business plan. However, the Equivalent Unit Rate planned for 2014 was €24.4 (equating 155.4 M€ and 6.4 M service units)<br>√ RESULT: €22.5 (equating 145.3 M€ and 6.5 M service units) |

## DISPROPORTIONATE AND UNPREDICTED TRAFFIC GROWTH

In 2014, air traffic increased by 2.4% over 2013, reaching a total of 1,671,185 flights. This was 1.7% above the baseline scenario of the STATFOR seven-year forecast (October 2013) and marks a clear return to growth in the MUAC airspace from the 2008 pre-crisis traffic values. Remarkably, a disproportionate traffic increase was observed in the Brussels sector group.

The average daily traffic volume for the year reached 4,579 flights, while the average daily traffic volume over the key summer months (May-October) amounted to 5,040 flights. Significantly, the summer months saw a 2.1% increase in traffic compared to 2013.

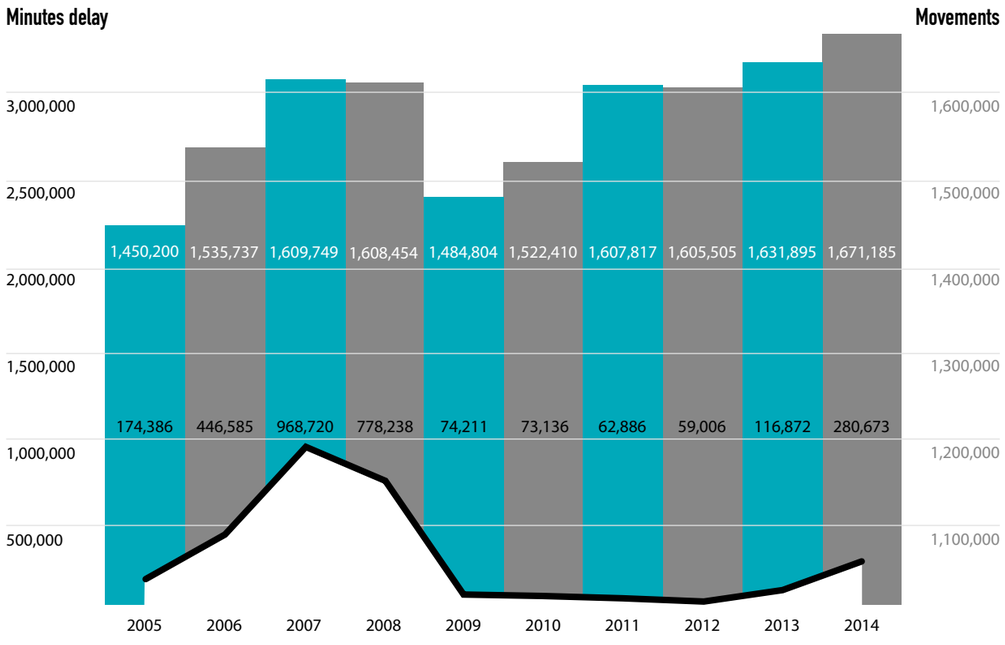
Punctuality was maintained at very high levels, with 98.9% of flights unimpeded. This helped to maintain a good level of performance with an average ATFM delay per flight of 0.17 minutes. In spite of an increase in the delay indicator between 2013 and 2014 (from 0.07 to 0.17 minutes), MUAC managed to achieve the capacity target set for 2014 of 0.20 minutes average delay per flight. The unpredicted and uneven distribution of the traffic growth across the three sector groups resulted in a marked increase in delay in the Brussels sector, which accounted for over 75% of the total delay.

With 1.96 composite flight-hours per air traffic controller-hour, MUAC maintained very high levels of air traffic controller productivity throughout the 2014 business cycle. Despite increased traffic demand, controller productivity decreased by 1.5% during 2014 due to an increase in ATCO-hours on duty. Some of the factors explaining this trend are imbalanced traffic increases among sector groups and inaccurate traffic forecasts, which impacted staff planning.

| MUAC | 2013 | 2014 | % variation |
|---|---|---|---|
| IFR flight-hours controlled | 574,812 | 587,342 | + 2,2% |
| ATCOs/OPS hours on duty | 288,931 | 299,908 | + 3,8% |
| ATCO productivity | 1.99 | 1.96 | - 1,5% |

## Air Traffic Controller (ATCO) productivity 2013-2014

ATCO productivity decreased from 1.99 in 2013 to 1.96 in 2014. This indicator is the ratio between IFR flight-hours controlled and ATCO-hours on duty. In 2014, although MUAC controlled more IFR flight hours (+2.2%), the number of ATCO-hours increased by 3.8%, generating a 1.5 % decrease in productivity.

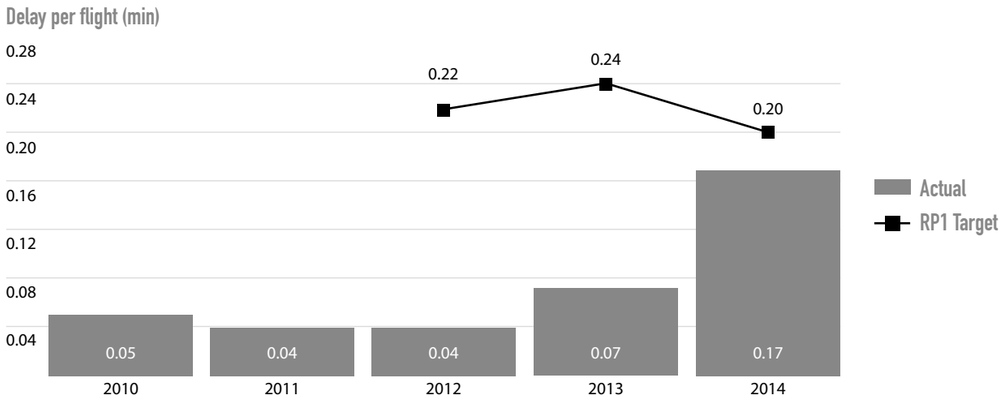



## Traffic and ATFM delay trends 2005-2014

2014 saw an increase in traffic of 2.4%. ATFM delays remained low with 98.9% of flights unimpeded. It is worth noting that although traffic bounced back to pre-crisis levels in 2011, MUAC managed to keep the total minutes of ATFM en-route delays stable.
The volume of delays reported for the years 2005-2009 in the ATM Cost-Effectiveness (ACE) Benchmarking Report, which is used to calculate the unit cost of ATFM delay, differs from the figures reported in the table above due to the exclusion of tactical delays on the ground (engine off) below 15 minutes.

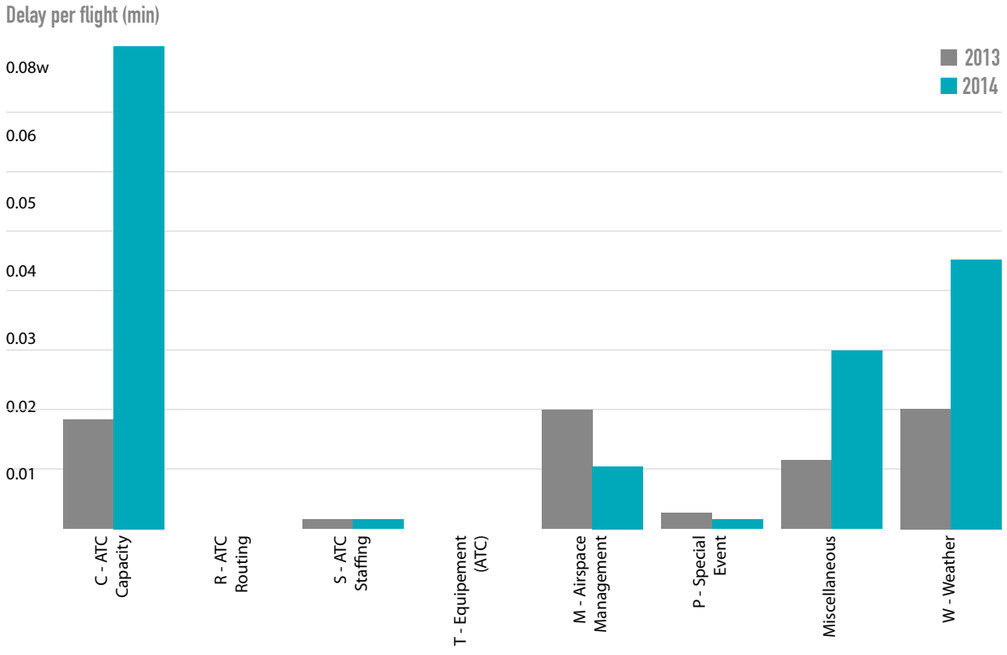


**The predicted traffic growth will mean that ATFM en-route delays will have to be kept under control in order to maximise the interdependency between the cost of delay and the cost of en-route service provision.**



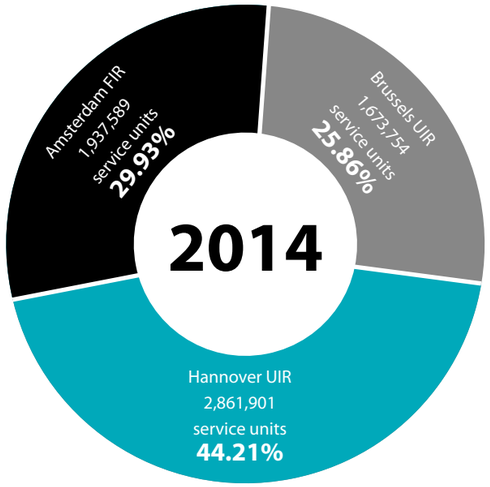

## Average en-route ATFM delay per controlled flight (2010-2014) and RP1 targets (2012-2014)

In 2014, MUAC's average en-route ATFM delay per controlled flight increased from 0.07 to 0.17 minutes. Despite this increase, which was driven by higher than forecasted traffic growth (+2.4% actual traffic vs a predicted 0.7% increase announced by the baseline scenario of STATFOR in October 2013), MUAC managed to keep its en-route delay per flight at a low level. Accordingly, the target of 0.20 minutes per controlled flight as defined within FABEC for the year 2014 was met.




## Average en-route ATFM delay per controlled flight by causes of delay (2013-2014)

This chart shows the distribution of the average MUAC en-route ATFM delay per controlled flight in 2013 and 2014. In 2014, capacity-related delay drove the increase in delay together with 'Weather' and 'Miscellaneous' impacts. The special 'Miscellaneous' category includes delay generated by restrictions in neighbouring airspace due to industrial action.




**Service units in 2014**

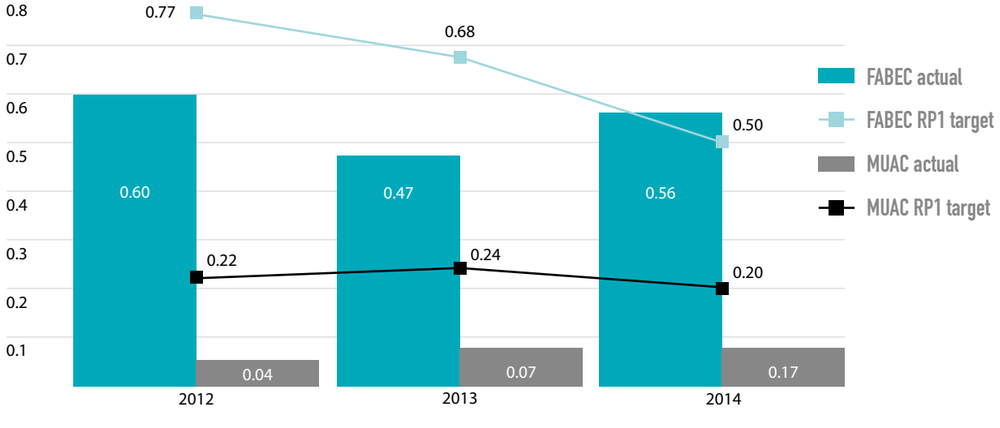
Breakdown of service units in the Amsterdam FIR, the Brussels UIR and the Hannover UIR respectively. Service units increased by +2.4% over 2013.

## MUAC'S CONTRIBUTION TO FABEC PERFORMANCE

The FABEC performance plan was drawn up to cover Reference Period 1 (RP1 - 2012 to 2014). It covers the key performance areas of safety, environment and capacity for the whole region while military mission effectiveness and cost-efficiency targets are addressed at national level. MUAC cost-efficiency targets were agreed by the Four States. In 2014, the service quality provided by the seven FABEC air navigation service providers (ANSPs) - ANA (Luxembourg), Belgocontrol (Belgium), DFS (Germany), DSNA (France), LVNL (Netherlands), MUAC and skyguide (Switzerland) - was satisfactory.

The results set out in this annual report highlight MUAC's positive contribution to the overall FABEC performance. In particular, with the further deployment of the direct route network, MUAC and its partners continued to push forward a key element of the FABEC airspace strategy aimed at achieving greater operational efficiency. This is particularly significant as flight efficiency is the fundamental factor expected to bring the most notable benefits to customers and stakeholders.

Furthermore, thanks to a good result for capacity management, MUAC contributed tangibly to the achievement of the FABEC target in 2014. Despite an increase in the average delay per flight controlled from 0.07 to 0.17 minutes for the last year of RP1, MUAC managed to achieve a score below its target, set at 0.20 for 2014. However, although MUAC performed better than the capacity target for 2014, FABEC did not manage to achieve its capacity target which was slightly exceeded by 0.06 minutes per flight.




**Average delay per flight (minutes) in the FABEC and MUAC areas during RP1**

## FINANCIAL BALANCE SLIGHTLY DETERIORATED

In 2014, the cost base amounted to €145.3 million. Although, in real terms, costs were up by 5.6% compared to 2013, they were also 3.4% lower than the 2010 costs that preceded the very low costs recorded in 2011, which were mainly driven by an exceptional reduction following the implementation of accrual accounting and the revalorisation of fixed assets. In 2014, MUAC achieved a comparable result to 2012 following the payment of a performance bonus to staff.

For this reason, in spite of a 2.2% increase in flight-hours controlled, MUAC scored a total financial cost per flight-hour of €247.

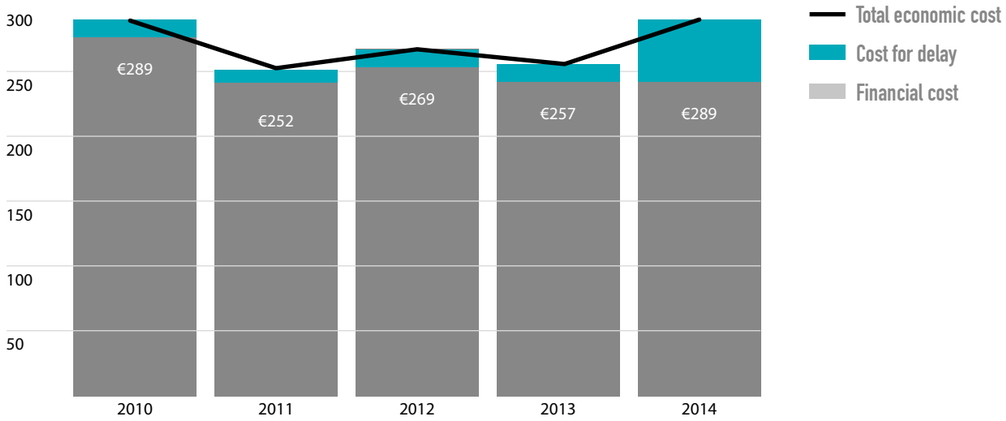
The total economic cost per flight-hour (also referred to as 'unit economic cost') is used as the main indicator of overall performance as it incorporates both cost of delay and the financial cost of ATM/CNS service provision. A slight increase in unit financial costs, coupled with a moderate increase in costs related to ATFM delay resulted in a unit economic cost of €289 per flight-hour in 2014 – an increase of 12.5%. This reflects and anticipates an increasing difficulty to manage uneven traffic flows among the three sector groups and a possible deterioration of service quality in RP2 (2015-2019). The need for a highly efficient allocation of resources and investment is underscored by this extremely challenging environment.

The key performance indicator for cost effectiveness, defined in the SES II Performance Regulation, is the unit rate. Since this is calculated on the basis of consolidated costs at national level, the concept of a MUAC-equivalent unit rate was introduced as a performance indicator taking the specific MUAC service provision costs into account. 'Equivalent' indicates that the calculation does not take the full cost of MUAC service provision into account. For example, EUROCONTROL support costs and the cost of using CNS infrastructure (which is made available free of charge by the Four States), are not included. Despite an increase in the equivalent unit rate from €21.8 to €22.5 in 2014 (+3.2% expressed in €2014), the target of €24.4 was met. This was achieved through a combination of effective cost-containment measures coupled with a slight increase in the number of service units.

| MUAC cost-base (M€ – €2014) | 2010 | 2011 | 2012 | 2013 | 2014 | Trend 2013/2014 |
|---|---|---|---|---|---|---|
| Staff costs | 119.1 | 110.9 | 121.5 | 115.0 | 123.6 | 7.4 % |
| Non-staff operating costs | 13.5 | 13.3 | 13.2 | 12.9 | 12.0 | – 7 % |
| Depreciation costs | 16.8 | 11.1 | 10.0 | 9.1 | 9.3 | 2.4 % |
| Cost of capital | 1.1 | 1.3 | 0.7 | 0.6 | 0.5 | – 10.8 % |
| Total costs (M€) | 150.5 | 136.5 | 145.3 | 137.6 | 145.3 | 5.6 % |
| Exceptional reduction | | –13.5 | | | | |
| Total costs (M€) | 150.5 | 123.0 | 145.3 | 137.6 | 145.3 | 5.6 % |

**GAT cost-base 2010 – 2014 (M€ - €2014)**

In 2014, the MUAC cost-base rose by 5.6% in real terms. This result was mainly driven by an increase of 7.4% in staff costs due to the payment of an incentive bonus. However, this temporary increase was partially compensated for by a 7% decrease in non-staff operating costs due to the rise in miscellaneous receipts and a decrease in external assistance costs. Overall, MUAC staff levels decreased by 2.8% between 2013 and 2014.




## Total economic cost per flight-hour (€2014) - Trend 2010-2014

The total economic cost per flight-hour controlled (or unit economic cost) is a standard key performance indicator used in the ATM Cost-Effectiveness (ACE) benchmarking reports, produced by the Performance Review Commission. It is the sum of ATM/CNS costs (or financial cost) and air traffic flow management delay costs per composite flight-hour.
MUAC increased its unit economic cost by 12.5% in real terms in 2014, mainly due to an increase in unit delay costs (from €18 to €42), coupled with an increase in unit financial costs from €239 to €247. In 2014, staff costs rose by €8.6 million. Over 2014, the unit economic cost bounced back to its 2010 value in real terms. However, this value was elevated by a one-off payment of a staff incentive bonus. For this reason, unit financial costs are expected to decrease in 2015.

# ACE 2013 REPORT AGAIN CONFIRMS MUAC'S STRONG PERFORMANCE

In May 2015, the ATM Cost-Effectiveness (ACE) 2013 Benchmarking Report was released, once again confirming MUAC's ranking among the top-performing ANSPs in Europe. The economic gate-to-gate cost-effectiveness indicator for MUAC amounted to €256 (€2013) per composite flight-hour while the European system average stood at €478. The economic cost-effectiveness indicator in Europe ranged from €832 to €182. It should be noted that the figures for MUAC differ from those reflected in this report which are expressed in €2014, taking into account an inflation rate of 0.3%. High levels of performance are predominantly driven by high air traffic controller efficiency, high-performing technology as well as effective management of resources and operational procedures.

# SAFETY

In line with Commission Regulation (EU) No 691/2010, laying down a performance scheme for air navigation services and network functions, the three primary leading safety performance indicators which are closely monitored at MUAC are the effectiveness of the Safety Management System (SMS), the application of the severity classification of the Risk Analysis Tool (RAT) and the reporting of Just Culture.

Lagging safety performance indicators such as the trend in separation infringements provide additional data which help to establish safety trends.

Over the course of 2014, MUAC's overall safety performance was positive. Even though the reporting culture remained excellent and all lagging indicators were also still within the defined threshold values (despite the increase in traffic), it is important to avoid complacency. The Brussels Sector Group, which experienced the highest percentage increase in traffic, also recorded the highest level of separation infringements, and had the highest number of geographical hot-spots. As a result, specific projects were set up to mitigate the effect of the traffic increase on safety performance and to address these hot-spots.

## Leading safety performance indicators

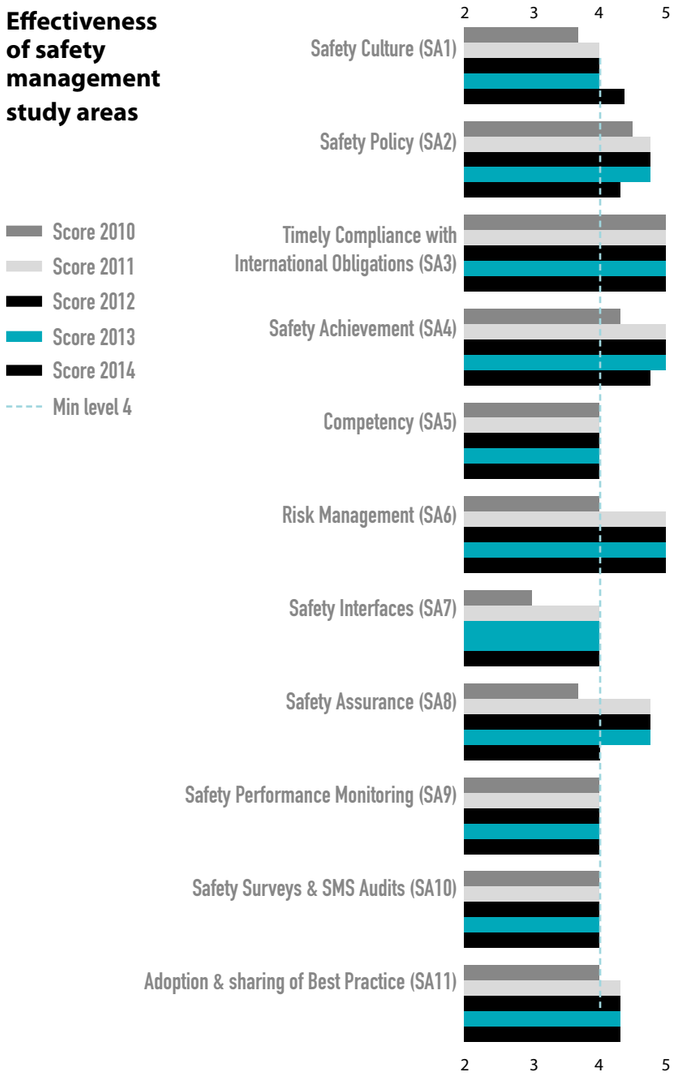
### Effectiveness of Safety Management

The internal MUAC target for 2014 was to achieve at least 80% (level 4) in each of the 11 study areas, with one specific improvement for Safety Culture - from level 3 to level 4. The overall level of 80% was achieved. Safety Culture also improved from level 3 to level 4 as a result of the Just Culture project which was launched in 2014 with the signing of the Just Culture Policy in September 2014.

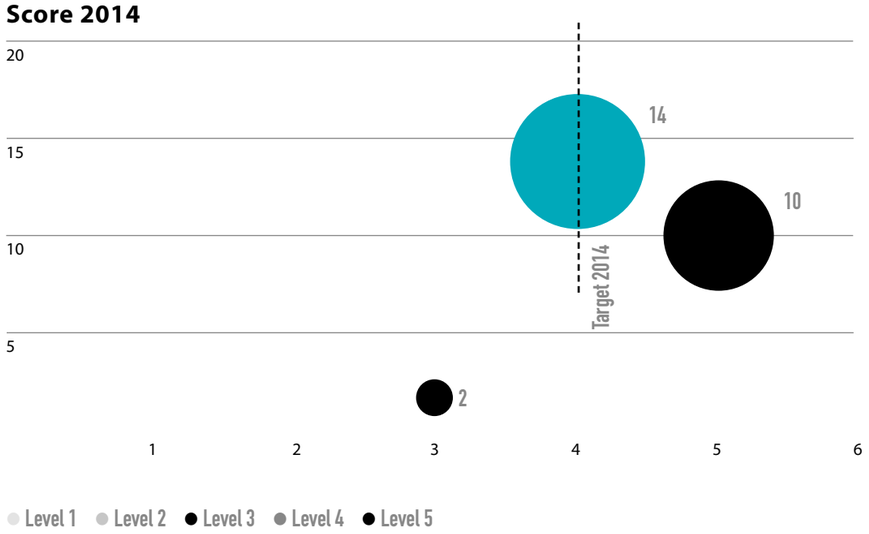
However, the scores in some other areas deteriorated, notably safety responsibilities and accountabilities, emergency/contingency response plans and the policy on information sharing.

For 2015, and with the start of RP2, the effectiveness of Safety Management will no longer be measured through the 11 study areas, but rather by means of five Management Objectives: MO1 – Safety Policy and Objectives, MO2 – Safety Risk Management, MO3 – Safety Assurance, MO4 – Safety Promotion and MO5 – Safety Culture.

**Effectiveness of safety management study areas**



## Effectiveness of Safety Management Score 2014

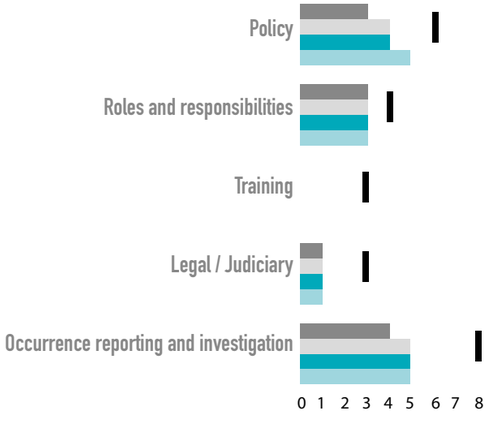



### Application of the severity classification of the Risk Analysis Tool (RAT)

Since 2012, all separation minima infringements with a MUAC contribution have been assessed using the RAT methodology and an ATM ground severity has been allocated. Moreover, since 2013, all ATM-specific technical events have been assessed using the RAT methodology. As there was no technical event that caused an impact on ATC in 2014 all events were scored severity "E".

### Reporting of Just Culture

The sign-off of the Just Culture Policy in September 2014 by the Director General of EUROCONTROL improved the scoring in the Policy domain. The Just Culture project, established in 2014, aims to achieve the targets set for RP2 in the FABEC Performance Plan.




## Just Culture key performance indicator

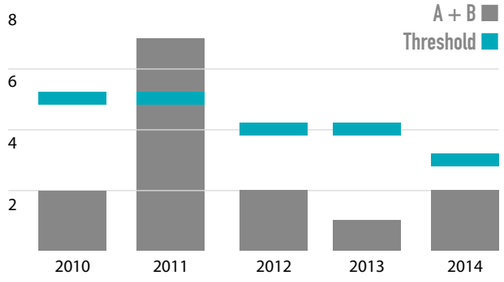
A survey of the Just Culture in place at MUAC was conducted in 2014. This graph shows the number of positive answers to the 24 questions (broken down into five domains) which were included in the Just Culture questionnaire. The questionnaire gave only two possible answers ("Yes" – 1 and "No" – 0).

## Lagging safety performance indicators

The frequency of severity A and B incidents plotted against time is the basis for the internal lagging safety key performance indicator for 2014. The annual MUAC Business Plan defines the ceiling for this self-imposed value. Additional activities are triggered whenever the ceiling is exceeded leading to further analysis as to the existence of systemic issues which may have caused these occurrences.

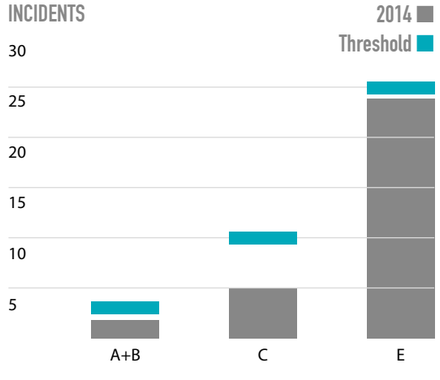
For MUAC, the most important safety goal is to ensure that, within its area of responsibility, it does not contribute to any accidents or any separation infringements. For 2014, a ceiling of three Severity A and B incidents was set to take into account the variability of the diverse factors impacting safety performance.

In 2014, the lagging safety performance indicator for MUAC was achieved; the actual number of severity A and B separation infringements attributed to MUAC was 2 (no severity A and 2 severity B incidents).




## Severity A and B separation infringements attributable to muac (2010-2014)

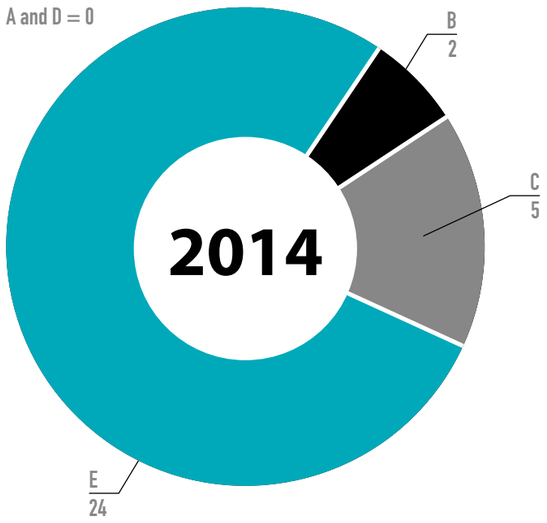
Severity A and B incidents refer to serious and major incidents respectively. Severity A (serious) refers to an incident where an aircraft proximity occurred in which there was a serious risk of collision. Severity B (major) denotes the occurrence of an aircraft proximity in which the safety of the aircraft may have been compromised. The severity scoring system based on the Risk Analysis Tool (RAT) was introduced in 2012.




**Severity A - E separation infringements attributable to MUAC (2014)**

In addition to this lagging performance indicator on the severity A and B incidents, the total number of severity C and E separation minima infringements with a MUAC contribution are also tracked. The aim of these indicators is to provide an early warning that the key performance indicator for the A and B severity classifications may be under threat, thus producing a more complete picture of the overall risks. In 2014, a ceiling of 10 severity C and 25 severity E separation minima infringements with a MUAC contribution was defined. For 2014, the actual number of incidents reported was: severity C – 5 and severity E – 24.

These safety performance indicators are the main retrospective indicators. However, they alone do not reveal weaknesses in the safety performance of individual system elements. Therefore, several additional safety indicators, designed to provide a deeper understanding of safety performance, were also tracked.




**Severity A, B, C, D and E separation infringements attributable to MUAC in 2014**

# ENVIRONMENT

## Reducing route extension

During the reporting period, flight efficiency benefits continued to be offered to airspace users at both the strategic and tactical levels in order to meet environmental targets.

At the strategic level, the introduction of additional direct routes in MUAC airspace as well as direct cross-border routes offered airspace users the potential for increased efficiencies.

Data analysis for 2014 reveals that direct route usage amounted to 61% and that the total number of NM saved by operators amounted to 850,800. In 2014, direct route usage generated savings in the order of 5,105 t of fuel and 17,016 t of $CO_2$ compared to the previous fixed-route network.

The constant effort to promote the benefits of these new routes to airlines resulted in a reduction of the cross-border flight inefficiency indicator from 8.02% in 2013 to 7.68% in 2014. This equates to a reduction of 4.4% in horizontal route extension of the last filed flight plan trajectory compared to 2013.

For several airlines, total usage of free routes was above 90% in 2014. In the MUAC airspace this resulted in a reduction of the planned route extension from 2.02% in 2013 to 1.88% in 2014, equating to a 7.4% reduction in horizontal route extension of the last filed flight plan trajectory compared to the great circle.

At the tactical level, the allocation of direct routes in 2014 generated a total route extension improvement of 3.73% compared to original flight plans. This resulted in a total flight distance reduction of 6,758,963 NM (or 4.5 NM on average per flight), saving more than 40,550 t of fuel and reducing $CO_2$ emissions by 135,179 t.

## Energy-saving initiatives and sustainable building elements

In compliance with the environmental legislation in force in the Netherlands, the local authorities are provided with an evaluation of MUAC's annual energy consumption. During 2014, the replacement of down lighters in one of the buildings generated an estimated electricity consumption reduction of 24,000 KWh/year as well as a $CO_2$ reduction of over 15 t per year.

Furthermore, in a bid to progressively and permanently improve the sustainability of MUAC's overall infrastructure, the installation of sustainable elements in the new building has ensured that the company minimises its carbon footprint. This included – amongst other things - the installation of a green moss roof, optimal insulation, glass with a low solar heat gain coefficient as well as the use of materials with a low health and environmental impact alongside energy efficient installations.

# RISK MANAGEMENT

Over the course of 2014, the MUAC risk management process was redesigned to align it with the new corporate risk management process and MUAC's new process-based organisation. The new process facilitates risk identification and monitoring at different organisational levels. Risks which are assessed to impact the achievement of MUAC's business objectives are elevated to MUAC's corporate risk register. Each risk requires a mitigating action for reducing its probability and/or impact.

MUAC's risk register is updated every quarter and discussed by the MUAC Board. It is also shared and discussed with the Agency Risk Management Group on a quarterly basis.

Additionally, in 2014, MUAC's risk management process was introduced as an item for discussion within the Maastricht Coordination Group.

In 2014, direct route usage at the strategic level generated savings in the order of 850,800 NM for aircraft operators, equating 5,105 t of fuel and 17,016 t of $CO_2$ compared to the previous fixed route network.

At the tactical level, the allocation of direct routes resulted in a total flight distance reduction of 6,758,963 NM (or 4.5 NM on average per flight), saving more than 40,550 t of fuel and reducing $CO_2$ emissions by 135,179 t.

# MANAGEMENT REPORT

# CUSTOMERS

Over the course of 2014, MUAC engaged in numerous projects and activities in an effort to further improve customer service. Customer consultations throughout the year helped to ensure that improvements fully embraced customer needs. The optimisation of airspace design and usage along with enhanced cooperation with the military partners helped to enhance the safety, efficiency and cost-effectiveness of operations. Technological solutions and innovations were further developed. Most notably, the stability of the MUAC ATC system also greatly contributed to sustained performance.



## CUSTOMER RELATIONSHIP MANAGEMENT

### Customer consultation

MUAC consults with aircraft operators at both operational and strategic levels. Every effort is made to consult with MUAC customers in the very early stages of service enhancement projects to ensure that the proposed activities are appropriate and relevant, and to bring to their attention activities that are designed specifically for their benefit. The expanded use of flight-plannable routes is a particularly pertinent example of one of these projects.

During 2014, MUAC held a number of meetings with a selection of key account customers on three different levels: operational, managerial and senior. The potential for further improvements in operational and technical activities was explored during these meetings. Better understanding of each other's positions and needs was gained, knowledge was shared, and those involved in the consultations committed to continue working together on all levels.

The MUAC initiative to supply aircraft operators with bespoke airspace usage reports has resulted in savings sometimes amounting to millions of euros by enabling operators to reduce the amount of fuel carried on each flight. Another benefit of the reports is that they help operators monitor flight-planning performance by identifying routes which are not flown, as well as unused call signs.

In November 2014, the annual plenary MUAC Customer Consultation meeting covered topics such as air navigation costs, performance, flight efficiency, 'Just Culture', safety and future programmes. It also addressed aircraft operators' specific requirements in open and honest discussions. In all, 13 aircraft operator representatives participated in the meeting. The outcome of the discussions highlighted the customers' continued satisfaction with the consultation process and MUAC's performance. Numerous actions for the future also emerged from this meeting, once again underlining the value of close relationships with the customer.

### Identifying appropriate offload scenarios to minimise operator costs

The initiative, undertaken by MUAC Flow Management specialists in collaboration with customers, to improve the MUAC level-cap scenario portfolio continued throughout 2014. The costs of implementing a level-cap scenario, whereby operators agree to alter flight-level requests to a sector below the original, are estimated according to the distances flown. Being able to calculate the costs more precisely is important in order to establish whether a level-cap scenario, introduced to alleviate traffic demand, might be less efficient than a regulation.

To improve the levels of accuracy, MUAC Aircraft Operator Liaison asked customers for data on the true cost and impact they incur from any given scenario. Customer opinions about the concept were also collected. This data was shared with the Flow Management Scenario Planner, the Planning Supervisor and the Capacity Assessment Team to aid operational planning decisions.

The Network Manager will establish a database of approximate cost (true cost varies slightly from flight to flight according to wind conditions and take-off weights) which will be used to build up a table ranging from the most efficient to the most costly scenarios. This will then be referred to by Flow Management for both pre-tactical and tactical use.

### Customer engagement via eurSky

Since 2012, MUAC has been engaging with its customers via the eurSky online customer forum. Now in its third year, eurSky is most highly regarded for its distribution of Free Route Airspace reports and the support it offers in the planning for direct routes.

It is being increasingly used as a collection tool for customer requirements as well as a platform for responding to them. Furthermore, MUAC regularly broadcasts pre-tactical, tactical and other important information, including operational campaigns on the forum.

Online business social networking offers clear added value and MUAC has helped and encouraged customers to use the medium in the way that best suits their own specific needs. Less formal links were created with a growing number of customers who can decide just how and when they want to use the system.

# MANAGING ATM SERVICES

The entire ATM Services Delivery process is being continuously assessed and refined to maintain excellent service quality, increase controller productivity and enhance safety. Despite a challenging environment, in which traffic grew stronger than forecasts predicted, MUAC continued to provide safe and sustainable ATM services.

As well as technical developments, local contingency arrangements were also reviewed and improved to secure the stability and long-term availability of MUAC services.

With the introduction of additional sectorisation options, and a supervisory team with a clear focus on performance, MUAC was able to achieve the RP1 capacity target. However, the significant traffic growth meant that the summer months were extremely busy, resulting in some delay.

In order to support supervisory staff in their decision-making processes during daily operations, emphasis has been put on improving reporting and monitoring mechanisms. Consequently, the occurrence and problem management processes were aligned across MUAC activities to ensure that all reported operational and technical issues are followed up with a thorough investigation and a swift injection into the Change Management Process. Results are then reported back to the originator in a timely and comprehensive manner. Improvements of the post-operations analysis process - as the basis for preparation of the day of operations - will be addressed in 2015.

# OPTIMISING AIRSPACE DESIGN AND USAGE FOR SUSTAINED PERFORMANCE

## Free Route Airspace gains ground

With close to 900 direct routes published in the upper airspace controlled by MUAC and the DFS Karlsruhe UAC, the network of direct, flight-plannable cross-border routes has expanded considerably over the past three years as part of the Free Route Airspace Maastricht and Karlsruhe (FRAMaK) project. This has created a large-scale free routing airspace over Belgium, most of Germany, Luxembourg and the Netherlands which has delivered significant reductions in both airline costs and $CO_2$ emissions.

As a result, MUAC and Karlsruhe UAC exceeded the EU-mandated great circle deviation percentages for the first Single European Sky reference period. Current deviation runs at 1.7%, significantly lower than the 4.65% EU requirement.

The success of this project was recently recognised at the World ATM Congress where it was honoured with a Jane's Award for its outstanding achievement in the Environment category.

From 2012 to 2014, the FRAMaK project was sponsored by the SESAR Joint Undertaking and was part of the Functional Airspace Block Europe Central (FABEC) Free Route Airspace Programme. The project partners were DFS, EUROCONTROL, MUAC and Lufthansa.

The FABEC Free Route Airspace Programme defines a stepped and gradual implementation approach whereby FABEC area control centres will develop and implement FABEC-wide cross-border free route airspace.

Since 2012, when the Free Route Airspace programme was first launched, more than 470 direct routes have been implemented in the MUAC airspace alone.

MUAC and its neighbouring partners closely coordinated free route implementation in order to maximise benefits. In addition, an ad hoc coordination group, the North Sea Regional Focus Group (NSRFG) is helping to align efforts with Danish and Swedish free route projects as part of the Route Network Development Sub-Group (RNDSG).

Although most aircraft operators make good use of available free routes, overall usage could be improved. Therefore, work has been under way to raise airlines' awareness of the financial and operational benefits generated by free routes to encourage greater usage.

## FABEC Flow Optimisation Concept Scenario (FOCS)

The FOCS study was launched to help develop an airspace design for the core area of FABEC that will contribute to performance targets for both horizontal flight efficiency and capacity. MUAC has already participated in an initial study to identify possible improvements to the interfaces between the Brussels Sector Group and adjacent/subjacent partners.

## FABEC Implementation Package South-East

The aim of the FABEC South-East project is to modify two major European ATS routes in order to eliminate two crossing points. This project also intends to introduce a revised military cross-border area 22 (CBA22), combining the current TRA Lauter airspace over Germany and the TSA22 airspace over France.

Following a successful real-time simulation to validate the airspace redesign in October 2013 at EUROCONTROL's facility in Brétigny, initial implementation was planned for November 2014. However, FABEC has since decided to postpone the implementation until March 2016.

## FABEC Cross-Border Area (CBA) Land-Central West

Whilst the FABEC CBA Land (Step 1) and Central West (Step 2) airspace design project continued throughout 2014, the final implementation of both steps was postponed. Future changes affecting the FABEC CBA Land airspace are currently being further investigated.

## Variable Division Flight Level (vDFL) extended

The variable Division Flight Level (vDFL) concept enables more flexible and dynamic distribution of traffic between MUAC upper and lower sectors (from FL245 to UNL) thereby increasing efficiency. As such, it is the first step towards the introduction of the dynamic sectorisation concept for the Single European Sky ATM Research (SESAR) vision.

Following the successful implementation of a vDFL in the eastern part of MUAC airspace in December 2013, the concept was more widely deployed in December 2014 to the western part of the airspace covering the DECO sectors over Dutch and north-west German airspace.

In the DECO sectors, the division flight level between the upper and lower sectors was fixed at FL345. However, since traffic distribution is not constant throughout the day, the introduction of vDFL facilitated varying the division flight level between sectors. In this way, the optimum sector configuration/sector volumes can be chosen to meet traffic demand. Better distribution of traffic between sectors results in increased operational staff efficiency, more capacity for future traffic increases (without the requirement to apply traffic-management measures) and improved environmental impacts since more traffic can fly at higher levels.

The continued development of this process will see an expansion of the concept to the densest and most complex areas of MUAC airspace – above Belgium and Luxembourg – increasing ATM performance further still.

## Cross-border Arrival Management - XMAN

In April 2014, following a request by the United Kingdom's NATS ANSP, the trial of the XMAN London Heathrow (EGLL) concept began. This trial involved the co-operation and support of the London, Maastricht, Prestwick, Reims and Shannon ATC centres.

After completing the work on the basic step in 2013, the group of experts finalised the Concept of Operations on the advanced step in 2014. That step will optimise and balance delay-sharing in FABEC airspace which will streamline the traffic in the transition airspace and prevent interference between individual traffic streams to/from major airports. In 2015, the group will focus on the architecture and requirements to make that step a reality. These measures will improve the en-route part of cross-centre arrival management.

The success of the XMAN London Heathrow project was recently recognised at the 2015 World ATM Congress where it was honoured with a Jane's Award for its outstanding achievement in the Enabling Technology category.

The goal of XMAN is to decrease aircraft holding times at congested airports by reducing their cruising speeds during the final en-route phase of flight. In doing so, flight efficiency is increased as fuel burn levels and $CO_2$ emissions fall. Moreover, less airborne congestion in terminal areas will also contribute to improved operational safety by reducing pilot/ATC workload.

The resulting feedback from the summer 2014 XMAN EGLL trial supported the feasibility of the concept in MUAC airspace. As a result, it was agreed that a solution that would require a number of technical changes should be implemented. If operational conditions allow, trials will take place throughout the summer of 2015.

XMAN plays an important role within the FABEC airspace strategy and the overall Single European Sky vision. FABEC goals are for the XMAN procedure to be rolled out initially for the main airports in and adjacent to FABEC: Amsterdam, Frankfurt, London Heathrow, Munich and Paris Charles de Gaulle. In line with the requirements set out in the European Implementing Rule, the XMAN procedure will be extended to a total of 25 European airports between now and 2024.

## Brussels Relief Study

In June 2014, the Brussels Relief Study was launched to investigate the feasibility of creating a third layer within the Brussels Sector Group to alleviate traffic overloads. The study involved simulations to test various internal sector configurations. Following the success of these simulations, the study was turned into an implementation project, with initial results expected by December 2015. Continued investigations throughout 2016 will determine the future feasibility of splitting this third layer even further.

As a bi-product of this study, the implementation of the Olno High sector took place in April 2015.

## New Luxembourg high sector

A new sector combination, based on the Luxembourg High sector, was added to the list of possible configurations for the Brussels Sector Group in April 2013. However, this configuration was temporarily withdrawn from operational use so that internal transfer procedures could be assessed. The subsequent assessment was concluded in February 2014, after which, the Luxembourg High sector was returned to operational service.

This additional configuration can be used, under certain conditions, to balance sector workload according to traffic demand and the composition in the eastern part of the Brussels Sector Group. This results in better use of resources and contributes to greater controller productivity.

## Munster Clip

As a result of the Maastricht Airspace Re-Structuring (MARS-2) project, aimed at streamlining current sector boundaries with direct routes, the boundary between the north-western part of the Munster sector and the Delta sector will be straightened. This will reduce unnecessary controller inputs, thereby lessening workload whilst increasing safety and efficiency.

## Optimising civil/military coordination

In 2014, the Amsterdam FIR airspace was optimised by improving the coordination of airspace usage between the Royal Netherlands Air force (Air Defence and ATC) and MUAC. Areas and requirements were reviewed in order to allow, wherever possible, maximum usage of the airspace without putting additional restrictions on civil or military requirements.

## Provision of Military ATS in the Amsterdam FIR

Following up on the Netherland's Airspace Vision, a feasibility study was initiated in January 2014 to look at the possibility of transferring the provision of military ATS in the Amsterdam FIR above FL245 to MUAC.

The project, which is expected to generate network capacity gains, will also increase safety levels thanks to enhanced co-ordination and improved controller situational awareness. In addition, the project will also optimise and simplify airspace management in the Amsterdam FIR upper airspace as only one ANSP will operate in this airspace. Full implementation is expected in the course of 2016.

## Lippe Radar integration

The German Government is considering entrusting MUAC with the service provision for operational air traffic (OAT) services in the Hannover UIR as a follow-up to the study on a new institutional model for Maastricht UAC - Phase 2. The key aims of the Lippe Radar OAT integration project are to provide the German Ministry of Defence with an efficient and effective OAT service in the Hannover UIR at a cost lower than is currently the case, whilst assuring current high levels of safety, service and performance.

This would make it possible for MUAC to become an integrated civil/military service provider which would enhance the overall effectiveness of the network. With the support of the German Authorities, the proposal was submitted for the approval of the Provisional Council in early 2015. In order to maintain the momentum, preparatory work covering the different aspects of the integration (e.g. legal, financial, human resources, licensing and training aspects) was kicked off.

## Mitigating the effects of Frisian Flag

The annual NATO Frisian Flag exercise presents many challenges for both MUAC and aircraft operators. Considerable work was done to mitigate the effects of the April 2014 exercise and ensure safe and efficient operations. Unfortunately, route extensions and high delays in the Delta and Jever sectors could not be avoided.

# TECHNOLOGY

## ATFCM/ASM tools portfolio

Throughout 2014, work continued on the improvement of Air Traffic Flow and Capacity Management/Airspace Management (ATFCM/ASM) tools. These deliver efficiency and capacity enhancements by improving the planning of available human and airspace resources months ahead of the day of operations (e.g. the strategic ATFCM phase). Crucially, they will also help achieve environmental performance targets.

### Advanced Flexible Use of Airspace – LARA (Local And sub-Regional ASM)

Flexible Use of Airspace (FUA) and Collaborative Decision Making (CDM) are important concepts which are helping to drive the implementation of the Single European Sky (SES) vision. Consequently, increased adoption, and incremental development of LARA (Local And sub-Regional ASM) is key to this process. The tool, which is being developed with the support of the European Commission (EC), covers the entire spectrum of airspace management from ASM levels 2 and 3 (including real-time coordination of airspace activation) to long-term planning.

MUAC is now integrated in the Belgian cluster: all LARA workstations for the Belgian airspace are connected over a network to the central LARA BE server installed and maintained at MUAC. While this in itself brings immediate operational benefits, it will also allow a direct feed of military airspace planning data into the Flight Data Processing System (FDPS) to further automate the display of active training areas on controller human-machine interfaces (HMIs). In May 2014, improvements to both LARA and the FDPS were carried out and validated over a week-long live trial with the Belgian Air Force. Operational use is planned for 2016.

Meanwhile, integration of MUAC into a Dutch cluster, and the subsequent connection of LARA NL to the MUAC FDPS is technically ready. Shadow mode is foreseen in the 2nd half of 2015 and operational implementation in early 2016, pending final implementation by the Royal Netherlands Air Force.

Under the SESAR umbrella, LARA will continue to expand its reach with a link to the German ASM tool (STANLY-ACOS), and to the Network Manager (NM) which will then be able to receive real-time information from local LARA systems.

### Airspace Design and Validation Tool Suite

The Airspace Design and Validation Tool Suite is used to assist with the simplification of airspace design processes and improve the way airspace modifications are introduced. They are specifically targeted at capacity-related functions, particularly workload-related issues.

The toolset's main purpose was to fill the gap between specific MUAC requirements for supporting enhanced performance, and existing generic tools developed by the Network Manager, including the Network Strategic Tool (NEST). In 2013, MUAC established a close cooperation with the Network Manager to further enhance NEST. The first extension modules, covering rostering and sector optimisation, were delivered in 2013. In 2014, an entire set of plug-ins, tailored to MUAC's specific needs, was developed at MUAC and integrated with the NEST application. The project has now been completed and tool usage is monitored and coordinated by the newly established local NEST Users Group.

### Integrated Flow Management Position (iFMP)

After intensive development and operational validation work, carried out throughout 2014, the integrated Flow Management Position (iFMP) became operational at MUAC on 3 February 2015. The iFMP is one of the most promising technical developments in the area of Air Traffic Flow and Capacity Management (ATFCM). It is specifically designed to assist with complexity management, workload prediction and traffic management. Using trajectory predictions from both the Network Manager's system and the local flight data processing system, the tool anticipates the traffic situation according to occupancy and entry rates as well as complexity counts up to six hours in advance. It also contains a sector optimiser that can identify the best sectorisation whilst investigating alternatives.

To maximise efficiency, it is fully integrated with the TimeZone manpower planning tool developed at MUAC. The user-friendly interface offers bar graphs which are fully configurable and integrated with a geographical display of expected traffic flows and flight lists. The tool also displays an overview of the weather situation at major airports and is capable of accessing real-time information (European Airspace Use Plan/European Updated Airspace Use Plan (EAUP/EUUP) and Regulations) available in the Network Manager's systems via B2B web services. The iFMP integrates new ideas and concepts being explored under the SESAR programme, in the area of Flow and Complexity Management, and serves as MUAC's validation platform in these areas. Future developments encompass integration with the ATC system to feed it with planned sectorisation and Short-Term ATFCM Measures (STAM), a connection to the tactical ASM systems as well as increased data exchange with Network Manager systems via B2B services.

## Radio Direction Finder System (RDFS)

The Radio Direction Finder System (RDFS) aims to locate aircraft based on radio transmissions, by deploying a set of state-of-the-art radio direction finders, developing triangulation software to accurately calculate the position of an aircraft during transmissions on the sector frequency and finally by providing a visual display of this information on the controller's integrated HMI. The activities carried out in 2014 concentrated on the preparation and subsequent launch of the call for tenders for the RDF equipment and the associated installation/connectivity tasks. The contract was signed early May 2015.

## New management information tools in support of the 2.0 management system

It is absolutely vital for MUAC to continuously enhance operational performance, fine-tune management processes and improve organisational transparency in order to respond to the pressures originating from,

amongst other things: the EU performance scheme, continued FABEC development and the constant evolution of the airline industry. Throughout 2014, the development of the integrated ISO-compliant 2.0 management system continued together with its associated processes, procedures and a new portfolio of management information tools. These tools include a central project intelligence database, a competence and skills database, numerous reporting tools, a multi-annual planning tool along with an information board. The target date for completion is 2015.

## FABEC - DSNA and MUAC jointly procure voice communication system

The new-generation Voice Communications System (VCS), which was launched in 2011 following the signing of a contract between MUAC, the French Direction des Services de la Navigation Aérienne (DSNA) and equipment supplier Frequentis, will be deployed at MUAC from the end of 2015 and, in the following years, across French air traffic control facilities. Notably, the VCS will incorporate a baseline for dynamic and flexible operational concepts supporting remote users and involving multiple centres. Its primary function is to maintain safe controller-pilot and controller-controller voice communications. As part of this project, improvements to the VCS integration with the controller's HMI will be implemented.

## Air Ground Data Link in operation since 2003

Over the 2014 business cycle, MUAC continued work, under challenging conditions, to ensure that airline operators were provided with the best possible data link services as defined in the Data Link Services Implementing Rule for ANSPs as well as Future Air Navigation System (FANS) 1/A services.

Controller-Pilot Data Link (CPDLC) operations via the aeronautical telecommunications network (ATN) continued to experience issues impacting the robustness of airborne equipment which was affected differently depending on the communication service provision infrastructure. Despite continued successful avionics filtering, carried out by means of a white list established with skyguide, a significantly higher level of communication drop outs (so-called 'provider aborts') were noted with one particular communication service provider. This led to a loss of confidence in the system and a subsequent drop in use by the aviation community which increased controller workload. In order to continue data link services, whilst maintaining safety levels during the busy summer period, MUAC had to restrict the data link services provided by the communication service provider concerned.

MUAC also continued to share its 20-year operational experience with the LINK 2000+ Central Reporting Office in order to standardise procedures across the Link area as well as investigate the root causes of the connectivity issues. MUAC also supported several live data link end-to-end validation flights, paving the way for urgently needed avionics software upgrades of several avionics providers' equipment. Improved feedback was delivered to communications service providers, airlines and avionic providers concerning the observed technical issues, thus providing the basis for further detailed investigation and trouble-shooting.

Data link communications in the MUAC airspace have been steadily increasing over recent years, and in 2014, on average some 340 data link messages were exchanged every day with more than 100 participating airlines. MUAC strongly believes in the future potential of CPDLC and hopes that the technical problems can be resolved through cooperation with our partners, allowing this technology to deliver its full benefits.

# SESAR DEVELOPMENT PHASE – VALIDATIONS OF SYSTEMS AND OPERATIONAL CONCEPTS

For many years, MUAC has been sharing its Industrial Based Platform (IBP) for the conduct of SESAR pre-operational validations in technologies likely to become important future performance enablers. Not only does this help the progress of the SESAR programme, it also allows MUAC to continuously evolve the IBP through lessons learned. A sample of some of these validation activities are highlighted below.

## Air-ground interoperability – Preparing for the second Initial Four-Dimensional (i4D) flight trial

Initial Four-Dimensional (i4D) trajectory management will improve air traffic predictability and efficiency resulting in reduced emissions. The second flight trial to test the air-ground data exchange and concept of flying to the fourth dimension – time - took place in March 2014. This second trial followed the world's first ever in February 2012. A number of SESAR partners collaborated on the i4D trials including the aircraft manufacturer Airbus, avionics and ground equipment producers Honeywell, Indra and Thales as well as two ANSPs – LVF and Naviair.

By the end of 2013, the IBP had evolved into its final iteration for the i4D Step C validations. This last baseline is now also used to support a large-scale i4D data-gathering exercise known as the PEGASE project using Airbus ferry flights between Hamburg and Toulouse.

Specific i4D validations at MUAC finished in 2014, but further work continues as part of the validations in a wider operational context under the Trajectory Management Framework (TMF) programme.

## Ground-ground interoperability

During 2014, work concentrated on testing and maturing the first baseline of the interoperability (IOP) systems using the results obtained in the November 2013 trial. These IOP systems are based on System Wide Information Management (SWIM) technology and introduce the concept of Flight Objects to replace the legacy On-Line Data Interchange (OLDI) technology. In order to achieve greater efficiencies, IOP-related ground-ground interoperability work has been merged into the TMF programme which integrates other operational concepts and tools.

A number of technical tests were executed in 2014. The next series of validations involving DFS and MUAC are planned for the second quarter of 2015. Work was also carried out in 2014 to determine how to establish better links with the Network Manager. Formal validations are planned for mid-2015.

## Flow and Complexity Management

MUAC has been involved in the dynamic Demand and Capacity Balancing (dDCB), Complexity Management and Advanced Flexible Use of Airspace (AFUA) projects from the very beginning of the SESAR programme. As all three of these areas are interrelated, it is planned to integrate them into the single integrated Flow Management Position (iFMP). The MUAC's LARA ASM tool will be used for some elements of the AFUA validations.

Short-Term ATFCM Measures (STAM) are part of the dDCB activities aimed at defining a formalised and standard workflow process for the European network. The objective is to encourage greater use of STAM by a larger number of control centres, and to increase the predictability of the network. Today's application of STAM is based on bilateral agreements between adjacent control centres and airspace operators. MUAC Flow Management staff members have been pioneering the use of STAM for almost a decade now to help them manage capacity. The current coordination process between ANSPs, airline operators and the Network Manager takes place bilaterally by phone, and therefore the agreed measures are not visible to the overall network. An initial trial, attempting to formalise the STAM process, took place in 2011 with MUAC and a very limited number of participating ANSPs and airlines, using simple tools.

In October 2014, a follow-up STAM live trial was carried out using the Network Operations Portal (NOP) provided by the Network Manager with a large participation of airlines and ANSPs, including MUAC. This successful trial aimed to bring the STAM concept to a higher maturity and to address the application of STAM in a large portion of Europe. Coordinating and publishing measures across the network in this way should bring benefits in terms of safety, efficiency and predictability.

The STAM functionality, based on newly developed B2B services by the NM, is planned to be implemented and validated in the iFMP in 2015. The Complexity Management validations, based on iFMP's weighted occupancy formula, are also planned for 2015.

## SESAR2020

MUAC will continue with research and development activities under the SESAR programme in the future. However, since the current SESAR structure is due to be extended through to the end of 2016, these activities will be covered under the upcoming SESAR2020 programme.

During 2014, MUAC defined the initial ambitions with regard to SESAR2020, which are linked to the activities described above, but also to the upcoming mandates as defined in the Pilot Common Projects (PCP). MUAC will further detail its proposed commitment in the SESAR2020 bidding phase which is planned to be concluded by the summer of 2015.

# MANAGEMENT REPORT

# PEOPLE

Over the reporting period, the number of employees went down by 2.8% from 642 in 2013 to 624 in 2014. However, the steep increase in traffic experienced in summer 2014, combined with the high controller outflow expected in the next 10 years, highlighted the need to resume air traffic controller training at the earliest opportunity to ensure sustained performance.



## IMPROVED ORGANISATIONAL STRUCTURE FOR GREATER PERFORMANCE

The final steps of the re-organisation were completed in 2014 with the implementation of the new process-based matrix structure. Other significant advances were also achieved with the prioritisation of projects and activities in line with the strategy including, the completion of the new integrated ISO-compliant management system which led to ISO 9001:2008 re-certification in December 2014, the further enhancement of communications processes and improvements to management information systems.

## AGILE MANPOWER PLANNING

Manpower planning is continuously being monitored with regards to both the controller and support functions.

Controller manpower planning was impacted by fluctuating traffic demand which saw a substantial upturn recorded over the reporting period, instead of a predicted downturn. Although the targets, which were set as part of the performance scheme were met, training will have to resume at a faster pace than originally anticipated in order to meet future targets.

For the support functions, the objective was to contain, or where possible, lower staff numbers. Therefore, over the reporting period, internal solutions were pursued instead of recruiting externally. Wherever possible, contracts where not renewed and, as part of the MUAC performance incentive scheme, six additional staff members resigned in exchange for a lump sum payment. These posts will either remain vacant for two years or will be removed altogether.

Overall staff numbers went down by 18 full-time equivalent (FTE) employees – equating to 2.8% of the staff complement of the previous year.

## NEW CONTROLLER TRAINING PROGRAMME

In 2014, the 10-year 'Solution for Mutual ATCO en-Route Training' (SMART) agreement was signed. This cooperative programme within FABEC, which involves ENAC (the training institute of Direction des Services de la Navigation Aérienne, DSNA), and MUAC is a logical step in further cooperation and consolidation of the training within FABEC.

New MUAC students will be able to participate in the first part of the initial training (basic as well as the en-route ratings), following the same programme as the ENAC student controllers, before completing their curriculum with an intensive phase of customised training with greater practical emphasis. This pre-transition phase will prepare them for their future complex operational environment, working methods and high traffic density, using the advanced HMI available at MUAC. The first course started in Toulouse in May 2015 with eight students.

## REVIEWING THE ENTIRE CONTROLLER TRAINING LIFE CYCLE

Over the reporting period, a complete review of the controller training life cycle was launched to match the ENAC initial training, and to make best use of pedagogical, didactical, social and environmental changes. The New Unit Training project has been set up to ensure that the course design and level of instruction are of the highest quality in order to maximise the overall student pass rate. At present, the average ab-initio pass rate is in the region of 40 - 50%. An increased pass rate will enable MUAC to reduce the overall ab-initio training requirement and associated costs.

## MANAGING DAILY OPERATIONS MORE EFFECTIVELY

The Central Supervisory Section (CSS) project aimed at ensuring that operations are undertaken in the safest, most efficient and flexible way possible was completed in April 2014. Following its implementation, it has been possible to reduce the number of supervisory functions from 54 to 45 by centralising management responsibilities. The harmonised and integrated processes in the operations room are now managed from a centralised position by a team composed of an executive duty supervisor, an assistant to the duty supervisor, a tactical supervisor, a capacity supervisor and a tactical capacity manager.

## SOCIAL DIALOGUE

Social dialogue activities in 2014 continued at both Agency and MUAC levels through the Agency consultation process involving the trade unions and meetings of the Staff Committee Servants with senior management.

At Agency level, 2014 was a year in which the social dialogue process was refocused with most of the effort being spent on re-establishing a cooperative way of working together with a higher level of trust on all sides.

Within MUAC, the management provided regular feedback to the Staff Committee Servants on MUAC's activities and its involvement within FABEC. They also followed up on staff concerns raised by the Staff Committee.

## Gender distribution (31 December 2014)

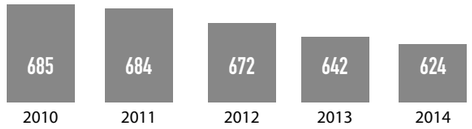
Female employees

118 = 19 %

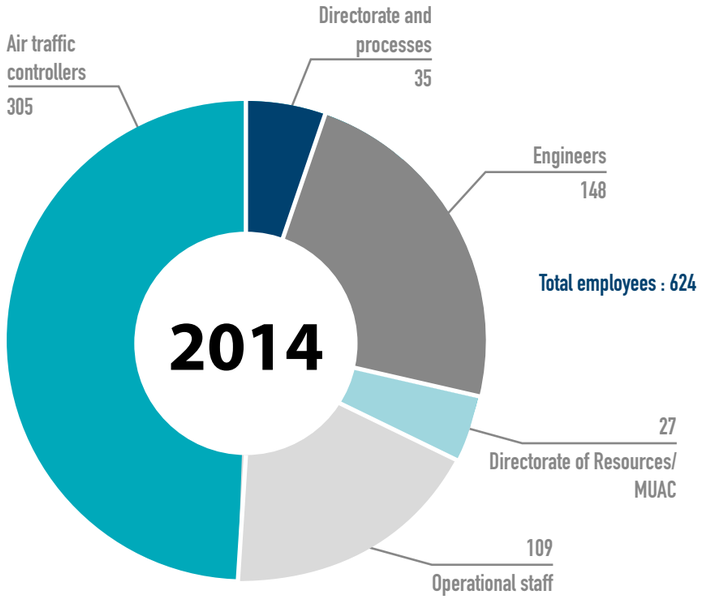
Male employees

506 = 81 %

## Staffing trends 2010 – 2014



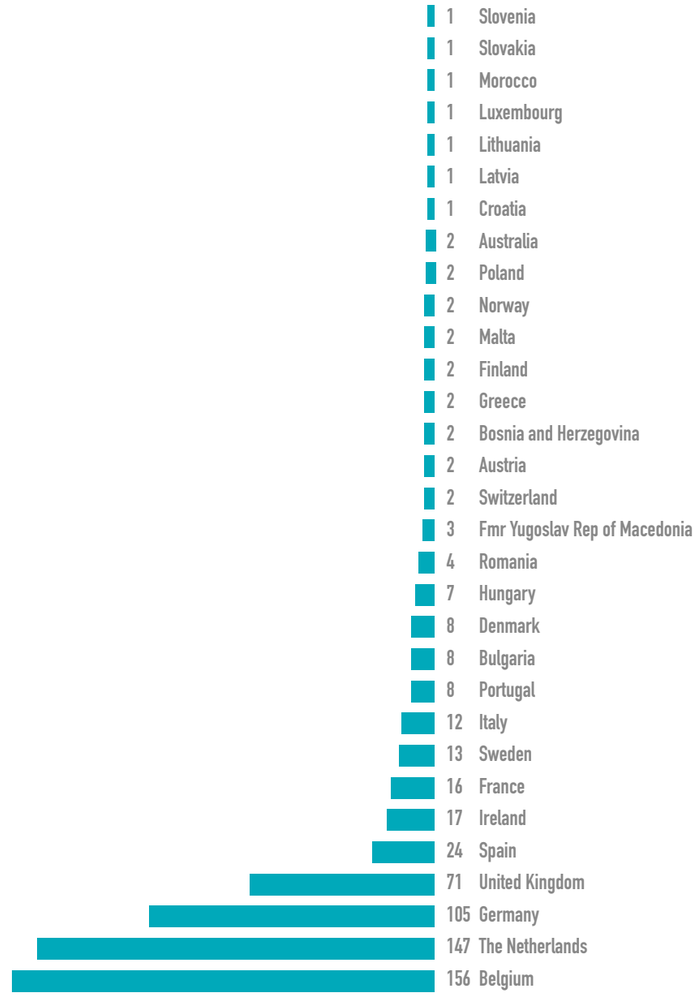

| 31 December 2014 | |
|---|---|
| **Breakdown of staff in the different core business units** | |
| Directorate and processes | 35 |
| Operational staff | 109 |
| Air traffic controllers | 305 |
| Engineering | 148 |
| Directorate of Resources/MUAC | 27 |
| TOTAL | 624 |




**Breakdown of staff in the different core business units (2014)**

| 31 December 2014 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|
| **Air traffic controllers per sector group** | | | | | |
| DECO | 80 | 84 | 91 | 93 | 97 |
| Hannover | 100 | 103 | 100 | 101 | 101 |
| Brussels | 100 | 103 | 106 | 107 | 107 |
| TOTAL | 280 | 290 | 297 | 301 | 305 |
| **Newly qualified air traffic controllers** | 17 | 10 | 7 | 6 | 9 |
| **Staff in- and outflow** | | | | | |
| Retirements | 10 | 5 | 6 | 14 | 11 |
| Other outflow* | 31 | 29 | 14 | 19 | 18 |
| Recruitment (except air traffic controllers) | 13 | 9 | 5 | 6 | 2 |
| Student air traffic controllers (ab initio and conversion) | 16 | 16 | 8 | 0 | 0 |

* Other outflow refers to student air traffic controller dismissals, resignations, early terminations of service, transfers to other EUROCONTROL units, unpaid leave, invalidity, end of contract, contract terminations or death in service.




**Staff nationalities in 2014**

# MANAGEMENT REPORT

# BUSINESS OUTLOOK



As business confidence within the Eurozone progressively returns, air traffic growth of more than 3% is expected in MUAC airspace for 2015. Once again, it is expected that growth will surpass the low scenario of the STATFOR seven-year traffic forecast. Therefore, to guarantee the accuracy of the business planning process, it is more prudent to rely on the STATFOR baseline scenario rather than on the low one. These traffic increases will be closely monitored in order to ensure an adequate response to, and handling of, the demand.

Current trends indicate a clear shift in traffic flows from the eastern part of the airspace to the west. This will inevitably pose additional operational challenges, particularly in terms of bottlenecks within an already congested airspace structure in the Brussels sectors.

Whilst 2014 was a challenging year in terms of successfully matching demand with appropriate output, it is expected that 2015 and the years beyond will be even more challenging. This will undoubtedly necessitate a high level of initiative and resourcefulness in all areas of the business to achieve the same high level of success.

To help mitigate the increased traffic demand, numerous programmes at operational, technical, human resources and managerial levels are being developed and implemented. The benefits of these initiatives will be regularly assessed with regards to the performance benefits each one may bring.

Innovative approaches are being developed to investigate and establish solutions to the problems of limited extensibility of the existing ATC methodology as well as to optimise the pre-tactical process.

From the controller resources perspective, and taking into account the duration of the controller training programme as well as the expected outflow in the next 10 years, it is essential that the appropriate recruitment measures are implemented at the earliest possible opportunity to ensure that sufficient qualified staff are in place to meet traffic demand. As well as detrimental effects on the network, any degradation in MUAC's capacity and delay performance would inevitably result in reduced revenue. Meanwhile, further optimisation of the MUAC concept of operations will aim to make more efficient use of the reduced controller resources.

Consistent progress in the implementation of current FABEC airspace design projects should increase the ability of MUAC to deliver the required capacity to the network. In particular, Free Route Airspace will remain a flagship activity in order to continue the delivery of notable benefits to airspace users. The improvement of horizontal and vertical flight efficiency will be carried out jointly between FABEC partners and airspace users.

Towards the end of 2015, additional system enhancements are foreseen which will increase the level of automated systems and processes available to air traffic controllers. The introduction of this supplementary automation will not only raise controller output, it will also enhance overall traffic safety.

It remains our strategy to establish the most efficient civil/military working relationships with our military partners in the Four States and to develop a sound working platform for effective civil/military integration.

As always, cost-efficiency will continue to play an intrinsic role as will investment in key areas to safeguard our pioneering approach to the provision of high-performance air navigation services.

**The MUAC Board**

# FINANCIAL ACCOUNTS

## ANNUAL ACCOUNTS

EUROCONTROL produces annual accounts which provide a consolidated view of the Agency's financial performance. In line with the applicable financial regulations, the specific performance of MUAC is identified in Part III of the Agency's accounts. This report includes an excerpt of the data available in the Agency's Annual Accounts in order to present a reference Balance Sheet and Statement of Financial Performance for MUAC. The Agency's Annual Accounts are produced in accordance with the principle of a true and fair view.

The Agency's accounts, including Part III, which relates to MUAC, are audited by the Audit Board with the assistance of external consultant auditors. The Annual Accounts, including the auditor's opinion, are subsequently 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.

The figures presented in this report are, therefore, subject to the approval of the Audit Board and the Provisional Council, which is expected in the summer of 2015.

## ACCOUNTING PRINCIPLES AND GENERAL NOTES ON ACCOUNTING MATTERS

The main accounting principles, underlying the present financial statements, are set out below.

Since 2011, the financial statements with regard to expenditure and receipts are prepared on the basis of the International Financial Reporting Standards (IFRS), and based on the provisions of the Financial Regulations of the Agency and their Rules of Application.

The Agency's policy, regarding fixed assets, is based on the revised Director General Decision XI/7(2011), dated 17/10/2011 and the Principal Director Resources Decision DR/II/07 (2013). Fixed assets are entered at their historic value and amortised over their useful lifetimes, in accordance with amortisation rates, which apply equally to the calculation of the investment costs to be recovered from the airspace users through the EUROCONTROL part of the cost-base (based on ICAO rules adopted by the Permanent Commission).

Following a decision by the Provisional Council in November 2004, the Agency applies IAS 38 and, as of 1 January 2006, capitalises only intangible assets that fully comply with this standard. Following this principle, only computer software for which EUROCONTROL owns intellectual property rights are capitalised.

Concerning operating expenditure, contributions from the Four Member States participating in MUAC are calculated on the basis of an agreed cost-sharing formula. At year end, the over/under payment of contributions is calculated by comparing the level of expenditure with the level of contributions paid.

Concerning investments, a mechanism for pre-financing investments by the Agency is in place, ensuring that investments are fully financed with bank loans. Therefore, the residual value of fixed assets in the Balance Sheet is fully compensated by an equivalent amount of loans. In the Statement of Financial Performance, the amortisation charge for the year is balanced by contributions from the Four States.

In accordance with Article 23 of the Financial Regulations, any over/under payments of contributions are deducted from/added to contributions for the subsequent year.

In accordance with Article 29 of the Financial Regulations, and, as approved by the Permanent Commission, the Annual Accounts incorporate both the Budgetary and the Financial Accounts.

The 2014 Budgetary Accounts, which determine the amount of contributions due from the Member States in 2014, are based on the IFRS principles (with some exceptions). Similarly, the 2014 EUROCONTROL cost-base, which has been charged to the users through the route charges recovery cost mechanism, is also based on the IFRS principles (with some exceptions).

The exceptions to IFRS are listed in Article 6 of the Rule of Applications to the Financial Regulations in the areas of contributions to social security schemes, compensations of national taxes and provisions.

# BALANCE SHEET (Nominal values)

| ASSETS | | € 2013 | € 2014 |
|---|---|---|---|
| **FIXED ASSETS** | Buildings & installations | 25,201,042 | 33,521,622 |
| | Equipment | 40,185,631 | 34,059,333 |
| | Vehicles | 0 | 0 |
| | Work in progress | 12,481,286 | 5,784,798 |
| | TOTAL FIXED ASSETS | 77,867,959 | 73,365,753 |
| **CURRENT ASSETS** | Contributions to be received | 31,785,783 | 32,590,308 |
| | Intercompany receivables | 14,347,661 | 20,164,729 |
| | Deferred charge | 8,031,679 | 7,624,246 |
| | Other debtors | 1,507,142 | 928,024 |
| | TOTAL CURRENT ASSETS | 55,672,265 | 61,307,306 |
| | **OVERALL TOTAL** | **133,540,224** | **134,673,059** |

| LIABILITIES | | | |
|---|---|---|---|
| **CURRENT LIABILITIES** | Contributions to be reimbursed to Member States | 15,049,321 | 12,435,163 |
| | Deferred income | 31,682,647 | 32,375,208 |
| | Other creditors | 8,940,298 | 16,496,935 |
| | TOTAL CURRENT LIABILITIES | 55,672,265 | 61,307,306 |
| **OTHER LIABILITIES** | Loans > 1 year | 77,867,959 | 73,365,753 |
| | TOTAL OTHER LIABILITIES | 77,867,959 | 73,365,753 |
| **FINANCIAL POSITION** | | | |
| | TOTAL FINANCIAL POSITION | 0 | 0 |
| | **OVERALL TOTAL** | **133,540,224** | **134,673,059** |



# STATEMENT OF FINANCIAL PERFORMANCE (Nominal values)

| | 2013 | | | 2014 | | |
|---|---|---|---|---|---|---|
| **INCOME** | **GAT** | **OAT** | **Total €** | **GAT** | **OAT** | **Total €** |
| Member State contributions | | | 123,926,974 | | | 126,355,586 |
| Member State contributions PBO | | | 371,118 | | | 375,000 |
| Internal Tax | | | 33,538,322 | | | 37,318,952 |
| **TOTAL INCOME** | | | **157,836,414** | | | **164,049,538** |
| **COSTS** | | | | | | |
| Remunerations | -119,837,791 | -3,839,181 | -123,676,972 | -126,536,021 | -5,370,165 | -131,906,186 |
| Remunerations – accrual budgeting | | | | | | |
| Receipts related to remunerations | 964,455 | 30,898 | 995,352 | 1,071,033 | 45,454 | 1,116,487 |
| Receipts related to outsourcing Austrocontrol | 547,464 | 17,539 | 565,003 | 276,275 | 11,725 | 288,000 |
| Receipts related to KLU Project | 1,026,805 | 32,895 | 1,059,700 | 1,286,267 | 54,589 | 1,340,856 |
| Receipts related to FABEC TEN-T | 2,245,720 | 71,945 | 2,317,665 | 0 | 0 | 0 |
| Receipts related to sale of services | 714,208 | 22,881 | 737,089 | 704,496 | 29,899 | 734,395 |
| STAFF COSTS | -114,339,139 | -3,663,023 | -118,002,162 | -123,197,950 | -5,228,498 | -128,426,448 |
| PENSIONS PBO | -362,368 | -8,750 | -371,118 | -362,257 | -12,743 | -375,000 |
| Staff-related costs: training and travel costs | -878,934 | -28,158 | -907,091 | -923,819 | -39,207 | -963,026 |
| External assistance | -2,818,963 | -90,310 | -2,909,273 | -2,213,425 | -93,937 | -2,307,362 |
| Accommodation | -3,451,595 | -110,577 | -3,562,172 | -3,844,616 | -163,165 | -4,007,781 |
| Communications | -1,525,073 | -48,858 | -1,573,931 | -1,568,418 | -66,563 | -1,634,982 |
| Data processing | -3,546,230 | -113,609 | -3,659,838 | -3,659,181 | -155,295 | -3,814,476 |
| General administration | -248,372 | -7,957 | -256,329 | -123,237 | -5,230 | -128,467 |
| Finance & insurance | -379,168 | -12,147 | -391,316 | -375,995 | -15,957 | -391,952 |
| Unrecoverable VAT | -4,923 | -158 | -5,080 | -7,660 | -325 | -7,985 |
| Sale of goods | 1,303 | 130 | 1,434 | 340 | 35 | 375 |
| Miscellaneous receipts | 25,094 | 804 | 25,898 | 751,722 | 0 | 751,722 |
| Miscellaneous receipts – revalorisation buildings | | | | | | |
| OPERATING COSTS | -12,826,861 | -410,839 | -13,237,699 | -11,964,289 | -539,645 | -12,503,933 |
| DEPRECIATION COSTS | -9,043,698 | -1,169,385 | -10,213,083 | -9,289,133 | -490,494 | -9,779,627 |
| INTEREST PAID | -591,912 | 0 | -591,912 | -529,367 | 0 | -529,367 |
| **TOTAL COSTS** | **-137,163,979** | **-5,251,997** | **-142,415,975** | **-145,342,995** | **-6,271,379** | **-151,614,375** |

# GLOSSARY OF ACRONYMS

## A

| | |
|---|---|
| **ACE** | ATM Cost-Effectiveness |
| **AFUA** | Advanced Flexible Use of Airspace |
| **ANA** | Administration de la navigation aérienne (Luxembourg) |
| **ANSP** | Air Navigation Service Provider |
| **ASM** | Airspace Management |
| **ATC** | Air Traffic Control |
| **ATCO** | Air Traffic Controller |
| **ATFCM/ASM** | Air Traffic Flow and Capacity Management/Airspace Management |
| **ATFM** | Air Traffic Flow Management |
| **ATM** | Air Traffic Management |
| **ATM/CNS** | Air Traffic Management/ Communications, Navigation and Surveillance |
| **ATN** | Aeronautical Telecommunications Network |
| **ATS** | Air Traffic Services |

## B

| | |
|---|---|
| **BAF** | Bundesaufsichtsamt für Flugsicherung/Federal Supervisory Authority for Air Navigation Services |
| **BSA-ANS** | Belgian Supervisory Authority for Air Navigation Services |
| **B2B** | Business-to-business |

## C

| | |
|---|---|
| **CAA** | Civil Aviation Authority |
| **CBA** | Cross-Border Area |
| **CDM** | Collaborative Decision Making |
| **CNS** | Communications, Navigation & Surveillance |
| **$CO_2$** | Carbon dioxide |
| **CPDLC** | Controller-Pilot Data Link Communications |
| **CSS** | Central Supervisory Section |

## D

| | |
|---|---|
| **dDCB** | Dynamic Demand and Capacity Balancing |
| **DFS** | Deutsche Flugsicherung |
| **DSNA** | Direction des services de la navigation aérienne |

## E

| | |
|---|---|
| **EAUP/EUUP** | European Airspace Use Plan/ European Updated Airspace Use Plan |
| **EC** | European Commission |
| **EGLL** | London Heathrow |
| **ENAC** | Ecole Nationale de l'Aviation Civile |
| **EU** | European Union |

## F

| | |
|---|---|
| **FABEC** | Functional Airspace Block Europe Central |
| **FANS** | Future Air Navigation Systems |
| **FDPS** | Flight Data Processing System |
| **FIR** | Flight Information Region |
| **FL** | Flight level |
| **FOCS** | Flow Optimisation Concept Scenario |
| **FRAMaK** | Free Route Airspace Maastricht and Karlsruhe |
| **FTE** | Full-Time Equivalent |
| **FUA** | Flexible Use of Airspace |

## G

| | |
|---|---|
| **GAT** | General Air Traffic |

## H

| | |
|---|---|
| **HMI** | Human Machine Interface |

## I

| | |
|---|---|
| **IAS** | International Accounting Standards |
| **IBP** | Industry Based Platform |
| **ICAO** | International Civil Aviation Organization |
| **iFMP** | Integrated Flow Management Position |
| **IFR** | Information Flight Rules |
| **IFRS** | International Financial Reporting Standards |
| **ILT** | Inspectie Leefomgeving en Transport /Human Environment and Transport Inspectorate |
| **IOP** | Interoperability Programme |
| **ISO** | International Organization for Standardization |
| **i4D** | Initial Four-Dimensional |

## K

| | |
|---|---|
| **KWh** | Kilowatt hour |
| **KLU** | Koninklijke Luchtmacht |

## L

| | |
|---|---|
| **LARA** | Local and Regional Airspace |
| **LVNL** | Luchtverkeersleiding Nederland |
| **LARA** BE | Local and Regional Airspace Belgium |
| **LARA** NL | Local and Regional Airspace Netherlands |

## M

| | |
|---|---|
| **MARS** | Maastricht Airspace Re-structuring |
| **MCG** | Maastricht Co-ordination Group |
| **MO** | Management Objectives |
| **MUAC** | EUROCONTROL Maastricht Upper Area Control Centre |

## N

| | |
|---|---|
| **NATO** | North Atlantic Treaty Organization |
| **NATS** | National Air Traffic Services |
| **NEST** | Network Strategic Tool |
| **NM** | Nautical Miles Network Manager |
| **NOP** | Network Operations Portal |
| **NSA** | National Supervisory Authority |
| **NSRFG** | North Sea Regional Focus Group |

## O

| | |
|---|---|
| **OAT** | Operational Air Traffic |
| **OLDI** | On-Line Data Interchange |

## P

| | |
|---|---|
| **PBO** | Projected Benefit Obligations |
| **PEGASE** | Providing Effective Ground & Air Data Sharing via Extended Project Profile (EPP) |
| **PCP** | Pilot Common Projects |

## R

| | |
|---|---|
| **RAT** | Risk Analysis Tool |
| **RDF** | Radio Direction Finder |
| **RDFS** | Radio Direction Finder System |
| **RNDSG** | Route Network Development Sub-Group |
| **RP1** | Reference Period 1 (2012-2014) |
| **RP2** | Reference Period 2 (2015-2019) |

## S

| | |
|---|---|
| **SAS** | Shared ATS System |
| **SES** | Single European Sky |
| **SESAR** | Single European Sky ATM Research |
| **SMART** | Solution for Mutual ATCO en-Route Training |
| **SMS** | Safety Management System |
| **STAM** | Short-Term ATFM Measures |
| **STANLY-ACOS** | STANLY Airspace Coordination System |
| **STATFOR** | EUROCONTROL Statistics and Forecasts Service |
| **SWIM** | System-Wide Information Management |

## T

| | |
|---|---|
| **TMF** | Trajectory Management Framework |
| **TRA** | Temporary Reserved Area |
| **TSA** | Temporary Segregated Area |
| **TEN-T** | Trans-European Network |

## U

| | |
|---|---|
| **UAC** | Upper Area Control Centre |
| **UIR** | Upper Information Region |
| **UNL** | Unlimited |

## V

| | |
|---|---|
| **VAT** | Value added tax |
| **VCS** | Voice Communications System |
| **vDFL** | Variable Division Flight Level |

## X

| | |
|---|---|
| **XMAN** | Cross-Border Arrival Management |

member of FABEC

EUROCONTROL

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DELIVERING VALUE TO THE NETWORK

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