Network Manager
nominated by
the European Commission

EUROCONTROL

Network Manager Annual Report 2013

June 2014

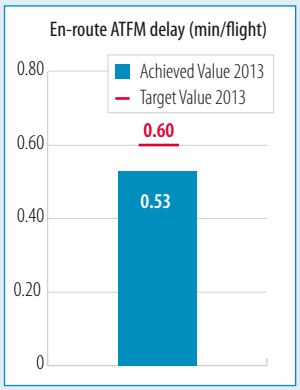
EXECUTIVE SUMMARY

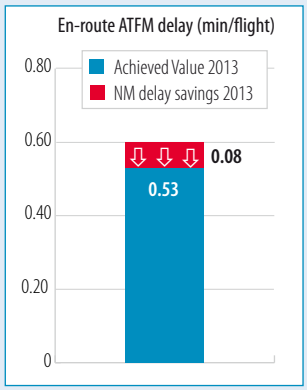
SAFETY

Risk of operations without transponder or with dysfunctional one | Landing without clearance | Detection of Occupied Runway | Blind Spot | Conflict detection with adjacent sectors

The Top 5 ATM Operational Safety risks affecting the network have been identified and guidance is being prepared for risk reduction in each area, in consultation with Network Manager (NM) stakeholders.

CAPACITY

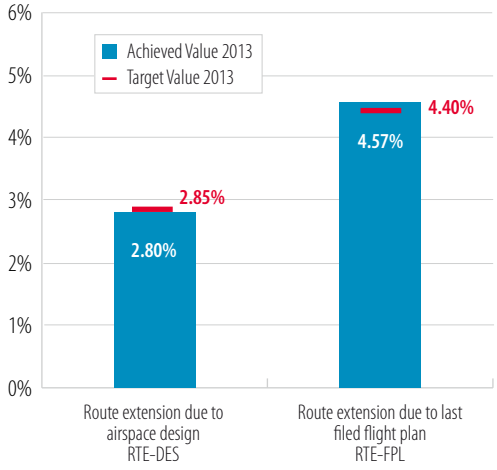




The en-route delay/flight target was met, at the end of 2013 the achieved en-route ATFM delay was 0.53 min/flight against a target of 0.6 min/flight.

The NM direct contribution to delay savings in 2013 was almost 800,000 minutes equivalent to 0.08 min/flight – without this, the delay in 2013 would have been 0.61 min/flight. This equates to 13.7% of the annual network delay, above the 10% target.

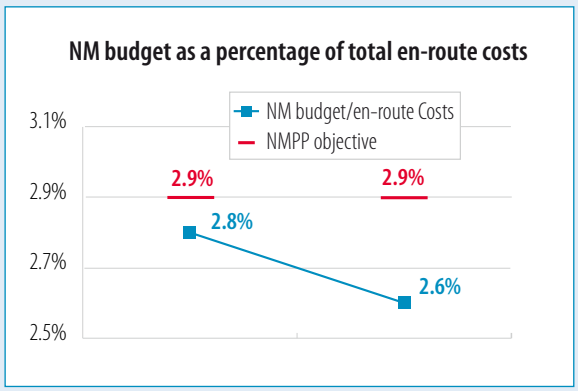
ENVIRONMENT



The route extension due to airspace design indicator result in 2013 was 2.8%, meeting the target of 2.85.

The route extension due to last filed flight plan indicator value in 2013 was 4.57%, missing the target by 0.17 percentage points. The lowest level ever was reached in December 2013 with 4.43%. The target was missed mainly due to the capacity shortfalls during the ATC strikes or reduced capacities in some centres. To close the gap the NM has developed a Flight Efficiency Initiative which describes the strategic and operational actions to be taken by the Network Manager to meet the SES performance target.

COSTS



NM's budget represented 2.6% of the total network costs. This is below the target of 2.9%. In 2013 the execution of 2013 budget was below the approved value and the total spending was also below 2.9% of the total network cost.

CONSOLIDATING THE NETWORK MANAGER

The European Union established the Network Manager (NM)[1] under the Single European Sky (SES) II package. The aim was to address the difficulties of the past and respond to the request of users to have a seamless European airspace - better managed at network level. This 2013 report is the second annual report produced by NM[2].

NM's priority is to create the operational partnerships needed to achieve the SES performance targets to the benefit of all States included in the pan European 'network'[3]. To achieve its network performance objectives NM has fostered good cooperation with its stakeholders, appropriate **governance**, and a network focus aimed at continuous improvement of the network operations through proactive **NM activity**.

Since July 2013 NM has a new Director, Mr. Joe Sultana. Joe is not new to the NM; as NM Chief Operating Officer since the creation of the NM he had a major contribution to its success. In the second half of the year the NM Directorate was reorganised to be better equipped to deliver its objectives and be prepared for the new challenges.

2013 saw NM make significant progress towards its strategic and performance objectives and we are pleased to report another good set of results.

The capacity/delay target of en-route ATFM delay of 0.6 min/flight was achieved. Through its actions, NM contributed to a delay reduction in excess of 10% of the en-route delay recorded in 2013. The flight efficiency indicator due to airspace design was met and is on the right track to meet its RP1 target. There is room for improvement for the flight efficiency indicator due to flight planning, which was missed by 0.17 percentage points, although the December value of 4.43% was much closer to the target. NM has increased its actions in 2013 to tackle this area.

This report presents extensively on the implementation of the actions pertaining to the strategic objectives (SO) of the Network Strategy Plan (NSP). Visually this can be easily recognised by the SO sign above, indicating the strategic objective being addressed by the respective section of the report. (See Chapter IV for more information on the NSP and the SOs are shown on the inside back cover).

SO

Stakeholder Cooperation

The **Cooperative Decision Making** (CDM) processes covering the main network functions were approved at the end of 2012. The practical implementation of these arrangements was completed during 2013, to fully address those processes that were relatively new (e.g. those related to scarce resources).

SO-1

NM's partnership approach is proving to be very successful, both in achieving its own goals and in helping its stakeholders improve their performance.

The **NM User Forum** 2013 enabled NM to listen to its partners, identify their expectations and understand their challenges. This annual rendezvous for the aviation community gathered 222 participants from 38 States and focused on how network performance in today's global economic context can be improved. The flight efficiency performance was on everyone's agenda and NM will make it the main subject of the next User Forum.

NM conducted another **Customer Satisfaction Survey** in 2013 to provide an objective measure of the degree of NM user satisfaction, covering exhaustively the services the NM provides and the various customer facing activities. It was designed to assist the NM in defining an improvement plan whereby customer satisfaction can be improved in a well targeted, cost-efficient and measurable manner. There were more than 1000 responses to the survey, the ANSPs and AOs being the segments best represented.

The satisfaction rate remains high. The percentage of the satisfied and very satisfied customers responding to the overall NM services capabilities was close to 90% (within which the percentage of satisfied customers increased, while the percentage of very satisfied customers decreased compared to the previous survey conducted in 2008) and the vast majority of individual services scored above 80% satisfaction (the scope of the 2013 survey was larger than 2008 survey).

This good result, in line with the output of the previous survey in 2008, demonstrates that the transition from CFMU/CND to the NM was not detrimental to the perceived quality of service. In 2014, NM will work with its partners to set up concrete action plans addressing the areas for improvement.

1 Commission Regulation (EU) 677/2011 of 07 July 2011 laying down detailed rules for the implementation of air traffic management (ATM) network functions (NM regulation).

2 As requested by article 20 of NM regulation.

3 States include: EU Member States, non-Member States that are members of EUROCONTROL or have concluded an agreement with the Union on the implementation of the Single European Sky or are participating in a functional airspace block.

Governance

The governance arrangements contributed greatly to the smooth functioning of NM.

The **Network Management Board** (NMB) is the industry-led body that governs the network management functions. It was established in accordance with the provisions of article 16 of the NM regulation. During 2013 NMB continued to define the priorities and work programme of the NM to achieve the SES objectives.

Under NMB governance and working closely with the NM, enabled the NM to improve its performance in 2013, in line with the SES performance objectives. NMB held three meetings in 2013 (March, June and November). The NMB reviewed the implementation of the Network Strategy Plan and network and NM performance throughout 2013. It approved the updated Network Operations Plan (NOP). NMB also helped in tackling network performance issues that NM escalated through the Network Directors of Operations forum and approved a number of recommendations from NDOP.

Network Directors Operations (NDOP) played a key role in supporting NM to achieve its performance targets. NDOP held three meetings in 2013 and it was NM's main operational forum for preparation, review and implementation of mandated operational actions. The NDOP structure includes mechanisms for direct involvement of ANSPs, military partners, airspace users and airports. NDOP tackled various issues such as: the preparation of the summer and winter seasons; addressing problem areas identified in the NOP or from the monitoring of the network performance; repository of measures for industrial actions and the efficiency of related operational procedures; airport and safety action plans; NM relations with FABs, as well as endorsement of key NM deliverables. To this effect NDOP made recommendations to NMB.

Throughout 2013, EUROCONTROL Teams and their substructures provided expert input and coordination (namely: NETOPS – Airports - AIS/SWIM – Safety - CNS Infrastructure). These teams are open to experts from all NM stakeholders and are tasked to develop and review specific technical and operational NM proposals at expert level.

European Aviation Safety Agency (EASA) has been tasked by the European Commission to carry out the oversight activities of the NM on its behalf. In order to assess the on-going compliance of the NM with applicable requirements, a two year (2013-2014) continued oversight programme has been defined by EASA.

During 2013 EASA conducted three oversight audits (May, September and December 2013) covering a wide scope of the regulatory requirements applicable to NM. To-date EASA has not identified any significant non-compliance (i.e. level I finding) with applicable requirements or the organisation's procedures and manuals during their continued oversight programme. In 2013 EASA issued two "Letters of Acceptance" for the deployment of two key NM releases (NM17.0, NM17.5).

NM Activity

NM's duty is to consolidate and coordinate the activities of the network to continuously improve network performance. NM safeguards the general interest of the network and applies this network focus in the analysis of the real operational issues across the network.

Throughout 2013 NM launched and contributed to a number of activities to address the bottlenecks in the network and improve the overall performance.

NM's performance analysis identified a number of critical areas which were incorporated in the NOP. The underlying causes for the critical areas were investigated, which triggered an **Action Plan** developed to address the needs to further enhance the operational network performance.

NM brought together ANSPs, Aircraft Operators, Airports and Slot coordinators to tackle airports with limited capacity. In the safety area NM worked both in improving its own safety maturity as well as supporting ANSPs in achieving their safety objectives.

NM ensured detailed planning of major ATM changes to ensure that network delay remained low. NM implemented a number of action plans and mitigations to support stakeholders in improving capacity and allowing NM to contribute to delay reduction. NM provided added value to its stakeholders in the optimization of the management of scarce resources. The NM system continued to evolve to support the improvement in operations required to deliver the required services.

NM ACHIEVEMENTS IN 2013

2013 was another very busy year for the NM with a number of significant achievements. NM activities in 2013 focused on achieving the performance targets of the first Reference Period (RP1) of the SES Performance Scheme.

SO-4

SO-5

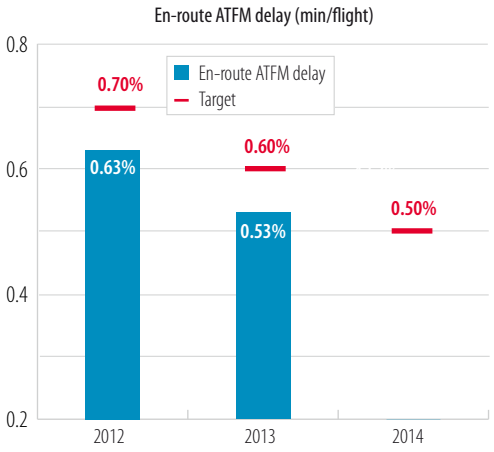
NM focused on enhancing network operations management, flight efficiency improvements, synchronising major ATM changes, mitigating the impact of strikes on the network performance, improving flexibility of capacity management in some ACCs constrained due to social tension or rigidity in the management of opening control sectors, support to safety improvement, integration of airports with the network.

In 2013 NM gave a high priority across its organisation to the actions needed to achieve the performance targets on capacity and flight efficiency and the objectives on safety while ensuring that the NM financial costs remained within the limits of 2.9% of total en-route costs. All these targets and objectives are captured in the NM Performance Plan (NMPP); see Annex I for full 2013 results.

SO-3

Network Capacity

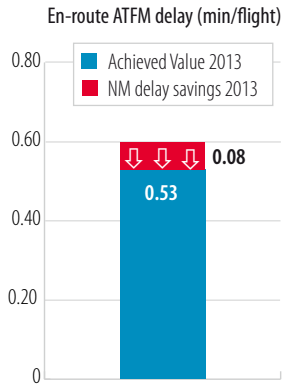
The main performance indicator is the en-route ATFM delay measured in minutes per flight, for which the network performance target for 2013 was 0.6 min/flight. This target was met, at the end of 2013 the achieved en-route ATFM delay was 0.53 min/flight, the best performance since measurement began. This was particularly creditable in a year that was marked by a significant amount of industrial action, which amounted to 13.6% of total delays; without industrial action, the network would have achieved 0.46 min/flight of en-route delay.



NM contribution to delay savings

In addition to the targets defined for the network, the NMPP defines a range of other indicators so that stakeholders understand the NM added value with respect to ATM network performance. The main target for NM is to reduce en-route ATFM delays by 10% below the declared plans for 2012-2014.

NM contribution to delay savings in 2013 were calculated from accepted Re- routing Proposals (RRPs) and NMOC direct action (i.e. Force CTO/CTOT, Override slot, Exclude/include).



The overall en-route delay reduction in 2013 was almost 800,000 minutes equivalent to 0.08 min/flight – without this, the delay in 2013 would have been 0.61 min/flight. This equates to 13.7% of the annual network delay. Around 132,000 minutes of this reduction was achieved via direct re-routings.

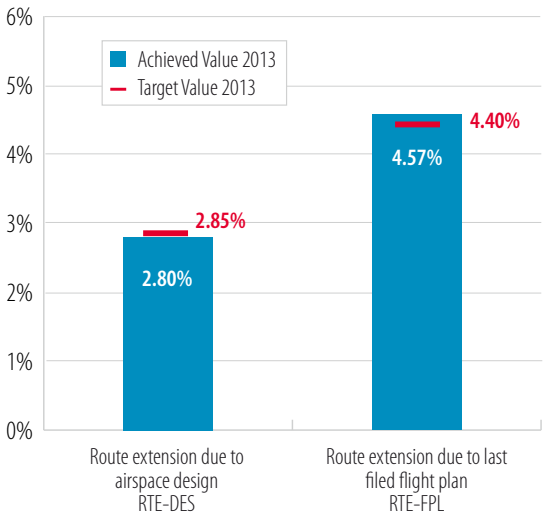
Flight Efficiency

NMPP defined two targets measuring the route extension from an optimum defined by the great circle distance, one due to the design of the routes and the other due to the last filed flight plan. Both key performance indicators have to achieve a reduction of 0.75 percentage points from 2009 to the end of RP1. The design indicator result in 2013 was 2.8%, meeting the target and is on a positive trend to achieve the RP1 target. The flight plan indicator value in 2013 was 4.57%, missing the target by 0.17 percentage points. The lowest level ever was reached in December 2013 with 4.43%. The target was missed mainly due to the capacity shortfalls during the ATC strikes or reduced capacities in some centres.

To close the gap the NM has developed a Flight Efficiency (FE) Initiative which describes the strategic

and operational actions to be taken by the NM, in order to respond to the SES performance targets. The FE Initiative provides both a qualitative and quantitative assessment of the impact of these actions on the performance of the European ATM network. A number of initiatives started in May 2013 like the Network Impact Assessment and Invalid IFPS queue treatment, which delivered in the range of 180000 nautical miles savings throughout 2013.

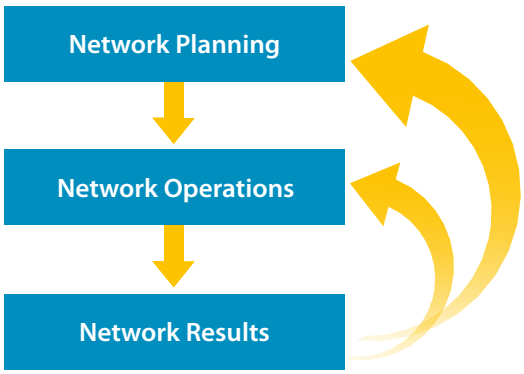
Full coverage of the network performance is addressed in the Network Operations Report 2013[4].



4 Published at http://www.eurocontrol.int/articles/network-operations-monitoring-and-reporting

NM AREAS OF ACTIONS

NM is addressing the real issues of the network while ensuring that the performance targets are met. Its planning, operations and continuous monitoring activities are closely interconnected to ensure that network performance is achieved.



While some NM activities have been part of the EUROCONTROL portfolio for some time, NM refocused them to the new network centric approach in line with SES objectives. Network operations planning and network current operations (tactical and pre-tactical) are prime examples in this category.

NM addressed the network functions related to scarce resources as well as safety and the airports domains from a network performance perspective.

Monitoring and reporting

SO-1

NM presented regular, timely and accurate reports on the overall **performance of the network** to NDOP and NMB throughout 2013. Results were published regularly in the Network Operations Report, the monthly and weekly bulletins that are distributed to interested stakeholders. The compliance with ATFM measures was monitored and the results published. The results are reviewed in the NM internal Performance Steering Committee, and those issues having a significant network impact trigger actions.

The monitoring results were considered in the planning (e.g. additional actions or critical areas) and operational phases (e.g. Playbook helped identify the 'high risk' delay areas). The results highlighted where NM should use its pro-active stance and act when a problem occurred.

Throughout 2013 post operations and performance monitoring analysed the efficiency of ATFM measures and continually improved the process to ensure NM could deliver over 10% delay savings for the network.

Operations Planning

SO-4

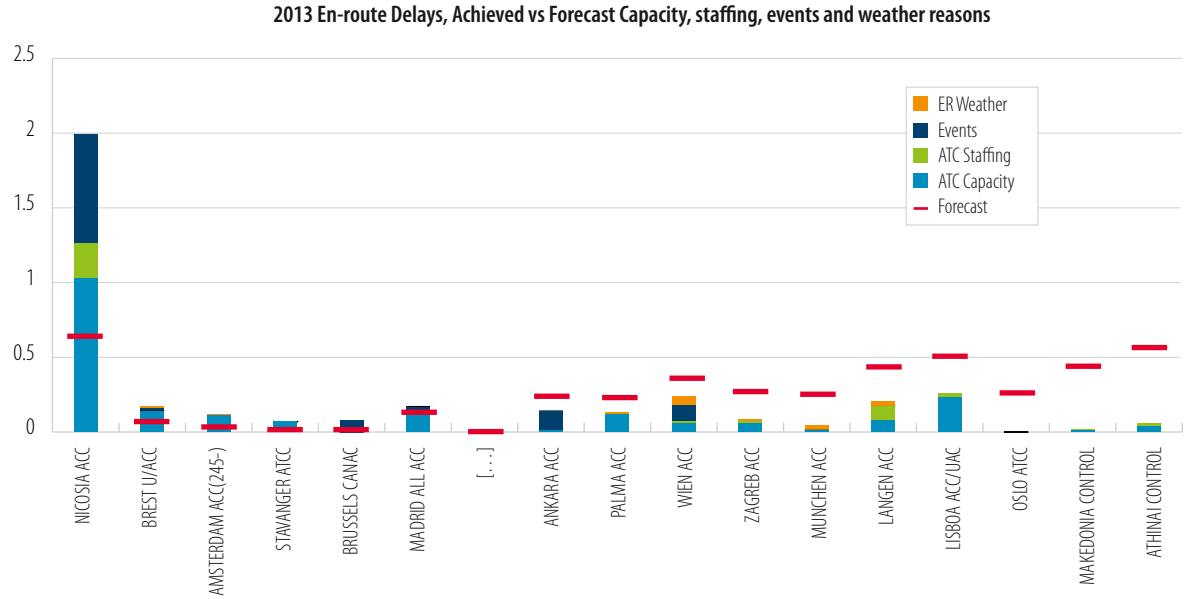
The Network Operations Plan (NOP) for the period 2013-2015 is a detailed plan that implements, at operational level, the Network Strategy Plan. NOP was adopted in March 2013 by the NMB.

Based on the traffic forecasts NOP identified the **capacity** of the network and individual ACCs needs as well as **operational performance** forecasts for delivering the ATFM function. This was done in close cooperation with the ANSPs involved, which provided further inputs (an updated NOP was approved in June 2013).

Critical areas for the network were identified and an **Action Plan** was developed to address the needs to further enhance the operational network performance. Additional such measures were proposed for Cyprus, France (Marseille ACC), Germany (Langen ACC), Greece (Athens and Makedonia ACCs), Norway (Oslo ACC), Poland, Portugal and Spain (Barcelona ACC).

The annual forecast of NOP for 2013 indicated an average en-route delay of 0.49 min/flight. The achieved value at the end of 2013 was 0.53min/flight. Within this value the overall NOP values for the staff, capacity were better than forecast. Even including weather and events generated delays the network performed better than forecast. The difference to the achieved 0.53 min/flight was mainly due to the disruptions, i.e. ATC strikes and ATC equipment failure, which accounted for 0.1 min/flight. Higher delays than the forecast were recorded at Nicosia, Brest, Amsterdam, Stavanger and Brussels ACCs and better delays than the forecast in Greece, Oslo, Warsaw and Lisbon ACCs.

The effective capacity indicator increased by 1.8% over the whole European ATM network in 2013, when compared to the corresponding periods of 2012, the highest capacity on record.



Major ATM changes

Another topic successfully addressed by NM through NOP and the Action Plan is the preparation of a **transition plan for major projects**. The plan was continuously updated during 2013. The latest edition was published by NM as the Transition Plan for Major Projects in Europe Winter 2013/2014. ATM system changes in Vienna, Poland and Cyprus had a significant impact on the network in 2013 and NM worked with the parties involved to minimise the delays caused by those events.

Functional Airspace Blocks

During 2013 the NM extended the areas of cooperation between the NM and FABs and stepped up its support to FABs, to include areas like airspace projects and transition plans at FAB level, inclusion of FAB plans in NOP, cross-border free route airspace, ASM/ATFCM processes at FAB level. Working arrangements and a detailed action plan were agreed, with the support of NDOP and NMB and its implementation started. The Action Plan addresses different areas of cooperation like the preparation of RP2 FAB Performance Plans, the relationship between the FAB performance plans and the NSP, the NOP and the ERNIP. NM continued to provide expert involvement in several FAB working groups to facilitate the development of plans and their implementation.

The cooperative work between the NM and the FABs will continue to enable the consolidation of all the projects in the context of individual single FABs and the integration of these into the overall network. It will support the interconnectivity of the overall network, the consolidation of individual projects inside the FABs and at their interfaces.

Route Network Design

The NM ensures that European airspace can accommodate the additional capacity needs. This is the role of the European Route Network Design Function, the European Route Network Improvement Plan (ERNIP) being the main tool, approved by NMB and is part of the Network Operations Plan.

As part of Flight Efficiency Plan, intensive work has been undertaken by States and ANSPs in close cooperation with NM to develop and implement enhanced airspace design solutions, with some 250 airspace improvement packages being developed and implemented in the 12 months preceding summer 2013. This helped to ensure that the 2013 flight efficiency target (route extension due to airspace design) was achieved.

ATFM Operations

Delivering the ATFM function operational daily delay performance is at the heart of the NM Operations Centre (NMOC). NMOC concentrates on anticipating problem areas and then providing network solutions. The provision of the ATFM function has been an integral part of NM activities for a number of years; network operations flow management procedures are mature and continue to provide benefit to the network. The NM developments ensured that the ATFCM procedures continued to evolve in 2013 and to deliver the expected results.

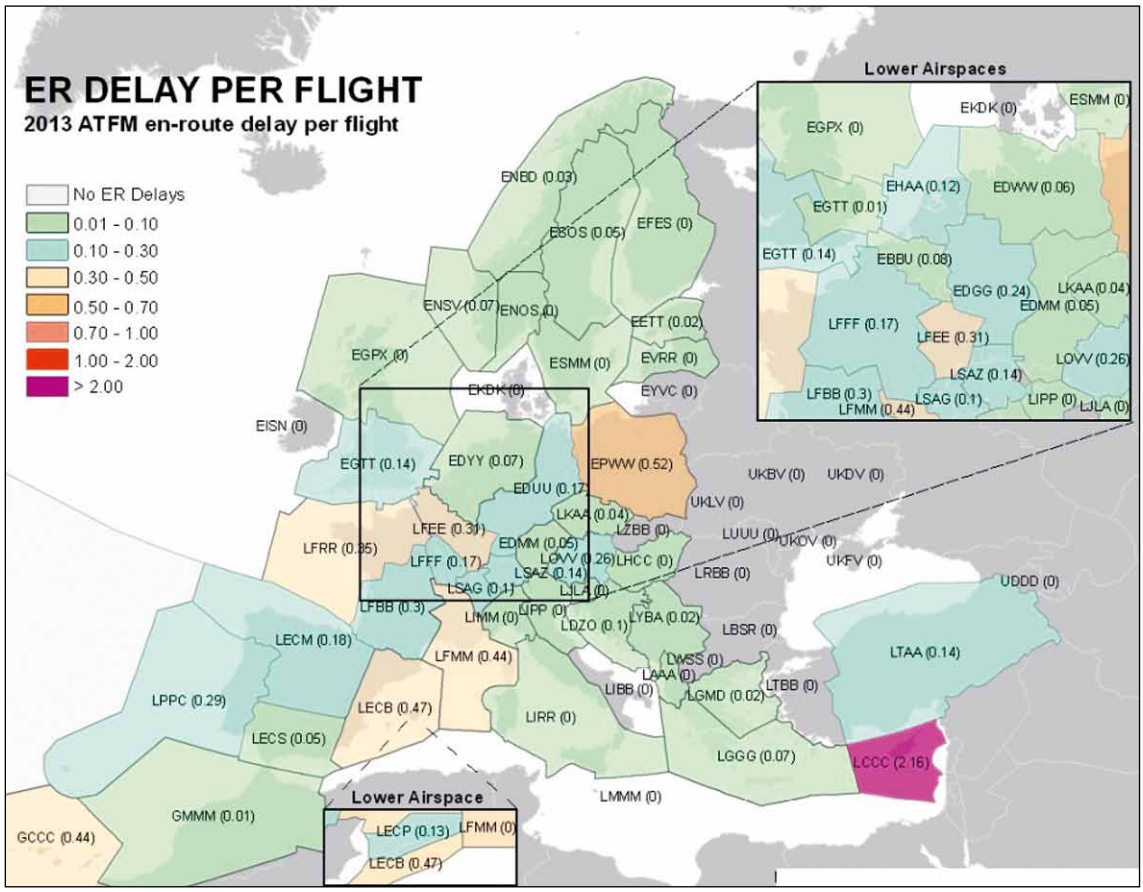
SO-5

The network operations were constantly monitored against the 2013 network and NM performance objectives and targets, using state of the art systems and tools. For example, the **Playbook** process and tool ensured that the operational staff focused on the achievement of performance targets at network and ACC level. For 51 out of the 52 weeks in 2013, the internal Playbook en-route delay targets for Capacity and Staffing were met.

The full results of the en-route ATFM delays (min/flight) are presented in the map below.

NM operational staff performed direct actions in tactical operations to reduce the delays in line with the NMPP lines of action. This amounted to a reduction of almost 800000 minutes of en-route delays, in excess of 10% below the en-route delay for 2013, achieving the NMPP target and related objectives related to re-routing proposals and weekend delays.

NM agreed an internal reorganisation of the NMOC, which creates new roles and functions that will focus on the management of the network drivers, i.e. the performance objectives on safety, capacity, flight efficiency and cost efficiency.



Special Events

NM in cooperation with Moscow ATM Centre made several improvements to ensure that the Sochi Winter Olympics would be managed without disruption to air traffic management network operations. These included information exchange on the flight departure times, flight intentions and airport slots to allow accurate visibility on the flights operated between Europe and the Russian Federation for efficient operations planning.

Industrial Action

Industrial action proved to be even more disrupting in 2013 than 2012. With over 680000 minutes of delays, it contributed to 13.6% of total en-route delays in 2013.

Moreover, it has a significant impact on flight efficiency, as the aircraft are rerouted to avoid the affected area. This contributed to over 700000 additional nautical miles in 2013.

The French industrial action on 11-12 June and on 10 October contributed to most of the industrial action delays in 2013. The industrial actions in Greece and Portugal in June, in France in September, and in Italy and Tunisia in October had a smaller impact.

SO-9

With the active support of NMB and NDOP, NM compiled a **Repository of measures for industrial action and contingency plans**. The repository contains a list of current practices for managing industrial action as well as an initial set of best practices for the management of such situations at network level.

To improve the efficiency of the operational procedures to better mitigate the operational impact of industrial action, NDOP approved a number of principles for the management of such situations, based on the experience of NMOC: adequate advanced information, preparation of mitigation measures, coordination, teleconferences and robust post ops analysis. During the June strike NM held regular teleconferences with airlines and ANSPs to provide clarification and support as the situation evolved. The NMOC coordinated with all adjacent ACCs in coming up with mitigating actions like re-routeing proposals, the use of oceanic routes, enhanced levels of staffing and extra traffic accepted by neighbouring ACCs, coordination with military stakeholders to reduce military activity throughout the strike period.

Network Safety

SO-7

Recognising that safety is the key rationale for ATM, the NM has adopted and started to implement a safety approach to ATM network operations. A true partnership with the stakeholders ensured that the objectives set in the NSP and NMPP were achieved in 2013.

The Top 5 Risks ATM Operational Safety risks affecting the network have been identified and guidance is being prepared for risk reduction in each area, in consultation with our stakeholders.

NM has actively supported the stakeholders in achieving the RP1 European wide performance indicators. The **Risk Analysis Tool** was deployed both on the NM systems and made available to our stakeholders. During 2013 six more ANSPs received training and support in applying the RAT methodology in their organisation.

Through the "Experience Sharing to Enhance SMS (ES2)" programme NM **supported ANSPs to improve the maturity and effectiveness of their SMS**: main milestones were the CEO Safety Conference, the Software Safety Assurance workshop, Human Performance workshop and the Best Practices in Occurrence Investigation seminar, which were well attended with more than 450 participants in total.

Another key ingredient for maintaining safe operations is a positive safety culture. NM continued to support the ANSPs as part of the ongoing process to measure and improve the safety culture in EUROCONTROL Member States; 32 ANSPs had conducted at least one **safety culture survey** by the end of 2013.

Additionally**, SKYbrary,** a web-based electronic repository of safety data related to ATM and aviation safety continues to thrive – there were more than 1.5 million visits during 2013, an increase of 38% over 2012.

Airports

SO-6

There are no airport related targets at network level in RP1. However, from a network perspective the impact of disrupted operations at an airport can have a far reaching impact on network performance. The focus of NM airport activities in RP1 is to assist airport stakeholders to enhance airport performance and to integrate airport operations into the network.

Operations at **Greek island airports** saw a traffic increase of approximately 5% across 19 airports, but arrival regulations caused a delay increase of 44% (in minutes) when compared to 2012, but they remained significantly below the 2011 level (-60%). NM worked during the summer in collaboration with the Hellenic Civil Aviation Authority, the Hellenic Air Navigation Service Provider and Airline Operators to find additional airport capacity at certain airports at certain times. Without these actions the delay situation would have been much worse.

A key process to facilitate the major airports integration in the network is the **Airport Collaborative Decision Making (A-CDM)**.

During 2013 Helsinki, Düsseldorf, London Heathrow and Zurich Airport fully implemented A-CDM. Thirteen more airports are planned to implement it during 2014. The benefits of A-CDM implementation are visible at network level, with more accurate departure information – DPI - feeding into the ATFCM system run by NM. The network will be able to use the available capacity more efficiently.

NM is also supporting flight efficiency at the airports through **Continuous Descent Operations** (CDO). By the end of 2013, 35 additional airports implemented CDO, during some parts of the day or night. This makes a total of 122 airports that have introduced CDO by end of 2013.

Scarce Resources

Both the **Radio Frequency Function (RFF)** and **Transponder Code Function (TCF)** were established in 2012 and are governed by collaborative decision making (CDM) arrangements approved by the NMB. In 2013 NM consolidated on this to provide added value to its stakeholders in the optimization of these scarce resources.

Radio Frequency Function

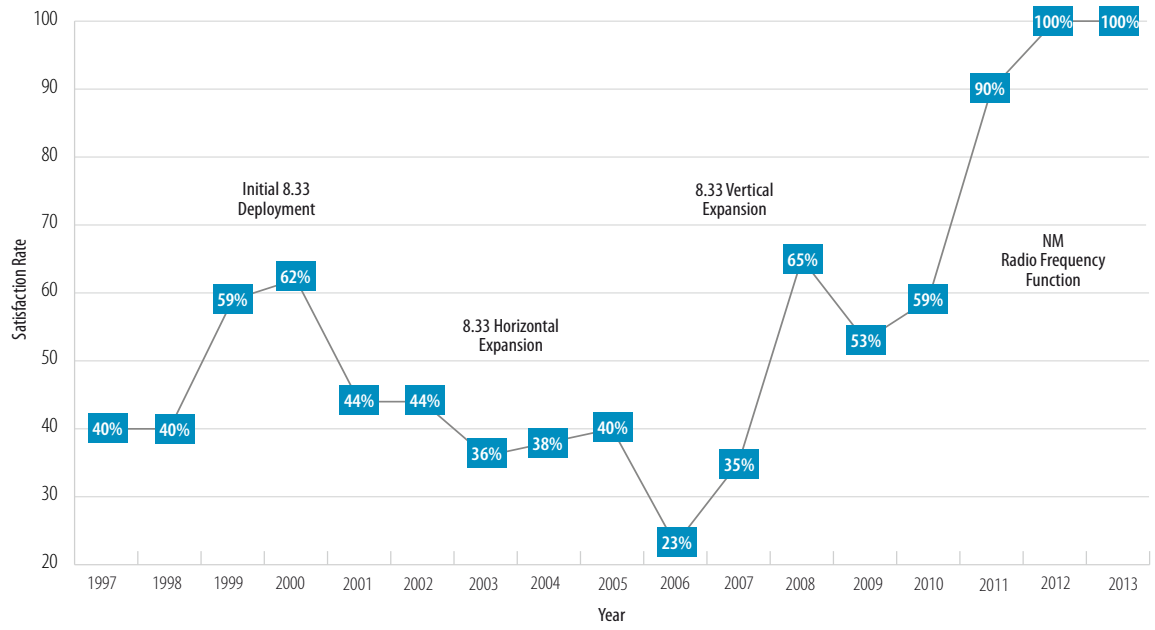
SO-8

In the central European region it continues to be difficult to find a new voice frequency for an en-route or an approach sector. If one is found it requires several frequency shifts from neighbouring sectors to be implemented.

To improve the situation, during the second half of 2013 a comprehensive exercise was undertaken by the RFF and most of the European States to improve the quality of the VHF frequency assignment data in the NM central register. The data quality exercise was performed by 32 countries that ensured best practices were followed and looked for opportunities to reduce frequency congestion. The resulting benefit was significant, both in terms of number of frequencies gained and the decrease in the number of frequency shifts required to accommodate a new frequency request.

This enabled the RFF to satisfy for a second consecutive year all frequency requests in the most frequency congested European areas, which is the best performance for more than 10 years (see the diagram below).

Frequency Request Satisfaction Rate in the European congested areas



In addition, the time to satisfy those requests (253 days in 2013) has been reduced to less than half of what it was just two years ago.

To satisfy the frequencies demand for the next 10 years it is necessary to create more voice channels, which can be achieved by extending the use of 8.33 kHz channel spacing radios, to be fully deployed by 2019.

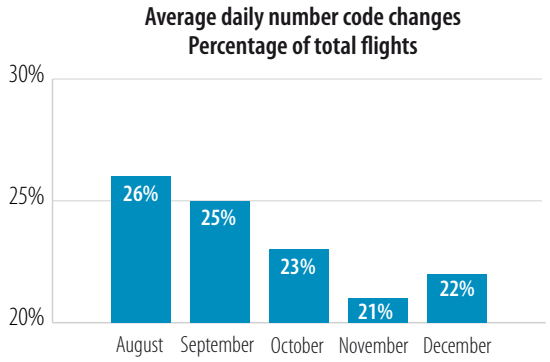
The Radio Frequency Function has also improved the tools and procedures for the management of navigation frequencies and supported the analysis and resolution of the radio interferences reported by the National Frequency Managers.

Transponder Code Function

SO-8

The introduction or extension of multiple technologies continued to contribute to the optimisation of the transponder code usage in Europe by providing enough codes to the users and avoid allocating wrong or conflicting transponder codes.

The Centralised Code Assignment and Management System (CCAMS) entered into operation in February 2012. By the end of 2013 twelve States implemented CCAMS namely: Austria, Bulgaria, Denmark, Estonia, Finland, Ireland, Lithuania, Moldova, Norway, Sweden, Ukraine and the United Kingdom. It should be noted that CCAMS also benefits non-CCAMS States as it reduces the number of code changes due to crossing different participating areas (see the graph).



No cases of wrong codes assigned by CCAMS were detected by the monitoring tools and no such reports were received from the operational users.

Another technology that contributed to the optimisation of the code usage was the Mode S radar technology that supported the capability to use the downlinked aircraft identification, which continued to progress in 2013.

In coordination with the ICAO Paris Office, the Code Allocation List (CAL) for the complete ICAO EUR Region was produced and published in preparation for the summer season 2013. No cases of shortfalls (e.g. code shortages) in code allocations to States was reported.

Network Crisis Management

SO-5

The main role of European Aviation Crisis Coordination Cell (EACCC) is to support coordination of the response to network crises impacting adversely on aviation, in close cooperation with corresponding structures in States.

The NM/EACCC continues to participate regularly in ICAO volcanic ash exercises (VOLCEX). Therefore, in April 2013 the NM was the leader of VOLCEX 13/01, and involved a number of its operational staff using the opportunity to maintain its level of readiness. Moreover, in VOLCEX 13/01 the NM/EACCC continued driving the process of implementation of the Safety Risk Assessment (SRA) approach in Europe.

In May 2013 the NM/EACCC organised its first cyber attack exercise, CYBER 13, which identified a number of lessons learned and actions both at the national and network level to enhance aviation's readiness for this kind of threat. The exercise was well attended, more than 20 organisations (Airlines, ANSPs, States, Military, European Agencies, Railways) co-operated with NM and EC to ensure its success.

In June 2013 the NM/EACCC organised a Crisis Management Workshop. Its main objective was to continue establishing closer ties between the NM/EACCC and State Focal Points, who are the key players in linking national crisis management arrangements with the NM/EACCC.

In August 2013 the NM started developing a bulletin of risk assessment of ATM disruptions resulting from natural hazards to enable aviation partners in assessing risks of possible major disruptions and crises. Following a period of trial its deployment is planned in 2014.

An operational procedure between NM/EACCC and the Emergency Response Coordination Centre (ERCC) of the European Commission (managed by DG ECHO) was developed and published in June 2013, which sets out the foundations for the cooperation between the two centres in different crisis situations.

In 2013 NM dealt with a number of disruptions with a potential to develop into a crisis, however, none of

the events required activation of the EACCC. The crisis pre-alert level was raised three times during 2013 (twice due to industrial actions in June and October).

Developments in operations and infrastructure

SO-2

During 2013 two major new releases of the NM system were implemented. The NM Releases 17 and 17.5 delivered a number of new or updated key functionalities.

Free Route Airspace (FRA)
The project involved a number of changes to improve the FRA network implementation, including the FPL processing systems and processes to cope with the route network evolutions impacting the NM services, such as night DCTs, Week-end DCTs or Free Route Airspace Initiatives.

The *Flight Plan Interoperability Programme* developments will enhance the flight plan data exchange between Airlines/Computer Flight Plan Software Providers and the NM during the pre-filing phase, in order to improve the accuracy and consistency between 4D flight trajectories maintained by the different stakeholders. The Extended Flight Plan trials were conducted to validate the inclusion of additional information in the flight plan submitted by the air operators.

The implementation of the ASM *Network Impact Assessment* enabled a timely and accurate pre-tactical network impact assessment of airspace allocation, e.g. by identifying a better use of the CDR 2 opportunities by the airspace users and as such improving the flight efficiency performance.

As part of the NM *Information Services*, the Network Operations Portal continues to evolve to provide better information sharing with NM stakeholders.

Improvements in the existing ATFCM tools, Airspace Data tools, Call-Sign Similarity Tool, CCAMS, European Crisis Visualization Interactive Tool for ATFCM (EVITA), the archiving of operational data for post-ops and performance analysis and many others were also part of the NM developments in 2013.

Human Resources Policy

NM follows the EUROCONTROL Agency HR Policies and Processes regarding Staff Planning and Skills Management, Performance Management, Training in line with the Agency's staffing strategic objective "to enhance the flexibility and mobility of the workforce within the Agency, including between the Agency and Eurocontrol Member States, which will achieve the Agency's business objectives by improving the knowledge, skills and capabilities of staff, harnessing their talent to help them achieve their potential'.

In this context NM, which is part of the NM Directorate of the EUROCONTROL Agency, has established an HR Review Panel that meets twice a month to analyse, provide recommendations and take decisions on all HR matters related to the NM. The NM Staff Planning is the tool used to determine the gaps of skills and resources against the NM work programme.

NM Budget

Following the work of the dedicated NMB Task Force, the 2013 budget of the NM received a positive opinion by the SSC at its 47th meeting on 15 October 2012 and was endorsed by the NMB on 14 November 2012.

The 2013 NM budget approved by the NMB was 142.1 MEURO. Including the overheads the total budget for NM was 197.0 MEURO.

The budget covers all activities falling under the Network Management Functions[5]. It excludes the activities performed by NMD not covered by the Network Management Functions and the parts of the Transversal activities that are for the benefit of other EUROCONTROL Agency activities.

The total en-route costs for 2013 were 7576[6] MEURO. NM's budget represented 2.6% of the total en-route costs. This is below the NMPP target of 2.9%. In 2013, NM did not spend its whole budget and as a result the total spending was also below 2.9% target.

The NMB (at NMB/8 in November 2013) did not endorse the NM budget for 2014 due to institutional issues. Nevertheless, the business continuity is ensured and NM will continue to perform its functions until a solution is found.

5 EAD was included by the NM in its functions in 2013. In 2014 EAD was taken out

6 The estimated 2013 Total En route of all Eurocontrol States based on November 2013 CRCO with the September exchange rate of the year 2013. The actual 2013 data will be presented to the next session of Enlarged Committee for Route Charges to be held on 25-26 June 2014

NETWORK STRATEGY PLAN

The Network Strategy Plan (NSP) defines the guiding principles for the network operation and its long term perspective; it is a new tool for improving ATM from a network perspective and in a structured way.

The network strategic vision is driven by the need for ATM Operations to achieve the SES objectives, and in particular the EU-wide performance targets. This vision incorporates six operational drivers that are the building blocks of network operations evolution for the next decade. They describe the main challenges that need to be addressed by the ATM community.

During 2013 the NSP was used to drive the NM activities towards the achievement of its strategic and performance objectives. This NM annual report presents in the different chapters the progress on the completion of the actions addressing the ten Strategic Objectives (SO) of the NSP[7].

The SO sign indicates which SO (see inside back cover) is addressed under that section.

The implementation of the SO actions in 2013 shows good progress towards the achieving of the strategic and performance objectives of the NSP (including the NMPP).

Preparation and adoption of the NSP for 2015-2019

One of the NM objectives in 2013 was to update the NSP to respond to the challenges of the Reference Period 2 (2015-2019) as per the SO 10 of the NSP.

This revision took into account the recent traffic forecast data for the European region and the expected European economic general context. In addition, technological, institutional and economic developments were carefully considered, especially the SESAR deployment. The first draft was prepared by NM and presented to NMB/8 in November 2013.

After a first review of NSP in November 2013, the NMB set up a Permanent NSP Task Force involving the NM, EC, ANSPs, airports and airlines to further develop the NSP and preparing the revised NSP for endorsement by the NMB. The revised version of NSP was approved during NMB/9 in March 2014.

7 The NSP, including the ten strategic objectives, could be found at http://www.eurocontrol.int/articles/atm-network-strategy-plan

CHALLENGES FOR THE FUTURE

NM has played a proactive role in addressing the network issues to bring tangible daily performance benefits to the network as a whole.

The future requires NM to maintain the good performance, which is the best way to consolidate its credibility and added value to European ATM.

The traffic growth is expected to return in the coming years, which combined with more ambitious targets in both capacity and flight efficiency performance areas will make 2014, the last year of RP1, particularly challenging.

NM will tackle in a proactive manner the systemic issues and the critical capacity areas. Similarly NM will tackle flight efficiency targets through initiatives with aircraft operators to improve airspace utilisation while respecting their flight cost efficiency needs.

Also high on the agenda for this coming year will be the safety and airport domains, which are recognised as improvement areas for 2014 and beyond.

The challenges of RP2 will dominate the NM agenda over the coming years. **SO-10**

In 2014 NM will finish the preparation for the RP2, which include the finalisation and adoption of the updated NSP and a standalone Network Performance Plan (NPP), as well as supporting the FABs in preparation of their performance plans. NM will need to perform its current and new activities in line with the NPP cost objective.

The 2013 monitoring results informed the preparation of the NOP 2014-2018/19 which foresees actions at local and network level in the area of Week/Week-end planning, less than optimum ATC sector configuration, inefficient route network and sectorisation, unnecessary restrictions, inclusion of FAB Plans, and planning of major projects/special events.

The NOP will identify additional measures for critical ACCs that may not have enough capacity for the forecast demand in RP2: Nicosia, Brest/Marseille/Reims, Athens/Makedonia , Barcelona/Canarias/Madrid/Palma, and Warsaw ACCs.

In 2013 the NM regulation has been amended in the context of the update of the Performance Regulation (Commission Regulation (EU) No 390/2013).

During 2014 the European Commission will undertake a further revision of the NM regulation as part of the formal review of the NM regulation implementation in the context of SES II framework. This could bring additional tasks that will need to be implemented by NM. A number of other important issues for NM have been earmarked recently in the context of the European Commission proposal on SES II+ and will be addressed in a not too distant future.

NM will keep a close watch on the evolving SESAR deployment and prepare accordingly. The Commission Regulation 409/2013 on the definition of common projects defines the cooperative arrangements between the Deployment Manager and the NM on all aspects related to network infrastructure, airspace organisation and performance as well as consistency with NSP and NOP. During 2014 the Pilot Common Project Implementing Rule will be adopted, which will bring new challenges for NM.

Work will continue at full speed between the various areas of expertise of the NM and the FABs. The main focus over the next period will cover a number of areas (including RP2 performance) with best practices being actively developed between the NM and the FABs.

ANNEX I NMPP INDICATORS, RESULTS 2013

Safety

There are no binding targets for the safety performance area in RP1.

NM focus in this area is enhancing the network operations safety.

NM supported the use of safety performance approach to fulfil its role: identifying network hotspots, analysing root causes and proposing action plans to minimise or remove the risk. The NMPP Part II defines the following objectives:

Identify Top 5 network safety risks 2012-2014.	Top 5 network safety risks identified: • Risk of operations without transponder or with dysfunctional one • Landing without clearance • Detection of Occupied Runway • Blind Spot • Conflict detection with adjacent sectors.
NM safety maturity level 3 by 2014.	*Objective for 2014, no intermediate value for 2013.*
Provide prioritised assistance and support ANSPs in 2012-2014 to improve their SMSs.	Four ES2 workshops, including the annual ANSP CEO Safety Conference, were held in 2013 as part of "Experience Sharing to Enhance SMS (ES2)" programme.
Ensure that over deliveries in ATFM regulations are not greater than 10% of the regulated rate.	In 2012, 12.3% was the percentage of hourly slices with over-deliveries above 10% of the regulated rate.
Reduce the number of reported RF interferences by 5% year on year from 2013 onwards.	As the reporting is limited to those interferences that imply a coordination at NM level, the numbers are too small to be able to follow the 5% reduction (1-2 reports per year).
3 million visits per annum to the SKYbrary website by 2014.	1 574 400 visits in 2013 from 226 countries / territories New more reliable methodology to calculate the number of visits, although gives lower numbers

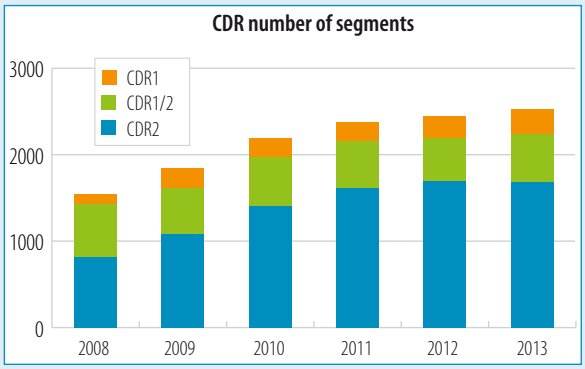
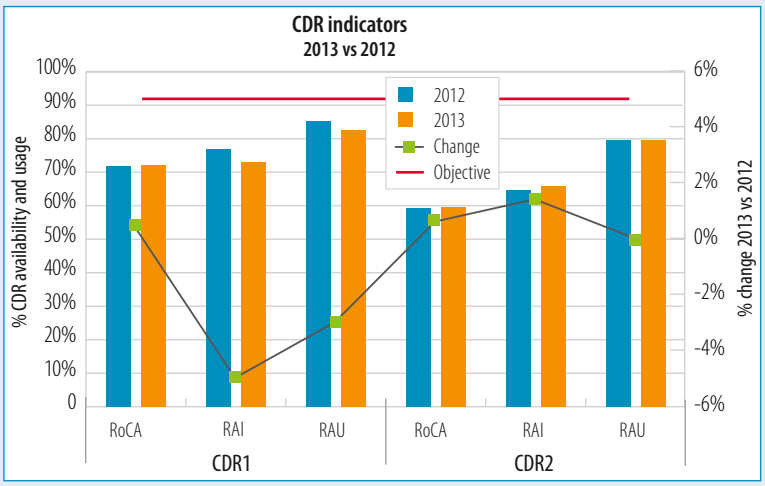
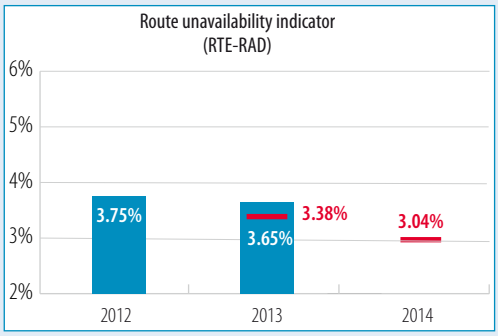
Environment

Two NM environment performance targets are defined in NMPP, consistent with the EU-wide environment performance target.

Reduction of 0.75% (relative to 2009) of route extension due to network design - the intermediate target for 2013 is 2.85%.	The route extension due to airspace design indicator result in 2013 was 2.8%, meeting the target of 2.85% and is on a positive trend to achieve the RP1 target. The route extension due to last filed flight plan indicator value in 2013 was 4.57%, missing the target. See executive summary.
Reduction of 0.75% (relative to 2009) of route extension due to flight planning - the intermediate target for 2013 is 4.4%.	

In addition the NMPP part II defines the following objectives:

Develop and support deployment of 500 airspace changes in 2012-2014.	424 airspace changes were implemented by the end of 2013; on track to achieve the objective for RP1.
Support implementation of free route in 25 ACCs by 2014.	By 6 March 2014 the 2014 objective has already been met with reaching a number of 26 ACCs where Free Route Airspace has been partially and/or fully implemented: Aix, Beograd, Brest, Brindisi, Bordeaux, Bucuresti, Karlsruhe, Kobenhavn, Lisboa, Ljubljana, Maastricht UAC, Malmo, Marseille, Milano, Padova, Praha, Reims, Roma, Shannon, Skopje, Sofia, Stockholm, Tampere, Warsaw, Wien and Zagreb ACC.

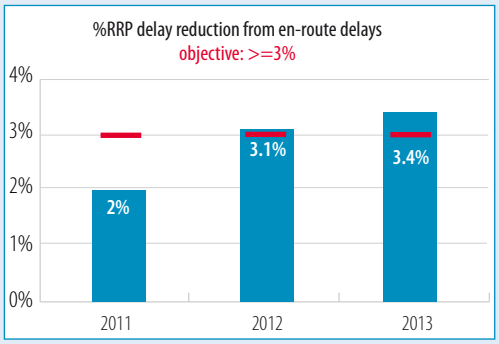
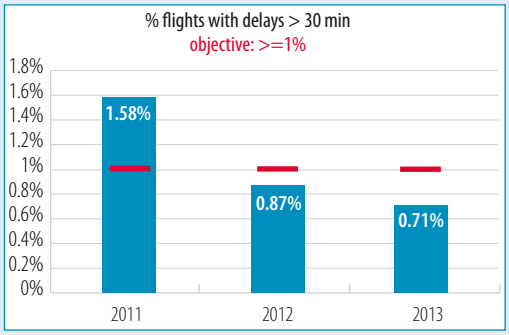
Increase annually the number of CDRs by 5%.	The overall 2013 increase for the number of CDRs is 3.2%; while CDR1 are almost at the same level (mainly because some CDRs were transformed in permanent routes), the CDR2 segments increased by 11% 
Increase annually the CDR1/2 availability and usage by an average of 5%.	The rate of both CDR1 and CDR2 availability (RoCA) increased slightly in 2013 but below the 5% objective. The CDR1 rate of planning and usage decreased in 2013 and the CDR 2 rate of planning increased while the CDR 2 rate of usage remained flat. The absolute number of aircraft planning or actual on CDR 2 increased significantly (FE initiative in the NMOC). 
Reduce route unavailability (in time and quantity) by 10% in 2013 and 2014	RTE-RAD indicator reached in 2013 the value of 3.65%, which is above the reference value, objective being 3.38%. A number of actions are foreseen in the FE work plan to close the gap. 
Reduction of vertical flight inefficiencies by 5% in 2014	*Objective for 2014, no intermediate value for 2013.* *NM is using the NOX indicator as a proxy to measure the vertical flight inefficiencies.*

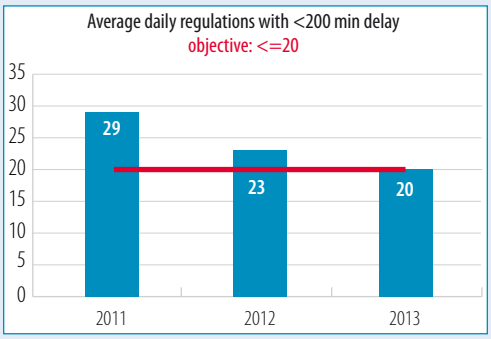
Capacity

Two KPIs defined in regard the network ATFM en-route delays and the NM direct contribution to delay reduction.

Meet annual network en-route delay target for each year in RP1, i.e. 0.6 minutes/flight in 2013.	The 2013 average en-route delay per flight was 0.53 minute/flight, meeting the target; see executive summary.
Reduce en-route delays by 10% below the declared plans for 2012-2014.	In 2013 savings amounted to almost 800000 minutes, equivalent to 2190 min/day or 0.08 min/flt. As a percentage of en-route delays – the most conservative value is 13.7%, measured against the total potential network delay, i.e. 0.53min/flt plus the saving 0.08min/flt = 0.61 min/flt. Measuring against the declared plans (0.49 min/flt in 2013) the percentage is 16.3%.

In addition the NMPP part II defines the following objectives addressing network capacity and delays:

Reduce airport generated delays by 5% at 5 airports in 2013 and 2014.	Seven airports monitored during 2013: a. In terms of NMOC direct delay savings for these airports – the percentage was met for all of them (between 6.11% for Istanbul and 8.63% for Palma) b. In terms of outcome (ATFM airport delays 2013 vs 2012) three airports met the objective (Istanbul Ataturk, Paris CDG and Frankfurt) and four did not (London Heathrow, Zurich, Palma, Düsseldorf).
Reduce first rotation delays by 5% per annum in 2013 and 2014.	Objective in 2013 was to get below 7324 min average daily delays for the first rotation period – achieved with 6531 min daily delay.
Save 120,000 minutes of weekend delay per year by 2013.	The weekend delays results: a. In terms of NMOC direct delay savings during weekends – objective met with 309000 minutes b. In terms of outcome (weekend delays 2013 vs 2012) 27206 minutes achieved vs 31388 minutes objective
Reduce delay due to accepted rerouting proposals in excess of 3% of daily en-route delay.	3.4% achieved in 2013, objective met.  NM changed in 2013 the method to include only those RRPs relevant for delay savings that delivered the expected delay reduction. On this method the 2013 percentage is 2.5%
Reduce the percentage of flights with delay (any cause) > 30 minutes from 1.58% (2011 average) to 1%.	0.71% achieved in 2013, objective met. 

Reduce the average daily number of ATFCM regulations that produce less than 200 minutes of delay to below 20 per day.	Objective reached with 20 reg/day. 

Cost Efficiency

There is no target in RP1, the objective is that NM costs remain within 2.9% of total en-route network costs.	NM's budget represented 2.6% of the total network costs. This is below the target of 2.9%. In 2013 the execution of 2013 budget was below the approved value and therefore the total spending was below 2.9% of the total network cost.

ANNEX II GLOSSARY

NM regulation	Commission Regulation (EU) 677/2011 of 07 July 2011 laying down detailed rules for the implementation of air traffic management (ATM) network functions
ATFM regulation	Commission Regulation (EU) No 255/2010 of 25 March 2010 laying down common rules on air traffic flow management
Performance regulation	Commission Regulation (EU) No 390/2013 of 3 May 2013 laying down a performance scheme for air navigation services and network functions
ACC	Area Control Center
A-CDM	Airport Collaborative Decision Making
AIS	Aeronautical Information Services
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
CCAMS	Centralised Code Assignment and Management System
CDM	Cooperative Decision Making
CDO	Continuous Descent Operations
CNS	Communication, Navigation & Surveillance
DPI	Departure Planning Information
EACCC	European Aviation Crisis Coordination Cell
EASA	European Aviation Safety Agency
EC	European Commission
ERNIP	European Route Network Improvement Plan
EUROCONTROL	European Organisation for the Safety of Air Navigation
EU	European Union
FAB	Functional Airspace Blocks
FE	Flight Efficiency
FMP	Flow Management Position
IFPS	Integrated Initial Flight Plan Processing System
KPI	Key Performance Indicator
NDOP	Network Directors of Operations Forum
NETOPS	Network Operations Team
NM	Network Manager
NMB	Network Management Board
NMOC	Network Manager Operations Centre
NMPP	Network Manager Performance Plan
NOP	Network Operations Plan
NSP	Network Strategy Plan
RFF	Radio Frequency Function
RP	Reference Period
RTE-DES	Route extension due to network design
RTE-FPL	Route extension due to last filed flight plan
SES	Single European Sky
SESAR	Single European Sky ATM Research
SMS	Safety Management System
SO	Strategic Objective of the NSP
SWIM	System-Wide Information Management
TCF	Transponder Code Function
VOLCEX	Volcanic Ash Exercise

STRATEGIC OBJECTIVES OF THE NETWORK STRATEGY PLAN

Strategic Objective 1 - Effective (robust) network CDM process offering the strongest possible level of acceptance of network measures

It encompasses the organization of the required CDM process within the scope of the NMB in order to achieve decision consistency among the involved organisations (e.g. issues contributing for reduction of Network fragmentation)

Strategic Objective 2 - Make available and share information and data relevant to network management and operations

To support the CDM processes and improve the flexibility, the predictability and reduce fragmentation, the required information needs to be validated and shared between the operational partners in their duties.

Strategic Objective 3 - Network Manager Performance plan to enhance the performance of the network

The NM Performance Plan, covering in addition the actions that the NM needs to perform within the wider operational context to contribute to the achievement of the global network operational targets.

Strategic Objective 4 - Development and adoption of the NOP to achieve the Network performance targets

The need for a robust common operational plan (NOP) to ensure that the operational targets (en-route capacity and flight efficiency) are achieved and to ensure that the required enablers are deployed and made available, in time, to support the operations.

Strategic Objective 5 - Manage the effectiveness of the network through monitoring and cooperative work to deliver the required network performance

To ensure a common management and monitoring of the operations at network level, that all operational stakeholders contribute and commit on relevant actions to achieve the network performance objectives.

Strategic Objective 6 - Integrate the airport operations into the network Operations

The relationship enhancement of all airport actors with the Network in a collaborative manner, contributing to improve the airport operations and consequently the airport performance indicators, while contributing to the network performance.

Strategic Objective 7 - Ensure a safety-based approach to the network Operations

To address the safety aspects, as core in ATM and to prepare the RP2 on addressing this key performance aspect. Ensuring the coordination of a mature and harmonised ATM Network safety management system, while promoting and ensuring a "just culture" within ATM as a key enabler for improving European aviation safety.

Strategic Objective 8 - Manage scarce resources

The scarce resources, that, when lacking, will adversely impact the performance of the Network.

Strategic Objective 9 - Better manage human ATM resources

The management of capacity (in particular staff) to address and react on time to demand and its changes.

Strategic Objective 10 - Prepare the network management and the network operations for RP2

The activity of network management is new. Its evolution also needs to allow it to anticipate changes in roles, making use of experience and preparing the operational network for new objectives and targets.