

**EUROCONTROL EXPERIMENTAL  
CENTRE**

**EFQM SELF-ASSESSMENT  
2003**

AWARD SIMULATION APPROACH

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02 May 2003

## DOCUMENT APPROVAL

The following table identifies all management authorities that have successively approved the present issue of this document.

AUTHORITY	NAME AND SIGNATURE	DATE
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## OVERVIEW

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### Context of this submission

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This submission document represents the 5<sup>th</sup> EFQM self-assessment that the EEC has carried out since the first self-assessment in 1998. See the section *Journey to Excellence* below. This is the 2<sup>nd</sup> time that the award simulation approach has been used, the first being in 2002. In 2002 and this time in 2003, the submission document has been submitted to an external team of assessors, led by a qualified EFQM senior assessor, in order to guarantee a totally objective assessment and scoring. The feedback from the 2002 self-assessment has been digested by the EEC and has been used to improve EEC functioning and operations.

This submission is being made at a time when the EEC is undergoing an important transition. Major initiatives have taken place in the ATM sector namely the ACARE initiative of the European Commission and the formation of new industry alliances. In order to meet the challenges of this rapidly changing context, the EEC conducted a far reaching strategy review in the 2<sup>nd</sup> half of 2002 followed by a reorganisation to align the EEC structure with the revised strategy. The former 9 business areas (pre 2003) were readjusted and consolidated into 6 business areas in order to fully align with ACARE and the revised ATM2000+ strategy. This transitional situation should be kept in mind by the reader.

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### History

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The EUROCONTROL Experimental Centre (EEC) was officially established as an external service of the EUROCONTROL Agency on 10 June 1963. The initial responsibilities were defined as:

- operational research and the testing of ATC methods
- operational demonstrations of the validity of the ATC system proposed
- operational and technical evaluation of control centre equipment

The EEC was the first establishment in the world to execute a totally digital real time simulation for ATC.

The resources and scope of the EEC have been gradually increased over the years and the EEC has become a leader in the provision of ATM simulation services and a major ATM/CNS R&D centre.

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### Changing market context

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From its inception and for most of its existence, the EEC has been in a stable public service environment. Despite fluctuations, the steady European economic growth has produced a steady growth in the demand for air travel with a consequent requirement for ATC systems to constantly deliver commensurate increases in capacity. This constant renewal and upgrade of ATC systems and airspace organisations has led to significant investments at the EEC both for research and development and for ATC simulations and the demand has usually exceeded the EEC's work capacity.

Competition for the EEC has been virtually non-existent since both ATC service provision and national research and development centres were government activities. Cooperation and collaboration has taken place but the absence of an overall view and management of research and development in Europe, has led to duplication and overlap of activities and wasted investment.

Since the beginning of the 90s, many States have privatised or corporatised their ATS providers and/or their R&D Centres. The EEC now finds itself in an environment where competition and the need to demonstrate cost effectiveness must be carefully married with collaboration to ensure the most efficient use of the overall European investment in ATM research and development.

In this context, the EEC has regularly reviewed its position and its role. Extensive discussions with the main stakeholders, through the EEC Consultation Group took place to define for each type of activity the funding, the work allocation mechanisms and the EEC role. The EEC does hold a unique position in European ATM, it being the only European ATM R&D establishment, but nevertheless in many aspects it is a peer among several players.

Over many years, the EEC has gradually build a strong partnership with the European Commission. In Q1 2003 after long negotiations inside and outside the Agency, this partnership has been further consolidated with EATM, and the EEC has been given full responsibility for ATM R&D in Europe. This transition, referred to at the beginning of this chapter, will see the EEC and the European Commission constitute a Joint Programme Board which will oversee ATM R&D

in Europe articulated through an ATM R&D Master Plan. Detailed working arrangements are currently being developed.

## Business of the EEC

The mission of the EEC is to carry out research and development in order to improve Air Traffic Management in Europe.

We deliver this mission through 6 business areas:

EEC Business Areas (2003)	
APT	Airport throughput
ERIS	EATMP reference industry-based simulation platform
INO	Innovative research
NCD	Network capacity and demand management
SEE	Society, Environment and Economy
SPP	Sector Safety and Productivity

As any research centre, the activities comprise experiments, studies, validation, tests, and prototyping. A major tool is simulation, ranging from analytical modeling through to real time simulation and field trials. Simulations are an instrument for evaluation, validation and acceptability testing of R&D products. They are also provided as a service to member states and ANSPs in order to support improvement actions such as airspace reorganisation, changes in working procedures, and the introduction of new tools. A major EEC activity is software development, of simulators, tools, and middleware, and of prototype components of ATM systems.

The work of the EEC is organised as a set of projects, and a project is managed by one of the business areas. The totality of the projects constitute the work programme. The following types of deliverable are project outcomes:

- Reports
- Publications in learned journals and conferences
- simulators
- tools
- prototype ATM system components
- demonstrators

Different projects in the EEC work programme address different periods in the research time spectrum, from short term through medium term to long term. Experience shows that there is normally a constant of 10-20 years to bring new concepts into operations.

Some projects in deliver benefit in the short term. For example, NCD provides a unique capacity planning service to the ATM community to deliver ATFM delay forecasts and yearly capacity plans

and to set short-term capacity targets for ANSPs. Other projects explore the feasibility and benefits of new airspace organisations, and new working methods as applied to current operational systems, and recommendations are often implemented in the short term.

Most of the other business areas are concerned with medium to long term research. One example, and a key EEC project is COSPACE. Its objectives are essentially to determine the operational feasibility, applicability, and potential benefits, in terms of safety, capacity and overall efficiency, of partial delegation of separation assurance from ground ATC to aircrew. If this line of research delivers the expected benefits, operations could be in the 2015 timeframe.

The EEC develops a large range of software applications for its own use. It is not the business of the EEC to develop and deliver operational products, that is the business of industry, but simulators, tools, prototypes and demonstrators which achieve a high level of maturity can interest the ATM community at large. These spin-off products are made available normally free of charge. See chapter 6

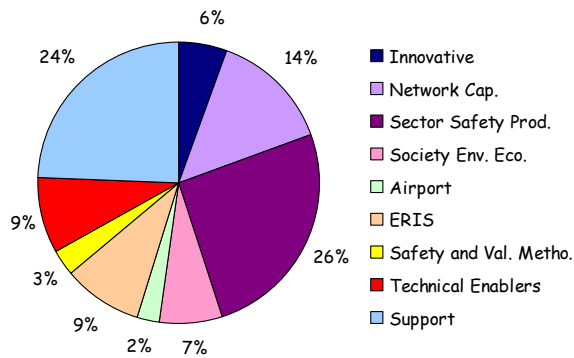
## Funding and Resourcing

All 2003 budget figures in this report correspond to the state at the time of writing. The budget of the EEC is a component of part 1 of the Agency budget, which is funded by Member State contributions according to Agency rules. In 2003 this amounts to 57.72 MEUR and covers staff costs, operating expenditure and investment credits. This EEC budget is augmented by 20.33 MEUR in the form of delegations from other sponsors, both internal and external to the Agency, in payment for work done.

Budget delegations	
Origin	Amount (MEUR)
Other Agency directorates, mainly EATM and CFMU	12.37
External to the Agency, mainly European Commission, ENAV, FAA	7.96
Total	20.33

With the addition of delegations, the total budget managed by the EEC in 2003 is 78.05 MEUR.

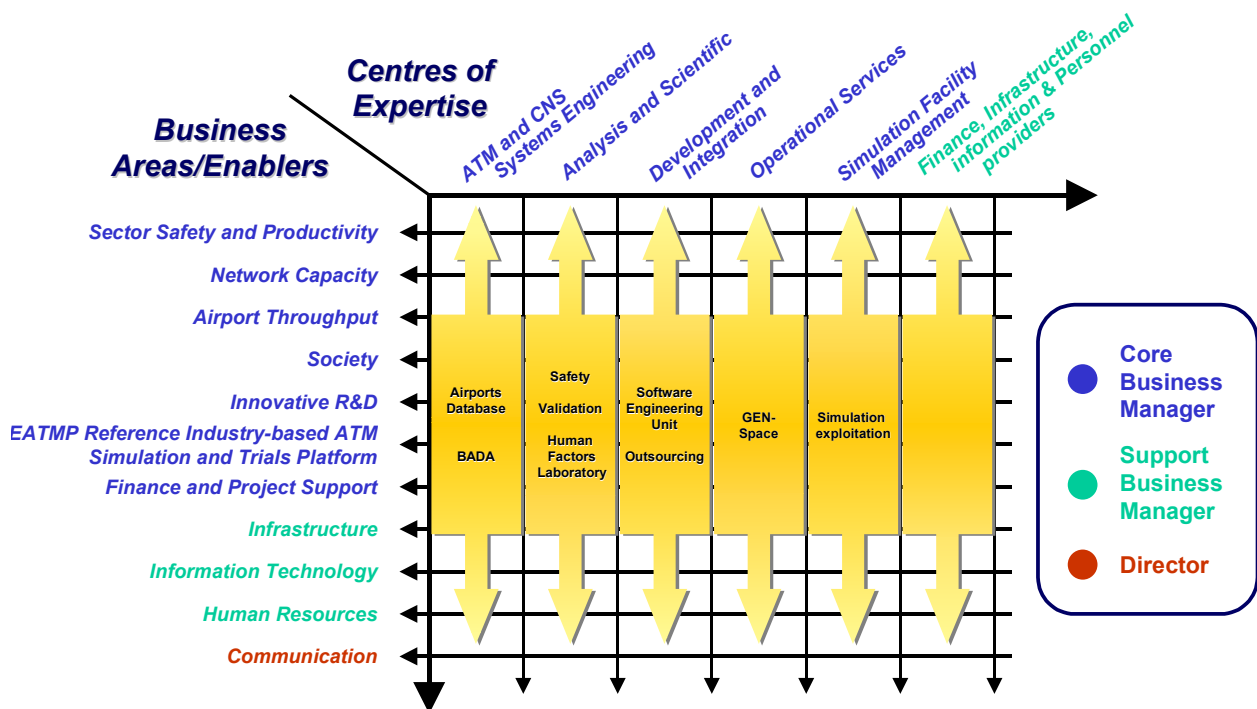
The chart below shows the amount of resources allocated to the different business areas, enablers, and support in 2003. Funds are allocated based on agreed plans in the Business Plan complemented by subsequent negotiation during budget execution.



The EEC staff complement is 272 budgetary posts of which 15 are frozen to reduce overall Agency staff costs resulting in 257 posts which can be filled. 252 staff are currently in post. This staff complement is supplemented with more than 200 external persons made up of contract staff and students and seconded staff from national administrations. The EEC building is set on a site of some 90.000 square metres. It has a total floor space of some 15.000 square metres which comprises office space, meeting rooms, a conference facility, experimental rooms and workshops, in addition to a showroom and the real time simulation area consisting of two control rooms, a demonstration room and a pilot room.

## EEC Organisation

The EEC operates a matrix organisation across the whole of its organisation, core business and support. There are 6 business areas and 4 principal business enablers on the vertical axis and 6 centres of expertise on the horizontal axis. A business area contains projects which deliver outcomes to customers. A business enabler contains services and projects which deliver outcomes to other units of the EEC. A centre of expertise gathers a pool of specialist knowledge and supplies skills in a dynamic manner to projects. A centre of expertise supplies skills to projects and services in business areas and business enablers as the needs arise. It is the responsibility of a centre of expertise to manage staff and skills and their development. Key methodologies such as safety, validation, software engineering, reside in centres of expertise and are developed and promoted and supported by the centre of expertise. Key methodologies are applied across all core business projects.



## Governance

The EEC is an external unit of the EUROCONTROL Agency. The DEEC is responsible to the DG for the efficient operation of the EEC. The EEC is overseen by the EEC Management Board (EEC MB), which sets and approves EEC strategy and which directs EEC activities. The EEC MB meets twice per year, and approves the EEC Business Plan.

### EEC MB Composition

Director General  
Head of DG Cabinet  
Senior Director EATMP  
Director Finance  
Director Human Resources  
Director CFMU

EEC Core Management members attend the EEC MB meeting. The representative of the local Staff Committee participates for agenda items which concern the Staff Committee.

Two other Agency steering committees are key to the functioning of the EEC, the EUROCONTROL Programme Appraisal Committee (EPAC), and the EATMP Management Committee (EMC).

EPAC is the investment Board at Agency level. It reviews investment proposals, being programmes, projects, services or simply equipment acquisitions, whose total capital value exceeds 5 MEUR (this financial threshold being 1 MEUR in some specific cases).

For work which the EEC conducts for EATMP, then DEEC is functionally responsible to Senior Director EATMP (SDE). EATMP is managed by the EMC, of which SDE is the chairman. The EMC meets approximately 9 times per year.

Internally, the EEC is managed by the Core Management (CM) which comprises five members, DEEC plus four senior managers. The CM meets approximately once every other week. The DEEC assistant is the secretary of the CM meetings.

### CM composition

DEEC  
Core Business Manager  
Support Business Manager  
R&D coordinator  
Special Advisor

The Experimental Centre Consultation Group (ECCG) is the principal forum for consulting EEC stakeholders. The ECCG is an official entity in the EUROCONTROL organisation. It was established in 1998 in order to advise the DG on the role, strategy, and performance of the EEC. An EEC staff representative who is elected by EEC staff, attends the ECCG meetings. The ECCG meets twice per year normally in April and October. ECCG consultation is an essential step in the Business Plan lifecycle, and the Business Plan is amended following ECCG advice.

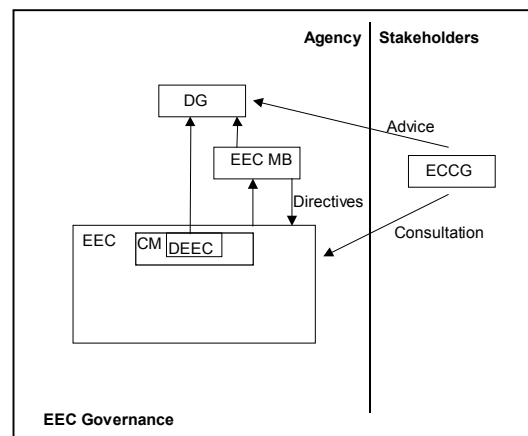
### ECCG composition

Chairman:  
Marc Baumgartner  
(President & CEO IFATCA)

Secretary:  
(EEC R&D Co-ordinator)

EEC staff representative  
Member States  
ANSPs  
ATM system providers  
IATA  
IFATCA  
ATCEUC  
R&D establishments  
Airports  
European Commission  
Military

An overview of EEC governance is depicted in the following diagram.



## Journey to Excellence

Experimental Centre Journey to Excellence (1)		
Year	Highlights	Features and detail
Pre 1995	<ul style="list-style-type: none"> <li>World leader for the provision of ATC real time simulations.</li> <li>Emerging process management</li> <li>EEC pressure leads to the creation of the Agency Quality Group in 1994</li> </ul>	<ul style="list-style-type: none"> <li>Process management: <ul style="list-style-type: none"> <li>Software engineering standards (IEEE based)</li> <li>Real time simulation handbook</li> <li>Project management training</li> <li>Simulation management group</li> <li>Change and problem control procedures.</li> </ul> </li> </ul>
1995	<ul style="list-style-type: none"> <li>Jean-Marc Garot director</li> <li>Hierarchical organisation flattened</li> <li>Domains of expertise</li> <li>Democratic reorganisation process</li> <li>TQM initiated</li> <li>EEC mission and vision</li> </ul>	<ul style="list-style-type: none"> <li>Total quality (TQ) principles: <ul style="list-style-type: none"> <li>Customer satisfaction</li> <li>Continuous process improvement</li> <li>Total staff involvement.</li> </ul> </li> <li>Seminars by external quality experts, Tom Gilb and James Teboul</li> <li>The mission (1995) of the EEC is to carry out R&amp;D in order to improve ATM in Europe</li> <li>Vision 1995 <ul style="list-style-type: none"> <li>Reinforce EEC objectivity</li> <li>Become more business-like</li> <li>Build on the excellence of our staff</li> <li>Further strengthen R&amp;D</li> </ul> </li> </ul>
1996	<ul style="list-style-type: none"> <li>Organisation focusing on projects and stakeholders</li> <li>Comprehensive project reviews</li> <li>Subsidiarity</li> <li>TQM</li> <li>Intranet and external web site created</li> </ul>	<ul style="list-style-type: none"> <li>Organisation: Centres of Expertise, Administrative Services, technical Services, and Core Management all in support to projects.</li> <li>Subsidiarity: wide distribution of extracts from the book by Charles Handy "The Empty Raincoat", extensive debate on the electronic newsgroups.</li> <li>TQM: 11 improvement projects launched involving 30 people.</li> </ul>
1997	<ul style="list-style-type: none"> <li>Focus on organisational development and leadership</li> <li>Restructure of support services and core and middle management</li> <li>Framework contract for external effort procurement</li> <li>Business planning launched</li> <li>Stakeholder survey 1</li> <li>Pilot performance appraisal</li> <li>TQM: CIC CoE, EFQM.</li> </ul>	<ul style="list-style-type: none"> <li>Internal communication on organisational development and leadership was spearheaded by a seminar delivered by Manfred Kets de Vries (INSEAD) a world authority on the subject. Notion of a fun factor.</li> <li>Restructuring of the technical and administrative support sections. Four work programme managers and four functional core managers.</li> <li>TQM: new staff performance appraisal scheme which was entirely developed within the EEC. Centre of Expertise (CIC) created with the core management special advisor as champion. Agency Quality Policy signed by the DG, EFQM mandated.</li> </ul>
1998	<ul style="list-style-type: none"> <li>EFQM self-assessment 1, score 203</li> <li>First Business Plan drafted</li> <li>Building renovation started</li> <li>ECCG created</li> <li>Staff satisfaction survey 1</li> </ul>	<ul style="list-style-type: none"> <li>EFQM awareness sessions attended by 150 people. Questionnaire issued on the intranet for all to respond.</li> <li>Business planning process focused on wide consultation inside and outside the Agency</li> <li>Extensive building project was necessary to ensure conformity with legislation: fire, electrical installations, building materials</li> </ul>
1999	<ul style="list-style-type: none"> <li>Business Plan v1.0 approved by the DG</li> <li>Organisation EATMP alignment</li> <li>EFQM self-assessment 2, score 287</li> <li>Stakeholder survey 2</li> <li>IT facilities management</li> </ul>	<ul style="list-style-type: none"> <li>The main objectives of the organisational adaptation were: <ul style="list-style-type: none"> <li>better alignment with EATMP</li> <li>a reinforcement of projects and programmes</li> <li>a reduced and strengthened core management.</li> </ul> </li> <li>EFQM self assessment again used the questionnaire approach, issued on the intranet and on paper.</li> <li>IT facilities management outsourced. Significant improvement in quality of service, staff retrained and reallocated mainly to core business</li> </ul>

<b>Experimental Centre Journey to Excellence (2)</b>		
<b>YEAR</b>	<b>Highlights</b>	<b>Features and detail</b>
2000	<ul style="list-style-type: none"> <li>Matrix organisation</li> <li>Business Plan v2.0 approved by DG.</li> <li>EFQM self assessment 3, score 306</li> <li>Building renovation completed</li> <li>Staff satisfaction survey 2</li> <li>Budget checkpoints</li> </ul>	<ul style="list-style-type: none"> <li>Main objectives of the matrix organisation were: <ul style="list-style-type: none"> <li>Facilitate alignment of organisation with strategy</li> <li>Increase flexibility of staff and projects</li> </ul> <p>Centres of Expertise (CoEs) were retained as the basic staff management unit, but their number was reduced to five. Contract staff were no longer assigned to CoEs but were allocated directly to projects. Projects were no longer managed in an ad-hoc fashion within CoEs but were grouped together into nine business areas which implemented strategy.</p> </li> <li>The pro-forma interview approach was used for the EFQM self-assessment. This required more resources but is more insightful. A sample of 10% of staff was interviewed by a team of 7.</li> <li>Suggestions Box launched</li> <li>Major improvement to the financial processes through the introduction of quarterly budget checkpoints where each project and business area is scrutinised</li> </ul>
2001	<ul style="list-style-type: none"> <li>Think-tank</li> <li>Business Plan v3.0 approved by DG.</li> <li>HR section reorganisation</li> <li>Major process improvement</li> <li>IT facilities management</li> </ul>	<ul style="list-style-type: none"> <li>The Think-tank cross functional team of 9 people undertook a wide ranging review of the functioning of core business. Main findings: <ul style="list-style-type: none"> <li>Reduce the number of projects</li> <li>Better define roles and responsibilities within the matrix</li> <li>develop knowledge management in CoEs</li> <li>communicate the staff plan</li> <li>restart systematic project reviews</li> <li>re-energise internal communication</li> </ul> <p>Improvement actions were launched to address each of the above findings. The functioning of the organisation should be reviewed every 12-18 months.</p> </li> <li>Major process improvement:: <ul style="list-style-type: none"> <li>Budget monitoring process</li> <li>Staff planning</li> <li>Access to business information (ACB).</li> <li>Intranet "How to Guide" to improve access to information</li> </ul> </li> </ul>
2002	<ul style="list-style-type: none"> <li>Business Plan v4.0 approved by DG</li> <li>Major revision of strategy</li> <li>EFQM self assessment 4, score 350</li> <li>Matrix extension</li> <li>Major process improvement</li> <li>Staff satisfaction survey 3</li> <li>Stakeholder survey 3</li> <li>Values project</li> <li>Internal communications improvements</li> </ul>	<ul style="list-style-type: none"> <li>EFQM self-assessment using the award simulation approach, assessed by external assessors.</li> <li>Matrix extension to enabling services, 6<sup>th</sup> centre of expertise added (FIP, Finance, infrastructure, information, and personnel)</li> <li>Major process improvement:: <ul style="list-style-type: none"> <li>Enabling services web site</li> <li>Process mapping based on initial process framework</li> <li>Review and enhancement of key performance indicators</li> <li>Clarification of the matrix and roles</li> <li>Process to measure the effectiveness of training</li> </ul> </li> <li>Staff satisfaction survey 3. First common survey undertaken in all Agency directorates.</li> <li>Major revision of EEC strategy to prepare for increased responsibility for R&amp;D in the Agency and in Europe and to ensure alignment with ACARE and ATM200+ strategies.</li> <li>DEEC initiates the values project to study in depth the current values of the EEC and the values to which the staff and management of the EEC aspire. Improvement actions will follow.</li> <li>Improvements in internal communication, weekly information corner, internal newsletter, revised EMM</li> </ul>
2003	<ul style="list-style-type: none"> <li>ERC</li> <li>EFQM self-assessment 5</li> <li>Staff satisfaction survey 4</li> <li>EEC reorganisation</li> </ul>	<ul style="list-style-type: none"> <li>The EEC is given the total responsibility of R&amp;D in the Agency and, jointly with the European Commission, the responsibility for R&amp;D in Europe</li> <li>EFQM self-assessment again using the award simulation approach, assessed by external assessors</li> <li>EEC restructured to align with the revised EEC strategy.</li> </ul>

## 1 LEADERSHIP

Excellent leaders develop and facilitate the achievement of the mission and vision. They develop organisational values and systems required for sustainable success and implement these via their actions and behaviours. During periods of change they retain a constancy of purpose. Where required, such leaders are able to change the direction of the organisation and inspire others to follow.

The EEC policy of subsidiarity requires that leadership competencies exist at several levels of the organisation. Leadership is expected from all levels of management as well as from people in situational leadership positions during specific meetings or interactions.

### **1a Leaders develop the mission, vision, values and ethics and are role models of a culture of Excellence**

The mission and vision of the EEC were developed in 1995 through a process of staff consultation and wide debate led by the Core Management Special Advisor. The resulting vision expresses the fundamental values of the EEC culture. The mission and vision are systematically deployed to all EEC activities via the strategy and work programme and are reviewed on an annual basis as part of the Business Plan revision cycle.

In 2002 a Task Force was established to investigate more closely the values of the EEC. With the support of external consultants, the group used a survey of all staff to identify what are, and what people feel should be, the values of the EEC. The findings of this group are being discussed with staff at present through a series of presentations. Each presentation was given several times to ensure maximum effectiveness. The aim of the project is to improve the collective understanding and move the EEC towards the common goals.

EEC Leaders, both members of core management and middle management, act as role models for a culture of excellence by personal and active involvement in improvement activities. Improvement projects are either generated from EFQM self assessments, or are generated by regular assessment and review activities, or are generated spontaneously from the continuous improvement culture. The Core Management Special Advisor is a member of the suggestions box board. Many of the major improvement actions such as strategy reviews, organisational realignments, outsourcing, facilities management, drive for business excellence etc., have all been triggered by core management.

Effectiveness of leadership is reviewed firstly through a series of questions in the staff satisfaction survey, and secondly through the annual performance appraisal. Core management away-days are organised once a year, each one focusing on a particular theme. The next one, for example, will focus on the conclusions to be drawn from the Values study described above. The conclusions of core management away-days are reported on at all staff meetings. To review and improve the effectiveness of core management leadership is the declared objective of these meetings, which are usually facilitated by an external consultant. Informally, leadership effectiveness is also reviewed through the open and democratic culture of the EEC, through personal interaction and through wide use of the electronic newsgroups. DEEC, and to a lesser extent some senior managers, dialogue directly with the staff through the electronic newsgroups.

Trust and empowerment are key elements of the EEC organisation. Since 1995, the traditional, rigid, hierarchical structure has been replaced by a flatter organisational structure which, through subsequent and regular assessment and review actions, has been transformed into the current powerful and flexible balanced matrix organisation. Such an organisation facilitates and encourages empowerment, the latter being further developed through coaching and training. Project and unit managers at the EEC have full responsibility for budget and staff and other resources and are accountable both horizontally and vertically through regular assessment and review processes. Budget reviews are held quarterly and all budget holders are required to account for transactions and confirm planning. Similarly people managers have been encouraged to extend the performance appraisal process by holding intermediate review meetings with their staff and this has become standard practice in each Centre of Expertise.

Communication has been identified as a key success factor for the EEC and was a topic that emerged from staff surveys as needing more attention. Based on this feedback it was decided to reinforce the role of the various management meetings as a means of ensuring communication in both directions.

Minutes from Core Management Meetings CMM are published on the Intranet. Attendance at the CMM is high. Since July 2001 there have been 28 CMM. At least 4 Core Managers were present at 26 of these meetings and there was full attendance at 19 of them.

Collaboration is the essence of a matrix organisation where people and resources come together in project teams to achieve a clear set of objectives. In 2002, in reaction to feedback from the Staff Satisfaction Survey, the CM participated in team-building exercises supported by an external consultant. Collaboration is also encouraged on a less formal basis through voluntary participation in consultative committees such as for the canteen and for major building projects.

The EEC adopted an approach of continuous improvement over fifteen years ago. This initially used total quality principles and then transitioned to continuous improvement when the activities were formalised around the EFQM model and techniques in 1998. Throughout this period, staff members have been encouraged to participate in improvement projects on a voluntary basis. Senior managers also will lead or participate in improvement projects. It is part of the approach that managers allocate time for continuous improvement activities.

Appropriate training was provided through the quality module of the project management training and more recently through specific EFQM training: both introductory and assessor training. There are also regular internal presentations. In 2003, 3 middle managers have followed the EFQM self assessment training and one scientist has qualified as a EFQM European Excellence Assessor.

This document, the report for the EFQM self-assessment award simulation, is being written by a team of 7 people, all volunteers, some managers, who are drawn from different EEC units. Many other people contributed to the development of the report via interviews and by their supplying data for the results chapters of the report.

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**1b Leaders are personally involved in ensuring the organisation's management system is developed, implemented and continuously improved**

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**Aligning the organisation's structure to support delivery of its policy and strategy**

The section *Overview-Journey to Excellence* above shows that the EEC has undergone several major reorganisations in order to respond to changing context. More recently, the EEC underwent a major restructuring in mid-2000 which resulted in its core business being organised as a classical matrix. People management activities, grouped into 'Centres of Expertise', were placed along one axis, and projects, grouped into 'Business Areas' on the other. The choice and naming of Centres of Expertise and Business Areas is highly significant, as they incorporate the strategic elements of the EEC and its deployment framework.

EEC Business Areas (2000)	
ACS	ATM concepts and studies
ATI	ATM implementation
CNS	Communication, navigation and surveillance
ENV	Environment
ERS	EATMP reference industry-based platform
GNS	Satellite navigation
INO	Innovative research
PFE	Performance, flow and economics
SAF	Safety

In 2002 the matrix was extended to include the center's support activities through the appointment of Business Enabling Managers (BEMs) and the addition of a sixth Center of Expertise. They are listed below:

EEC Centres of Expertise (2002)	
ACE	ATM and CNS system engineering
SAS	Safety analysis and scientific
DAI	Development and integration
OPS	Operational services
SFM	Simulation facility management
FIP	Finance, infrastructure, information and people provider

EEC Business Enablers (2002)	
MIM	Marketing & information management
ITM	Information technology management
AMI	Administrative and management information software
HRM	Human resources management
SMU	Social medical unit
SPP	Service for prevention and protection at work
TIG	Transport & mail infrastructure general support
FIN	Finance
FPA	Financial planning and analysis
PSO	Programme support office

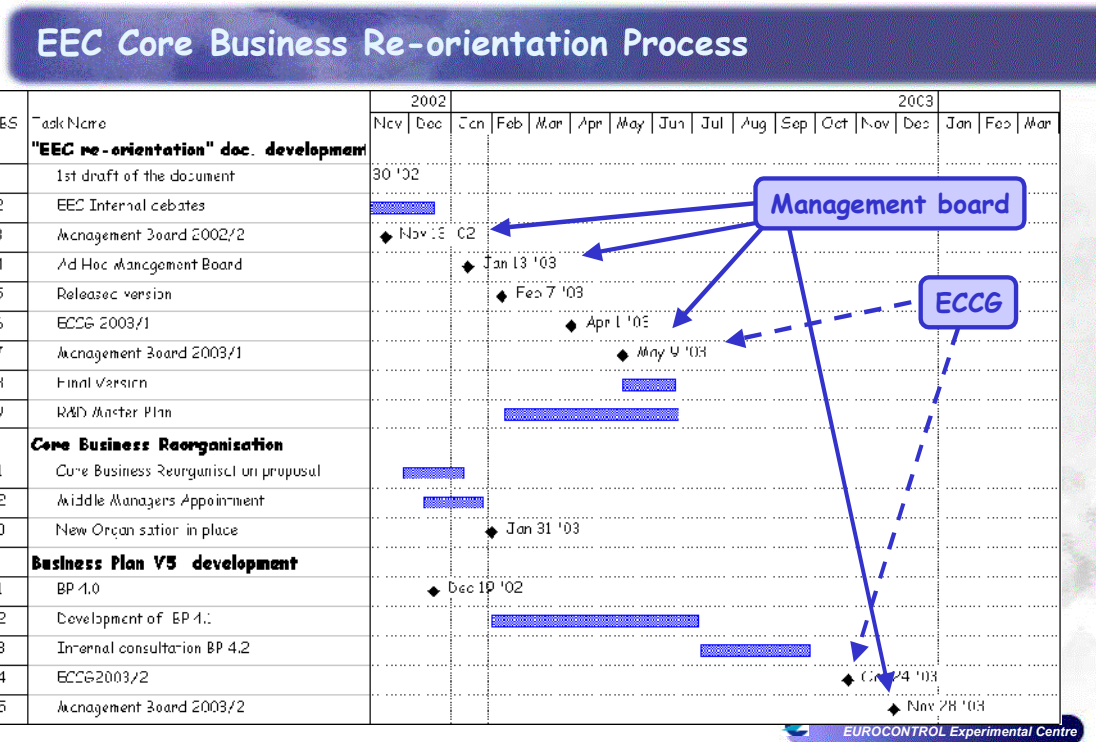
At the end of 2002 and beginning 2003 in response to the report "Proposed EEC reorientation v2", the 9 business areas were regrouped into 6 new business areas in order to implement the new strategic direction in a demonstrative manner and to align with the EATM reorganisation taking place at the same time.

EEC Business Areas (2003)	
APT	Airport throughput
ERIS	EATMP reference industry-based simulation platform
INO	Innovative research
NCD	Network capacity and demand management
SEE	Society, Environment and Economy
SPP	Sector Safety and Productivity

The EEC reorganisation implementing the "reorientation" was described and agreed by the EUROCONTROL Director General in Decision N° VII/1(2003) on 13 January 2003.

The Gantt chart on the powerpoint slide below depicts the business planning process which drives the re-orientation process. This slide also shows the way that the process is communicated and explained to staff and to stakeholders. This slide is part of standard EEC presentations.

This ability to respond to the evolving environment demonstrates the effectiveness of the EEC's matrix structure to accommodate change and reflect the needs of its stakeholders.



The organisational structure and operation have been assessed and reviewed on an annual basis to seek to optimise the delivery of strategy. A review took place in Q4 2001 in the form of a facilitated brainstorming exercise with the participation of representatives of senior and middle management. This led to improvement actions in the area of internal communication (see section 3d) and project management, project reviews (see section 2d) and contract management (see section 4a).

In Q2 2002 the heads of Centres of Expertise reviewed the impact of the matrix organisation on the EEC work programme. A survey of Project Managers and Business Area Managers was undertaken, which showed a high level of

acceptance of the matrix structure but identified some weak areas, notably in communication and collaboration. The formulation of improvement actions to address these areas for improvement will form the subject of middle management meetings in 2003.

Starting in 2002 and continuing through 2003, a major initiative was launched to establish a framework of key processes (see section 2d) and to map and document processes. Owners were clearly identified. This work was triggered by self assessment feedback in 2002. An improvement action was started and was reinforced by actions led by the core business manager and the support services. Processes are documented on the intranet.

An Intranet tool, the "How to?" Guide, has been developed to facilitate access to intranet information including processes. In addition a separate process indexing mechanism has been developed, accessible from the intranet home page.

Assessment and review of processes is gradually becoming more systematic. For example there are systematic annual reviews of the business planning process and the promotion process. This and previous self-assessment exercises as well as the increasing maturity of the organisation have acted as catalysts for a more systematic examination of key business processes. It should be noted that many processes especially in the finance, procurement, and human resource domains, are mandated at the level of the Agency. In these cases the EEC seeks, through appropriate training, to ensure that EEC staff understand and correctly apply Agency processes. Training material has recently been developed on the subjects of outsourcing and procurement to help project managers deal with changes to Agency procedures.

The EEC has been instrumental in introducing improved processes at the level of the Agency. Examples are performance appraisal, business planning, staff planning, budget monitoring and framework contract.

Since 1997 the EEC has adopted the industry best practise of using a Business Plan to communicate and deliver strategy. The Director General approved the first EEC Business Plan in 1999, after wide consultation with external stakeholders and Agency staff. The Business Plan explains the strategy and indicates how the strategy is deployed throughout EEC operations via the work programme and support activities. This is further supported by the matrix organisation as explained earlier in this section. The Business Plan process ensures that the Business Plan is assessed and reviewed on an annual basis linked to the annual budgetary cycle. Approval of Business Plans is recorded in the *Overview- Journey to Excellence*. The EEC has been instrumental in introducing a harmonised Business Planning process throughout the Agency, and the EEC Business Plan is viewed as best practice throughout the Agency.

For over a decade the EEC has been measuring performance indicators linked to the delivery of simulations, which has been its core business since the establishment of the EEC in the early 1960s. More recently and due to the

introduction of the Business Planning process, a more systematic approach to performance indicators has been initiated and these constitute chapter 7 of the current Business Plan. These indicators are assessed and reviewed by core management and the KPI owners on a quarterly basis (see section 2b). Performance indicators are co-ordinated at the level of the Agency and this resulted, during the 2001 assessment and review, in the introduction of two new indicators, the timeliness of project milestones (see section 6b), and the project management quality index (see section 9b). Systems have been developed as part of ACB to support the measurement of these performance indicators. See section 3a below for further details of ACB.

The EEC is recognised as one of the best performing directorates in the Agency, for example, budget expenditure performance consistently exceeds 95%, and the EEC is leading the Agency in the use of Balanced Scorecard techniques. Nevertheless, the EEC is very aware that performance can always be improved. Leaders constantly encourage staff to work on improvement activities by allocating time to continuous improvement at management meetings, by personal involvement in the identification of improvements and the establishment of performance indicators and by their support of self assessment, staff surveys, and customer surveys.

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### **1c Leaders interact with customers, partners and representatives of society**

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The EEC has established several approaches to understand and respond to the needs and expectations of stakeholders. Leaders, both at senior and other levels, are fully involved in the initiation and operation of the associated processes.

All EEC leaders are encouraged to network with stakeholders on a regular basis in order to keep abreast of changing needs and expectations. Since the EEC is a research centre, the main delivery chain is the project, and stakeholder involvement is paramount from initial requirements elicitation through to final acceptance of deliverables in order to ensure continuing alignment with evolving stakeholder needs. Specific activities in the project lifecycle process ensure full stakeholder involvement and these are supported by the provision of adequate funding for visits to stakeholder sites.

A special programme of VIP visits to the EEC was started in 2000 and is led by the DEEC. The objective of this approach is to invite to the EEC on a regular basis the CEOs of stakeholder organisations in order to exchange views, understand the strategy and needs of stakeholders, explain EEC and Agency strategy, and explore opportunities for collaboration. A visitors database application was created in 2003 in order to better track and follow up stakeholder visits and contacts.

A stakeholder survey has been carried out every two years since 1997. This is a primary source of objective feedback that is used to gauge stakeholder needs and expectations, to assess alignment of EEC strategy, to measure stakeholder satisfaction and to obtain stakeholder perception of EEC operations and performance. Improvement actions are planned and implemented based on the results of the survey. Senior management actively supports this process and fully participates in customising the questionnaire according to evolving needs and context.

The Experimental Centre Consultation Group (ECCG) was established in 1998 to advise the EEC and the Director General on the role, strategy, and performance of the EEC. (See section *Overview-Governance* above). The ECCG is the only forum that is dedicated to all EEC stakeholders. The principal working papers are the draft Business Plan of year n and the Annual Report of year n-1 and these are the vehicles for debate and advice concerning the role, strategy, and performance of the EEC. The draft Business Plan is modified as a result of the stakeholder advice before being submitted to the EEC Management Board and the Director General for final approval. In addition to the standard agenda, each meeting comprises one or more special themes, determined by the evolving EEC strategy e.g. safety, environmental issues, flow management and economic issues.

Partnership is of paramount importance to a research organisation through all phases of delivery. Partnership is thus an important part of EEC strategy. An overview of partnership is given here. Further details are provided in section 4a, and indicators and results pertinent to partnership are documented in sections 9a and 9b.

Partnership with other research units and universities stimulates creativity, maximises synergy, and optimises the combined use of resources. Partnership with the ATM system supply industry seeks to advance

standardisation, and seeks to accelerate the operational deployment of research results. Partnership with ATM service providers, with EATMP our number one stakeholder, and with other stakeholders is essential to ensure that EEC activities respond to the global needs of ATM in Europe and the world. Partnership with the European Commission (EC) seeks to contribute to the EC R&D effort in the most efficient manner by making EEC resources and expertise available to consortia working on EC projects. Since 1999 the EEC has provided a staff member on secondment to the EC to consolidate this partnership. The EC's high regard for the EEC is evidenced by the recent decision to establish a Joint (EEC-EC) Programme Board (JPB) to oversee all ATM R&D in Europe.

Partnership is also important in the support activities where outsourcing has been used to improve EEC performance and to allow EEC staff, where possible, to be retrained and transferred from support activities to core business activities. The following activities have been outsourced:

- IT service provision
- Print shop service provision
- Building maintenance
- Mission service provision, partnership with a travel agency
- Mission expenses, partnership with a financial services company

One particular partnership, the framework contract, has greatly improved the procurement of contractor support especially for core business. A framework contract has been concluded with a set of consortia who have agreed to maintain the required pools of expertise and to reply extremely rapidly to requests for support at agreed rates.

Time to procure contract support has diminished from 2-6 months to 3-4 weeks.

The EEC pioneered this technique in the Agency. Now several other directorates have adopted a similar framework contract.

The support activity partnerships are subject to regular assessment and review with the partners in order to identify areas for improvement and to organise joint improvement actions.

Senior managers fully support and participate in joint improvement actions with other Agency directorates. Some examples are:

- DEEC initiated regular meetings with other Agency Directorates in order to dialogue on a regular basis and to identify ways that the Agency as a whole can improve. Through

this mechanism the EEC has succeeded in transferring best practice to the rest of the Agency in the domains of human resources, finance, and technology.

- Business Plan Task Force which seeks to harmonise the business planning process throughout the Agency
- Improvement of the performance appraisal process
- Improvement of contractor procurement through the framework contract
- Promotion of an intranet culture in the Agency
- Improvement of dialogue with unions and staff committee throughout the Agency

Many of these actions have necessitated strong senior EEC management participation in order to lobby for their adoption at the level of the Agency

The main EEC stakeholder forum, the ECCG, is always encouraged to give advice to the EEC in order to improve performance, not only technical and operational performance, but also organisational and management performance. Recommendations to this effect are recorded in ECCG meeting minutes.

The EEC's senior management have adopted the following approach to recognise stakeholder contributions:

- Explicit recognition and thanks from the Director in the Introduction to the EEC Annual Report
- Written acknowledgement of valuable stakeholder participation included in project reports.
- Personal recognition and thanks at end of project events, delivered orally by the Director or other manager.

In addition, a feedback brochure is sent to all stakeholders to thank them for participating in the regular stakeholder survey and to provide them with a summary of the main findings and planned actions.

Participation in conferences and seminars is one of the main vehicles to disseminate and discuss research results. This process is fully supported by EEC senior management. In 1999, the EEC made a presentation of its continuous improvement strategy and actions at the EUROCONTROL Quality Forum, to attendees from all over Europe. The same presentation was also given at the ISTIA Quality Seminar to 15 participants from all over Europe.

Researchers regularly submit and present papers to conferences and seminars. This is part of the researchers way of life. At the

beginning of 2001 a policy decision was taken to increase the EEC contribution to the global ATM research effort through the publication of research papers. Business areas were encouraged to publish research papers and budget was increased to allow greater contribution to conferences. Results are recorded in section 6b.

The Director himself regularly speaks on the subject of ATM research and development at important conferences in the ATM community. He has also participated as expert witness in two debates broadcast on radio. He has also participated as an authority on ATM in four colloquia at the French parliament:

- Activites aeroportuaires, aménagement de territoire et developpement durable, 7<sup>th</sup> February 2001
- La croissance du transport aerien en Europe est-elle encore gerable?, 31<sup>st</sup> May 2001.
- Reconcilier developpement du transport aerien et qualite de l'environnement urbain, 7<sup>th</sup> June 2001
- Les retomb es conomiques et fiscales des grands sites a roportuaires francais, 21<sup>st</sup> October 2002

The EEC is co-sponsor and co-chair of the USA/Europe Air Traffic Management R&D Seminar. This seminar is organised in turns under the leadership of the US Federal Aviation Administration or the EEC and takes place every 18 months, alternately in the US and Europe. About 150 researchers from both sides of the Atlantic participate.

One of the four main orientations of the EEC strategy is to support sustainable growth of the aviation industry. To this end a dedicated business area was established in 2000 to address environmental issues. As a result of the most recent re-organisation of 2002, this Business Area has been expanded to include the impact on society at large of aviation. The business area has four main threads:

- Noise an air quality nuisance around airports
- Fuel burn and emissions
- Social attitudes to aviation
- Sustainable aviation

The EEC approach is to gradually increase funding of this business area.

ENV funding in MEUR			
2000	2001	2002	2003 planned
0.9	1.8	3.1	5.5

Senior management has supported the introduction of recycling measures at the EEC. These are reported in chapter 8 below.

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### **1d Leaders reinforce a culture of Excellence with the organisation's people**

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EEC senior management regularly communicates the EEC's mission and strategy through various channels. The prime vehicle is the Business Plan. The Business Plan is available to all EEC people on the EEC intranet.

Management meetings take place on a regular basis, led by a senior manager and dedicated to core business or support or people management or general issues. Fixed slots are provided to present the latest information concerning political context and possible strategy evolutions. See section 3d for further details of management meetings. Minutes of each meeting are published on the intranet within 8 days. There are other, quarterly meetings to review the detailed implementation of the strategy and budget usage and reallocate resources as necessary. The Director comments the EEC political context and strategy in the twice yearly all staff meetings in June and December.

To reinforce the corporate message, the Director General is invited to the EEC once or twice per year in order to speak to the staff about corporate political, institutional, operational, and strategic issues, as well as issues concerning specifically the EEC

Over the years the EEC has tried to foster a culture of openness, trust, tolerance, and democratic debate. We believe that we have gone some way to achieving this objective.

Extensive use is made of electronic mail, electronic newsgroups and the intranet. The EEC has adopted the approach of maximum transparency and consequently EEC people are widely informed on political issues which may affect EEC strategy. Strategy is also debated and clarified as needed on the electronic newsgroups. Debate and diverse opinions are encouraged. Senior managers and especially the Director actively participate in these debates and respond to questions, comments, and criticisms. Democratic debate is also encouraged in management meetings and everyone has the opportunity to air their views.

Managers at all levels communicate personal objectives and targets to staff during the annual

performance appraisal, in order to deploy strategy throughout the organisation.

The annual appraisal is also an opportunity for debate with line managers at all levels. This is a 180 degree appraisal where appraisees are encouraged to comment on management behaviour and offer constructive criticism.

Outside scheduled meetings senior managers' doors are always open and people are encouraged to come and talk whenever they wish. If preferred, appointments can be made. Managers' electronic agendas are visible to all staff, thus facilitating informal meetings.

In order to help people to achieve plans and objectives, the EEC approach is based on training and retraining. This has been initiated and fully supported by senior management. A scholarship system was developed during 2001 with the full support of senior management and HRM. The EEC contributes to the cost of long-term higher education for courses which will benefit people's career development at the EEC. (See section 3b). Senior management has also fully supported the development of a secondment policy to enable suitable staff to work for partner organisations for limited periods. The secondment, while being in the interests of the Agency, also give staff invaluable experience and the opportunity to broaden their knowledge and skills.

Mobility is an important element of the EEC approach to Human Resources management. This is encouraged by EEC senior management and is firmly anchored in EEC strategy. Skill shortfalls are identified within the EEC staff plan and retraining is organised so that people can gradually transfer to other jobs in order to better support EEC strategy. A key performance indicator tracks skill reorientation and is reported in section 9a below.

Recognition by leaders is an essential aspect of a modern human resources policy and the EEC leadership takes every opportunity to implement this policy. Some examples follow.

The annual promotion round is the formal way to recognise individuals for excellent work and potential. It is a transparent and democratic process based on merit.

Excellent performance by a team is recognised at the end of project event where participants will be thanked by the Director or a senior manager.

Spontaneous public thanks is posted on electronic newsgroups by senior managers and

other members of staff when praiseworthy achievements are reported. The Core Management Special Advisor is a member of the suggestions box board. The suggestions box is an important source of improvement across all EEC activities. The best suggestion, elected annually by an all staff vote, receives recognition with a certificate and prize which is presented by the Director at the all staff meeting in June.

The effectiveness of change is assessed by review and survey. For example the functioning of the organisation is reviewed approximately every 18 months, and the impact of the matrix organisation on the work programme was assessed via survey in Q2 2002, see section 1b above.

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### **1e Leaders identify and champion organisational change**

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Since 1995 the EEC has undergone 4 major re-organisations {1995, 1998, 2000 and 2003}, each time in order to respond to the changing external environment. These re-organisations have been managed with very full staff consultation. Individuals have been encouraged to contribute their own ideas on the organisation of the Centre and consensus has been sought through discussion. Early re-organisations allowed the identification of the Centre's key competencies. As the Business Plan has matured, subsequent re-structuring has produced a matrix structure which directly supports the strategy of the Centre. The two primary reasons for the implementation of a matrix structure were to increase flexibility and facilitate empowerment. Another important reason was to facilitate the alignment of the organisation's structure to support delivery of policy and strategy. The horizontal view of the matrix is structured as a set of business areas, directly derived from the EEC strategy. See *Overview* above.

The effective delivery of change is ensured initially through thorough preparation via planning and especially communication to explain to staff the reasons and the plans. All communication channels described in section 3d are used. Change often requires reallocation of staff to different tasks. This is facilitated through planning with the HR section to facilitate mobility and retraining.

Since 1998 self-assessment has been an essential means to stimulate and involve staff in improvement and to identify and implement improvement actions. After each self-assessment, staff are encouraged to lead and contribute to improvement projects and managers are committed to release staff to work on improvement projects. Senior and middle management lead by example and participate in improvement projects.

## 2 POLICY AND STRATEGY

Excellent Organisations implement their mission and vision by developing a stakeholder focused strategy that takes account of the market and sector in which it operates. Policies, plans, objectives, and processes are developed and deployed to deliver the strategy.

### 2a Policy and Strategy are based on the present and future needs and expectations of stakeholders

Eurocontrol Experimental Centre stakeholders range from public service providers to commercial organisations, from ordinary citizens (which could be airline passengers or residents in an airport environment) to government ministers. The institutional context of the Eurocontrol Agency, which includes the Experimental Centre, is constantly under review. Issues include; the need to separate regulatory functions from service provision, the tendency towards greater 'corporatisation', and changes in our relationship with political bodies such as the European Commission. For all these reasons a key requirement in the establishment of policy and strategy for the Experimental Centre is flexibility and responsiveness, while remaining confident in, and building upon, our particular strengths and special identity.

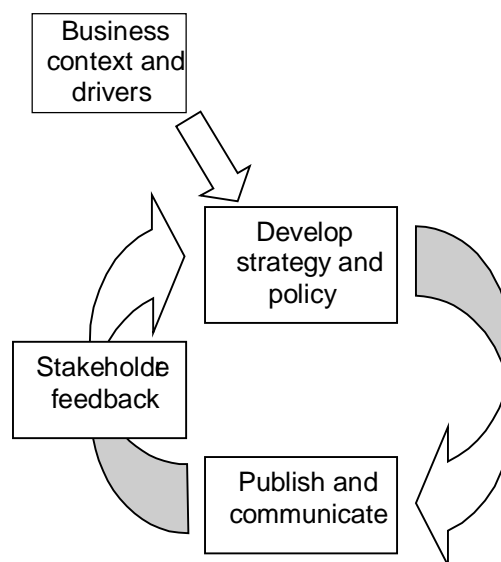
#### Market context

The Experimental Centre executes research and development (R&D) in the area of Air Traffic Management (ATM). Our immediate stakeholders, those for whom we most directly work, are the air traffic service providers of our member states. There exist other organisations within Europe and beyond which also perform ATM R&D, and there is potential for conflict between these organisations and ourselves. One reason for this is that the Agency is an intergovernmental organisation with an 'internal' supply of funding originating from EUROCONTROL member states or, more precisely, from the collection of route charges. This means that some of our products can subsequently be made available to states within the EUROCONTROL Organisation without charge. Other R&D organisations, however, are increasingly obliged to compete on a commercial basis, marketing and selling their expertise and products. The potential exists therefore for market distortion, and our policy and strategy must take this into account. In practice we have made specific efforts to include senior representatives of such 'competing' organisations in our strategic consultative processes to obviate this problem.

A further consideration is the fact that some of our member states, which formerly had substantial government-funded facilities, are looking to reduce their own costs. Under these circumstances R&D is often an early casualty, and EEC is therefore increasingly regarded as an agent useful in the coordinated dispersion of European ATM R&D activities.

#### The strategy loop

Given our complex and changing context, the setting of strategy and policy is a continuous and dynamic process. It can be characterised by the following loop:



Broadly speaking, policy and strategy is developed on the basis of:

- our legacy of skills and experience embodied in an existing strategy,
- moderation and amendment by stakeholder feedback,
- yearly review in the light of a changing business context.

In 2002 this included input from a task force asked to explore the direction the EEC should take in the light of the 2020 Vision from ACARE, new ATM actors such as Boeing and the ATM Alliance. The task force proposals are published

in "Proposed EEC Re-Orientation V2." The proposals drove the realignment of the EEC organisation in 2003.

### **Stakeholder feedback**

Stakeholder feedback is critical to keep EEC policy, strategy, services, products, and projects aligned with stakeholder present and future needs. Key inputs are:

- Stakeholder/market survey
- ECCG
- Visits
- R&D co-ordination
- Market watch

#### *Stakeholder/market survey process*

The process has two objectives:

1. Identification of stakeholder future needs
2. Extraction of stakeholder satisfaction.

The two aspects are combined in a questionnaire. The survey is conducted every two years. All EEC stakeholders receive the questionnaire. The survey is contracted to a specialist consultancy in order to benefit from their specialist knowledge and to ensure objectivity. Additionally in 2002 a specific survey was conducted amongst ECCG members at their meeting in May. Results have been used to re-orient EEC strategy and activities. Stakeholders receive a synthesis of the results and the EEC responses. Results are provided in section 6a.

### **The Business Plan**

The principal expression of our policy and strategy is to be found in our Business Plan. This is based on a standardised format for EUROCONTROL Business Units and is updated each year, with its fifth edition to be published in May 2003. The annual process by which the Business Plan is developed is shown in the Gantt chart above.

Development starts in the Spring. The first part of this process involves a complete review of the previous Business Plan, with sections updated and rewritten as necessary. This is the responsibility of the Core Business Manager, with relevant sections written by the Business Area Managers, who have a more direct day-to-day contact with stakeholders for their particular areas. In addition we take into account the requirements of our Agency partners such as EATMP and CFMU, and external partners, especially the European Commission. The content at this stage is derived from our understanding of stakeholder requirements accumulated during the previous year including

some specific project requests. Input also comes from our particular knowledge of the state of Air Traffic Management based on analytical data and forecasts, which are often generated by our own internal projects.

Market watch activities comprise careful reading of air transport trade magazines, the specialised and general press, company annual reports, web sites of companies and organisations such as the European Commission. Articles and information are systematically placed on the intranet and/or distributed to senior and middle management depending on the type of information. Market watch activities contribute to our general understanding of market evolution which we feed into Business Plan development.

The draft Business Plan is presented to the Experimental Centre Consultation Group (ECCG) for comment and discussion.

Comments and feedback from the ECCG are taken into account when developing the final version of the Business Plan, which is then presented to the EEC Management Board for final approval. Details of the ECCG and EEC MB are provided in the section *Overview-Governance* above. The main role of the EEC MB is to ensure that all considerations and guidelines coming from EUROCONTROL Agency controlling bodies are suitably taken into account in the Business Plan, and to give final approval for the document.

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### **2b Policy and Strategy are based on information from performance measurement, research, learning and external related activities**

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The origins of policy and strategy as embodied in the Business Plan are varied. Three significant contributions in 2002 include the task force report on "EEC Reorientation", the Agency reorganisation and the results from the 2002 Stakeholder Survey. Inputs also come from the Balanced Scorecard approach, instituted in 2002. See Chapter 9.

Additionally in a response to a need to better target our resources and expertise we have pursued our policy of support to EATMP and European Commission programmes which are of benefit to all EUROCONTROL members in preference to support to individual states.

We are in addition responsible for performing a number of studies related to the current day performance of European ATC, and studies to forecast future ATC capacity and demand. This

means that we have direct and early access to much of the source data which is used to drive plans for Europe-wide ATC systems development and harmonisation, and this is included in our own strategic thinking.

A different, and equally important input to our strategy results from the role of the Experimental Centre as leader of the ATM community in research and development, which means that parts of our Business Planning is 'proactive' and breaks new ground. The novel elements of our strategy are sometimes potentially controversial. Examples of leading-edge planning include the introduction of research into societal trends while maintaining the emphasis on environmental studies and the pursuit of safety as an end in itself. A safety culture survey has been conducted to measure the implementation of safety culture within the EEC. Results are reported in section 9a.

In order to allow comparison of our strategy with that of other institutions, EEC projects are included in the ARDEP<sup>1</sup> database. This is a Europe-wide census which collects and categorises information on R&D projects in Air Traffic Management. Positioning ourselves in a wider context gives two specific benefits. First, we are able to avoid duplicating research that is being done elsewhere, and second, we are able to identify gaps in current activities. This was, for example, one of the mechanisms by which the chronic lack of investment in innovative research was identified (ARDEP 'Yellow Book', 1998), resulting in new initiatives at EEC in this direction.

We have initiated an annual R&D symposium targeted at high level management of ATM R&D. This is a forum where current trends and future prospects of European activities are discussed. US contributors are also invited to these meetings. Much valuable feedback is derived from these.

A general understanding of social, political, economic, institutional, operational, and technical issues as they affect ATM are an essential input to Policy and Strategy formulation and evolution. This is achieved through the creation of a Business Area addressing social, economic and environmental issues in the context of ATM. In addition we are in the process of determining a social and environmental policy with regard to our interaction with the non-ATM community. These actions are supplemented by a regular reading

of general and specialised press, of European Union and national government official publications, and by regular monitoring of relevant web sites.

On the more creative side, we continue the internal 'brainstorming' sessions, held in both in 2000 and in 2001. These were organised as full day open sessions in which all staff was encouraged to participate, and express themselves on various ATM issues. They were led by a single 'facilitator' and, apart from some basic rules of courtesy and protocol, participants were encouraged to freely express their views. These brainstorms provided some animated debate, and many of the ideas expressed therein have been integrated into our strategic thinking. Recent brainstorm topics have included EEC Values and placement of external contracts.

### **New technologies**

To support strategy and policy development, the Experimental Centre stays abreast of new technologies in two specific ways.

- First, we keep our experimental infrastructure up-to-date. This is necessary since our experimental facilities, software and hardware, need to simulate increasingly complex models and tools, which amongst other things require constantly increasing computing power. In addition, we are something of a 'showcase' for new technologies applicable to ATM. One example of this is the progressive upgrade of the controller ATC displays used in simulations to use the latest large flat panel devices. A second example is the AudioLan product where the EEC was the leader in developing voice over IP functionality.
- Second, we have an entire Business Area dedicated uniquely to innovation. By definition this area looks into new, and sometimes radical, technologies with the expectation that some of results can be fed into the other Business Areas. One of the benefits of this work is an increased contact with universities, where academics are actively encouraged, sometimes by means of financial support, to engage in research in ATM. Currently 11 PhD or MSc students are supported with theses such as: Air-rail intermodality from the Passenger's Perspective and Modelling of Aircraft Trajectory Uncertainty with Semi-Markov Model.

<sup>1</sup> Analysis of Research and Development in Eurocontrol Programmes.  
<http://www.eurocontrol.int/ardep>

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## **2c Policy and Strategy are developed, reviewed and updated**

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### **Depends on EEC mission and vision**

Our strategy accommodates a mix of short and long-term activities, and the balance between these is important.

On one hand our stakeholders expect increasingly rapid results, since they themselves are more and more subject to short-term commercial constraints. Some of our fast turn-around activities include analysis of delay figures and forecasts for, say, one year into the future. Another example is the direct support we provide to air traffic service providers when they wish to prototype and test their new controller interface designs. Results of such work have been implemented directly in operations rooms, a good example is operational application of Medium Term Conflict Detection in the Rome ATCC.

On the other hand the EEC is one of the few organisations capable of centralising longer-term activities, and our stakeholders understand and encourage this. Here, for example, we perform longer term forecasting activities up to 2010 and beyond, for example in the Constraints to Growth project, and develop innovative products within our Innovative Research Business Area.

A further business scenario that we have recently embraced is one of industrialisation, where we have decided to identify products which could be further developed by partners outside the Experimental Centre, and to make the necessary agreements to do this. This is one way in which we are developing a sense of commercial awareness that was previously absent. Industrialisation is further described in section 4a.

### **Evaluating relevance/success factors**

Stakeholder/market surveys (section 2a) give the EEC important insights which have had a significant influence on our policies and strategy.

In the 1997 survey was a clear message that we should adapt our environment to changing demand, and in particular take on a central role as coordinator of European ATM R&D. In response to this we appointed a full time R&D coordinator who forms part of the Core Management team.

The 1999 survey indicated:

We were asked to better cooperate with projects external to the EEC. Part of our response has been to become active consortium partners in at

least 8 European Commission projects. Such cooperation did not previously exist.

- We should set more realistic objectives and properly complete projects, “make it work properly before moving on to the next technology horizon”. In response to this we have initiated specific project structures to ensure completion and reusability of our result, for example c.f. Business Plan 2002 and the AGI project structure. We are also building on in-house simulation results by taking platforms out into operations rooms and connecting to live data feeds of MTCD in Malmo, Maastricht and Rome, – this is a significant new contribution to the overall validation process. See also section 9a.
- We should improve analysis methods. In response we have launched a major initiative to implement high quality validation methodologies and have created a validation cell within the SAS CoE. We are implementing this by providing validation management for the major EC Gate to Gate project.

Our most recent (IPSOS) stakeholder survey conducted in 2002 has identified:

- a need to improve the communication of our results. Efforts are in hand to address part of this element through improvements to the Activity Report, and through the compilation of a web based external newsletter sent to over 4000 subscribers every quarter.
- to be more operational and concrete in the work produced. We seek to put more emphasis on field trials.
- to remain neutral and independent.
- continue in the pursuit of creative and productive research. We seek to increase partnership with universities and maintain or increase funding to the Innovative research business area.

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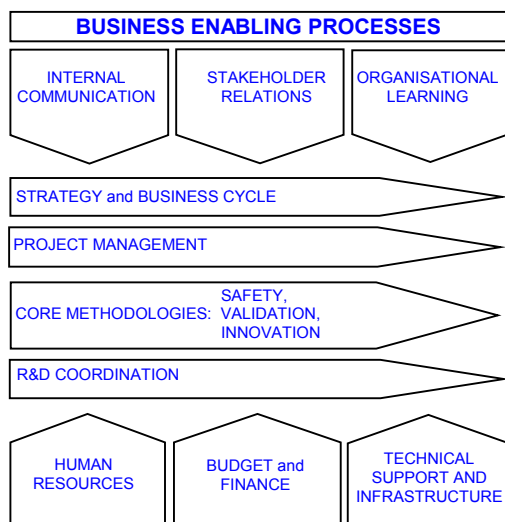
## **2d Policy and Strategy are communicated and deployed through a framework of key processes**

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### **Key processes for delivery of strategy**

During 2002 and 2003, a large effort was devoted to mapping and documenting processes and reaching consensus on the framework of key processes which implement strategy. This work was based on the strategy review of late 2002 and the subsequent reorganisation of

2003, and is consequently a new framework which is now being consolidated.



We are currently studying how best to link the key process framework to cascading process descriptions using the intranet.

In practice it is the Core Business Manager, supported by the Business Area Managers, who is responsible for implementing Experimental Centre policy. Work-programme Management Meetings (WMMs) are held approximately every two weeks to exchange information necessary for the execution of the work-programme. On occasion we open these meetings up to external stakeholders (e.g. European Commission) to improve our visibility at working level and allow feedback.

Further supporting processes include systematic reviews of Business Area Portfolios, individual projects and CoE direction. A special review takes place at the proposal stage to ensure that only projects that are consistent with policy are launched. Regular reviews take place thereafter to ensure continued alignment.

In many cases our activities are bound up with those of some stakeholders: for example, we execute several key workpackages for some EATMP programmes, and we are active partners in European Commission consortia. In these cases our processes are integral with those of our sponsoring organisations. For example, when we are working with the EC, there are specific budgetary control and reporting processes.

#### **Internally communicating and cascading strategy/policy**

The principal instrument for communicating strategy and policy is the Business Plan. This is a public document, and Experimental Centre staff are expected to read and understand the

content. Additional internal communication of policy takes place at twice yearly all-staff meetings, where key initiatives are explained, quarterly Enlarged Management Meetings (EMM), which are addressed to all middle managers and specific issues are addressed in Weekly Information Corners open to all staff. During 2002 an initiative was launched to link individual objectives identified in the Performance Appraisal process to EEC Policy and Strategy in an endeavour to better acquaint staff of their individual contribution.

The working-level guardians of policy and strategy are the Business Areas, and the activities of each are reviewed in detail at least once per year in open meetings. During 2002 all Business Areas spent at least half a day explaining their activities. There is, twice a year, a management away-day involving core management, Business Area managers and heads of Centres of Expertise and separately core management and Business Enabler Managers. On these occasions a number of key strategies are exposed and discussed, and the value of our activities is reviewed Business Area by Business Area.

Every person working at the Experimental Centre, staff and contractors, has direct access (via his or her desktop computer) to the intranet, on which a wide range of strategy-related information is freely available. For example, all EEC publications, minutes of management meetings and relevant documents from partner organisations are readily accessible. The 'home page' includes a diary of forthcoming events, hyperlinked to detailed descriptions, and there is a column for senior management to transmit key messages.

There is a set of internal news discussion groups within the Experimental Centre. These include groups concerned with management, ATC, infrastructure, social and staff issues. Contributions to these groups are often directly related to strategy issues.

#### **External communication of policy and strategy – closing the loop to strategy setting**

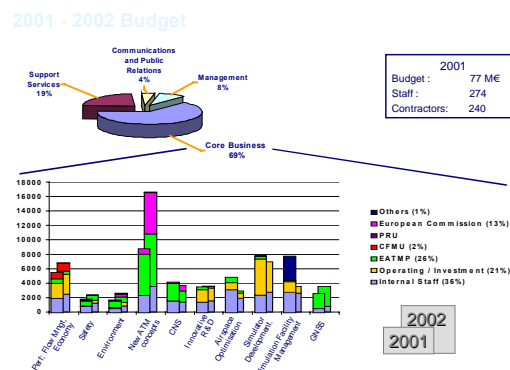
Our policy and strategy are communicated externally via a number of public forums. For example, our senior management made presentations at major ATC conferences both in Europe and worldwide eg. ATC 2002 Maastricht, Advanced Workshop on ATM in Capri and "Les rétrobes économiques et fiscales des grands sites aéroportuaires française". The EEC external web site is an important public communication vehicle where the Business Plan can be viewed, a quarterly newsletter, introduced in 2002, can be viewed and

subscribed to, and where the EEC Policy and Strategy is explained:  
<http://www.eurocontrol.fr/>

We host, on the premises of the Experimental Centre, a large number of working groups involving direct and indirect stakeholders. These include international groups such as RTCA and EUROCAE. We provide conference chairs, session chairs and rapporteurs for a number of international R&D conferences, for example the Europe/US ATM2002 R&D conference, and the Digital Aviation Systems Conference. In 2002 our articles for books, journals and professional magazines, plus our conference and workshop papers totaled 66 contributions. In addition we were present on the stands of various international exhibitions such as ATC Maastricht. All these events give the opportunity to further expose our activities and in particular to receive feedback from our peers and stakeholders.

During 2002 we received approximately a dozen high-level visitors at the Experimental Centre, plus 357 others including engineers and air traffic controllers. Amongst our high level visitors were several Directors and CEOs from national service providers and industry eg Airports Council International (ACI), French Direction del la Navigation Aérienne (DNA), and Aircraft European Contractors Manufacturers Association (AECMA). A yearly report – Rapport de Activities MIM, tracks all these public relations activities. All high-level visitors, and many of the others, received a presentation of our activities. Standard powerpoint files for this are available to all on our internal computer network, and this ensures that the same message on our policy and strategy is being given to all visitors. Many of the visitors receive live demonstrations of our products either in our showroom or in their 'working' context. The feedback we receive from these presentations, although informal, is a vital part of our strategy-setting and effectively closes the strategy loop depicted in section 2a.

Shown below is a MS Powerpoint slide extracted from the current standard presentation illustrating the type of information shown.



### Establishing organisation wide reporting mechanisms to track progress

The ACB tool is the main repository for all project related information. It generates numerous reports on a daily basis which are used to track staff allocations, budget usage. These reports and others are used in the quarterly budget checkpoint reviews which review progress and reallocate funds as required.

The project support office organises at least annual reviews of business project portfolios to ensure strategy alignment. Projects are reviewed at least twice per year to review progress, ensure continued alignment with strategy and to ensure conformity to quality standards.

On a quarterly basis Core Management and KPI owners meet together to review the state of the balanced scorecard (see section 9a). Achievements to date are examined and projected end of year results are checked to determine if progress is on track and, if necessary, what corrective action to initiate. During the meeting, documents are reviewed which detail the lower level components of the KPI which are aggregated to produce the KPI which appears in the balanced scorecard. KPI owners are clearly identified. The main responsibilities of a KPI owner are:

- owner of the associated process
- yearly target proposals
- monitor and regularly report on progress towards the announced target
- issue alert if process is inadequate and propose corrective action.

## 3 PEOPLE

Excellent organisations manage, develop and release the full potential of their people at an individual, team-based and organisational level. They promote fairness and equality and involve and empower their people. They care for, communicate, reward and recognise, in a way that motivates staff and builds commitment to using their skills and knowledge for the benefit of the organisation.

### **3a People resources are planned, managed and improved.**

Today, the EUROCONTROL Experimental Centre has 272 budgetary posts. Due to budgetary restrictions at Agency level, the EEC is authorised to fill 257 of these posts. Currently, 252 of these posts are occupied, while 3 recruitment campaigns are in progress. In addition 252 non-EUROCONTROL people were working on site made up as follows; 178 contractors, 2 national experts, 3 interim workers, 18 students and approximately 50 people working on facility management contracts. Just over half of the staff members are French, the remainder currently being made up of nationals of 14 of the EUROCONTROL member states. Of the 252 people in post, 83 are female, and 169 are male, and the breakdown by grade is as follows: A – 95 (88 male, 7 female), B – 91 (63 M, 28 F), C – 66 (18 M, 48 F).

All EUROCONTROL staff work at the Bretigny site except for the small number of people on secondment to national administrations or industry. Secondment is normally for one year renewable. Currently there are 3 secondees: 1 at the European Commission, 2 at the EUROCONTROL Air Traffic Control Centre, Maastricht, while 1 person has just returned from the Mitre Corporation in the United States, and 1 has just returned following 2 years at AENA, the Spanish air traffic services provider.

The EEC has undergone 4 major reorganisations since 1995. Over this period, the original hierarchical organisation has been transformed into a responsive matrix. See sections 1e, 2a, and Overview-Journey to Excellence for further details.

#### **Staff Management**

The inclusion now of almost all EEC staff (229) in the matrix, has given new impetus to the development of the Staff Plan. The Resource Allocation Management Meeting, RAMM (a forum responsible for allocation of staff to projects and for the prioritisation of filling vacant posts), has reviewed and revised the skill families present at the EEC. The Staff Plan describes the skills of each staff member and maps these against the current utilisation of these skills by the different Business Areas and Business Enablers. This allows the identification of areas where the supply and demand of skills do not match. Furthermore, using the strategy given in the EEC Business Plan it is possible to predict skill requirements of the Business Areas and Business Enablers over the next 5 years (currently to end 2007). Turnover of staff through retirement and requests for re-assignment are also accommodated in the Staff Plan. The end result is a clear plan of how the needs of the EEC can be met over the next 5 years through recruitment, re-training and internal mobility. In fact in 2002, we succeeded in re-orientating 6 skills in line with the needs defined in the Business Plan. The following table is an extract of the current Staff Plan.

Skill Family	Skills	EEC Posts (Headcount) on March 1st 2003					
		Officials in post	Detachment	Recruitments open	Frozen posts	Vacant posts	Nominal Posts
ATM Syst Engineering ACE + SFM	Air & Ground System Engineering	34	0	0	1	0	35
	CNS	9	1	0	1	1	12
	<b>Total</b>	<b>43</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>47</b>
Information Technology DAI + SFM	IS Management	12	0	0	0	0	12
	Software systems	23	1	0	1	1	26
	System administration	9	0	0	0	0	9
<b>Total</b>	<b>44</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>47</b>	
Management	Management	25	0	0	0	0	25
	Management Assistance	18	0	1	2	0	18
	Quality & methods	5	0	0	0	0	5
<b>Total</b>	<b>48</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>51</b>	

Clearly, in order to remain useful, the Staff Plan has to be maintained on a regular basis. It is reviewed continuously by the Heads of CoE and HR at the Resource Allocation Management meetings (RAMM). During a review of the defined skills contained in the Staff Plan which took place in March 2003, the number of highest level skills has been reduced from 36 to 19, grouped for the most part by CoE.

By using the Staff Plan to identify skill shortages, it has been possible to develop our recruitment strategy. A list of recruitment priorities has been agreed, along with a timetable based on the anticipated retirements of the next 5 years. The posts which will become available in this period will be allocated according to the Staff Plan. The application of this process at the EEC, agreed by DHR and DG, has enabled the EEC to streamline the recruitment process. The fact that the EEC has the lowest rate of unfilled posts in the Agency is evidence of the effectiveness of the overall recruitment process at the EEC.

A web-based tool, ACB (**A**ccess to **B**usiness), monitors the EEC's work programme and budget, and supports the application of the Staff Plan. As well as containing information on all the active projects of the EEC, the ACB tool is available to track which staff are assigned to which projects and over what duration. The allocation of staff to CoEs is extracted from the HiRIS data base. Project Managers can also use the tool to note their requirements in terms of resources.

### HR Tools

The HR database HiRIS, is updated by HRM and maintained by the AMI support service. Graphical presentations of the staff demographics are updated weekly on the EEC Intranet.

The data base contains comprehensive information on staff members. However many of the processes are managed by Headquarters, which leads to some inefficiency in terms of lost

time due to the need for EEC HR staff to double-check input made at HQ. The Director EEC has taken an initiative with the support of HRM to further decentralise data base processes, and a first meeting was held on April 14 with a senior manager from HR Brussels during which a number of processes were identified as potential for optimisation.

### HR processees

Many HR processes and procedures are documented on the intranet under the "Services" section. The process documentation initiative is being pursued as well as the integration of HR processes into the key process framework as described in section 2d. The EEC recruitment process has recently been updated and has been approved by the PMM (People Management Meeting).

### Staff Satisfaction Surveys

Staff Satisfaction surveys have been performed at the EEC in 1998, 2000 and 2002. Response rates in the first two were relatively low possibly due to the design of the survey and concerns of confidentiality. In 2002 a standard Agency survey was used and measures taken to assure anonymity of all respondents. The result was an exceptionally high return rate of 85%: which is one of the best in the Agency. Results are communicated to everyone through reports posted on the intranet and through presentations at all staff meetings, management meetings, and at a Weekly Information Corner. Improvement actions are derived and all people are encouraged to participate in improvement projects. The next survey at the EEC will take place in Quarter 3, 2003. Results of staff satisfaction surveys are provided in section 7a

### Human Resources Management Unit

HR processes at the EEC are owned by the Human Resources Management (HRM) Business Enabler (BE). These processes

include Recruitment, Training and Staff Management. The unit shares the management of processes with the Core and Middle Managements as appropriate. With a view to improving its service to internal customers, HRM requested an internal audit of its activities and services. A series of interviews of a sample of staff members was carried out by a staff member with experience in Continuous Improvement. The results of the survey were presented to all staff at a Weekly Information Corner in January 2003, and the complete report is available on the Intranet. HRM is committed to addressing the findings of the survey, which although not of a statistical nature, nevertheless highlight areas for improvement. As a quick win, the Staff Management office now has published opening hours each morning during which staff may come with questions and problems of an administrative nature. This initiative has allowed the HRM staff concerned to better manage workload by having un-interrupted time in the afternoon, and so being able to deal more rapidly with routine tasks

of the Training Plan is to identify training needs according to strategic requirements, while at the same time, recognising individual training needs. The link between the Business Plan, the Staff Plan and the Training Plan is being consolidated, leading to the development of a more coherent and planned training strategy. In Parallel, a Task Force has been set up to monitor training effectiveness.

Staff are encouraged during the Performance Appraisal process (see this section below) to think about their training requirements. These requirements are fed into the training plan.

Finally, all staff have access to training support via the Educational Assistance and Scholarship programmes. Currently 3 staff are availing of the support provided by the Scholarship scheme to follow higher educational courses such as MBA. Staff who wish to undertake study in their own time are encouraged to do so if the nature of the study has relevance to their professional development. They receive financial support from the training budget and are entitled to time off work for the preparation and sitting of examinations.

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### **3b People's knowledge and competencies are identified, developed and sustained**

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#### **Matrix Organisation**

See also sections 1b and *Overview-EEC Organisation*.

One of the main reasons for the first major re-organisation of the Experimental Centre was to better manage and develop the competencies of those working here. The key element in meeting this goal is the Centre of Expertise (CoE). Whereas staff are allocated to one or more Business Areas or Business Enablers for their day-to-day work also belong to a CoE, according to their area of competence. The Head of the Centre of Expertise (HoCoE) is responsible for the long-term career management and personal development of each staff member. In addition, the HoCoE has the role of anticipating the CoE's requirements in terms of skills and knowledge, and ensuring that staff are trained appropriately. These requirements are then fed into the Staff Plan and Training Plan respectively.

#### **The Training Section**

The Training Section is a unit of HRM and is responsible for the development and management of the EEC Training Plan. The aim

#### **The Performance Appraisal process**

Annual Performance Appraisal has been systematic at the Eurocontrol Agency since 1998 although there has been some evolution in the process used. In fact it was the EEC which initiated the pilot scheme of Performance Appraisals in 1996. Prior to that date there was a system of annual notation but no formal dialogue. The pilot scheme was adopted and developed by the Agency into the current procedure which entails an interview and written report. The regulations specify that each official must have an appraisal every two years. In practice, appraisals take place at least once a year. A guide book has been produced by HR Directorate and training courses for Appraisers provided. All staff participate in the process except those who would be retiring in the next 12 months. This point was raised in the Feedback Report as an area for improvement, and should be compensated to some extent by the recent introduction of exit interviews for retiring or resigning staff. In 2002 90% of performance appraisals were completed, the highest completion rate in the Agency. As a result of benchmarking with EUROCONTROL Luxemburg (IANS), mid-term performance appraisal is encouraged and is widely accepted by the Heads of CoE as a means to have more continuous dialogue with their staff. There is an increasing appreciation among staff and managers of the benefits of a well-conducted Appraisal process.

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### **3c People are involved and empowered.**

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#### **Director's Policy facilitates involvement**

Since his arrival in the EEC the Director has insisted on the importance of openness and visibility with a view to encourage people to be involved and to facilitate empowerment. Staff Representatives (see Staff Committee below) are present at certain management meetings and participate in the development of processes and procedures. For example the Staff Committee participated in all meetings dedicated to the Agency Job Management project (see 3e).

All senior managers operate an open-door policy. Their electronic agendas are public, and are regularly consulted by staff.

#### **Involvement of people in re-organisations**

Staff have fully participated in the definition of all re-organisations. For example, during the 1995 re-organisation, staff were freely invited to sign-up to the CoE of their choice. A Working Group comprising a broad range of staff managed the most recent re-organisation of 2000. A similar Working Group was tasked in November 2002 to review the effectiveness of the new EEC structure. The so-called Think Tank was supported by an external facilitator and produced a series of recommendations which have since been implemented in the latest re-organisation which came into effect in January 2003.

#### **Staff Committee**

Members of the local Staff Committee (SC) are elected for a two year period. The SC is made up of 2 representatives of each of the three staff categories (A, B and C) elected by secret ballot of all staff.

The SC is a permanent member of the Personnel Management Meeting (PMM), and participates as an observer in the EEC Management Board (see section *Overview-Governance* above) and it may be asked to speak and express its opinion on particular subjects. The policy of the Director is to encourage the participation of the SC wherever possible. The result of this is SC participation in the promotion procedure, the recruitment of new staff and in the Centre's ad hoc Working Groups. In fact, the SC's participation in the recruitment process was an EEC initiative which has now become standard Agency practice, despite resistance from other Directorates. The SC initiative to provide crèche facilities during the summer vacation has been a great success and now runs during all school holidays

and on Wednesdays. This initiative, called the Eurokids project, is further described in section 8a below.

#### **Unions**

Two unions are currently recognised at the EEC. It is EEC policy:

1. to enable the unions to function effectively for the benefit of the staff and of the EEC in general
2. to develop and sustain a meaningful and constructive dialogue between management and unions.

Union meetings are held during working hours: one annual general assembly, and ad hoc meetings on particular topics as required. The unions are an essential partner in the social dialogue between staff and Agency. There are on average 4 consultation meetings per year between DEEC and the unions at the EEC. Finally the unions are allocated a slot at the twice yearly all staff meetings and at the quarterly EMM. They are also permanent members of the PMM.

#### **ECCG**

The ECCG is described in sections 1c and *Overview-Governance* above. An EEC staff representative who is elected by EEC staff at the same time as the Staff Committee elections, attends the ECCG meetings and reports back to staff by means of a newsgroup posting. This is an important way of involving staff directly in stakeholder consultation.

#### **Suggestions Box**

The suggestions box, started in June 2000, is an important vehicle to stimulate staff to formulate and propose improvements. It is recognised that staff on the front line are best placed to identify opportunities for improvement. Suggestions are managed by an intranet application and everyone can monitor suggestions which have been proposed and their implementation state. A suggestions board comprising staff volunteers, a representative of the staff committee, and a representative of core management, facilitates the implementation of suggestions. The best suggestion, elected annually by an all staff vote, receives recognition with a certificate and prize which is presented by the Director at the all staff meeting in June. Results are provided in section 7b below.

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### **3d People and the organisation have a dialogue.**

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#### **Communication**

The three pillars of the EEC's internal communication are 1. Informal communication, 2. Management meetings and 3. Publishing and electronic communication.

The objective of informal communication is to promote informal exchange of information and open discussions by providing opportunities for staff to meet and discuss in the Cafeteria, the Canteen, through the AIPE clubs and activities, in the Language courses and in Conferences open to all staff.

The management meetings are:

CMM: Core Management Meetings occur every 2 weeks with additional ad hoc meetings as required. Participation is limited to the Core Management and special invitees depending on the agenda.

EMM: Enlarged Management Meetings occur quarterly and include all the management of the centre (CM, HoCoE, BAM and BEM and Co-ordination Units). These are information sessions where the Core Management reports the strategic and political situation.

WMM: Work-programme Management Meetings are held every two weeks as a forum for discussion for BAM and HoCoE.

BEMM: Business Enabler Management Meetings occur every 2 weeks for the managers of the Business Enablers.

PMM: People Managers Meeting occur each month. The attendees are the HoCoE and HRM plus Staff Committee and Union representatives. These meetings discuss general HR issues.

RAMM: Resource Allocation Management Meetings are held every two weeks to discuss project resourcing and specific instances of HR policy e.g. the recent Job Management process was treated in this meeting. The meetings are attended by the HoCoE and HRM only.

An all staff meeting is held twice yearly in June and December, and all Centres of Expertise hold monthly meetings.

The objective of publishing and electronic communication is to develop and maintain an integrated information system for the EEC based on the principles that non-confidential information should be accessible as early as possible, and that all staff deserve trust and should be informed.

The EEC makes active use of its Intranet. The EEC's home page comprises a list of forthcoming events, latest news and publications. Given the amount of information available on the EEC Intranet, we know that staff in Head Quarters regularly log on to our site to receive the latest information on a wide range of Agency issues. There are regular and frequent debates on the internal newsgroups. Moderators have been assigned to each newsgroup. These are staff members whose role is to generate discussion and ensure that replies are given to any questions raised. A current objective of the MIM team is to measure the numbers of staff reading each Newsgroup. This becomes possible with MS Outlook. The EEC has recently taken the initiative to produce two publications, the Experimental Centre News for external circulation and focusing on ATM issues, and an internal newsletter, EEC News. Each edition of the EEC News contains a number of features and includes an interview with a member of staff who may be a new arrival, somebody who may be leaving us shortly or somebody with an interesting project to describe.

#### **Communication Channels**

An Internal Information Monitoring Group has been set-up, and a Weekly Information Corner takes place on most Tuesdays outside of holiday periods. Attendance at the WICs varies according to the subject, however the accumulated average attendance so far in 2003 is 59, with a high of 155 and a low of 33.

The management open door policy referred to in section 3c above also provides a valuable communication channel between management and staff.

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### **3e People are rewarded, recognised and cared for.**

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#### **Promotions**

Working conditions and remuneration at the EEC are good. Levels of staff satisfaction are high compared to other benchmark organisations. However there is some discontent with the rewards and recognition possibilities. Currently, the only means to reward good performance is through the annual promotion process. The Agency allows for a maximum of 20% of promotable staff to benefit each year. However the availability of promotion 'slots' is a function of the number of budgetary posts available in each grade. This has led to imbalances between grades, whereby for the most part, there have been more promotion

possibilities at A grade level as compared to B and C grades. This has led to some frustration especially at the lower grade. The EEC has made considerable effort in the past to rectify the perceived imbalance in the number of promotions given to A-grade staff in comparison with B and C grade staff. The Director EEC and the Staff Committee attach high importance to ensuring as far as is possible, an equitable distribution of promotions across the grades. The contribution of staff to collective activities outside their normal professional activities are taken into account as secondary criteria for promotion. The EEC ensures the greatest possible level of openness in how the process is handled locally and continues to support efforts to have the process revised at the Agency level.

### **Job Management**

The objective of this project is to develop clear and standardised information on all Agency jobs, and to ensure that individual staff members are assigned the grade which corresponds to the actual work they are doing. The principle outcome from the first phase of the project is that about 60 staff should benefit from an up-grade. This further indicates the principle of empowerment which exists at the EEC, whereby capable people are allowed to take on responsibilities which would normally correspond to a higher grade.

### **Safety at Work and Welfare Officers**

The EEC had a Welfare Officer under contract at the EEC from 1996. In 2001 this position was made into an Agency post. The Welfare Officer is active in the integration of newcomers but is also available to all staff with personal or family difficulties. The first full-time Welfare Officer is no longer with the Agency and a recruitment is in progress to fill the vacancy.

A post was also created for a Safety and Prevention and Protection at Work Officer. Several benefits have already been seen such as regular fire drills, and staff are being trained as fire wardens and first aiders.

### **Flexitime and Home-working**

The EEC operates a system of flexible working hours. The system is popular with most staff as it allows the recuperation of 1 day's overtime per month as a leave day, and allows flexibility in start and finish times. Flexitime is managed at the unit level.

A pilot study of the use of home-working was run during 2001 with 5 staff volunteers participating. In 2002 the pilot scheme has been extended

with quarterly reviews of the impact of this way of working on the staff member and his colleagues. Staff are allowed to work at home for a maximum of three days per fortnight. Others also benefit from ad-hoc home-working which allows staff to work in this manner on up to 30 days per year and for specific tasks. Results are provided in section 8b below.

### **Building improvements**

The EEC building was completely renovated over a period of 2 years from 1998 to 2000. The working conditions are now excellent, and in the latest phase of improvement, an air conditioning system was installed in the area known as the extension which was built in 1995. Another simple but effective innovation has been the installation of water fountains in all conference rooms.

### **Environment and social responsibility**

To promote world environment day on June 5 a series of exhibitions and events is being organised. The aim is to raise the awareness of environmental issues amongst the people working on the Bretigny site:

- an art and photography competition for staff and their children
- promotion of public transport with an extra shuttle
- exhibition on water and the environment
- "bio" products stand
- "bio" meals at the canteen at lunchtime
- visits to the local waste disposal/recycling site
- films on ecology themes in the auditorium

## 4 PARTNERSHIPS AND RESOURCES

Excellent organisations plan and manage external partnerships, suppliers and internal resources in order to support policy and strategy and the effective operation of processes. During planning and whilst managing partnerships and resources they balance the current and future needs of the organisation, the community and the environment.

### 4a External partnerships are managed

#### Strategic Partnership

The Experimental Centre Consultation Group (ECCG) is the main general forum for consulting EEC stakeholders and for building and strengthening strategic partnerships. See section *Overview-Governance* above. The ECCG has met 7 times between May 1998 and April 2003.

An EEC Strategy Task Force of 10 EEC staff was created in July 2002 to define a strategy for the EEC that would benefit the whole ATM system. It reported in October 2002 with the first version of the 'Proposed EEC Strategy' for presentation and discussion at ECCG in April 2003. The report formed the basis of a reorganisation of EEC Core Business carried out in the 1<sup>st</sup> quarter of 2003 and approved by the Director General. Version 5 of the EEC Business plan will be based on the agreed strategy.

The principal feedback on EEC performance from strategic partners comes through the stakeholder/market survey. See section 2a above. Results are provided in section 6a below.

#### Forming value added supply chain partnerships

##### Framework contract

Since 1996 the EEC procures external assistance using a 'framework contract' with industry consortia. The objective of the contract is to set up partnerships with the consortia that are able to provide support to EEC in the execution of its work programme. This arrangement has reduced the time to let a contract to an average of 6-7 weeks. The contract is renewed every 3 years the most recent being April 2002.

The emphasis in using external assistance is increasingly on fixed-price tasking undertaken

mainly at the suppliers' sites. This encourages our Industrial partners to understand our needs and focus on deliverables. It also tends towards a 'level playing field', since proximity to EEC is no more an advantage.

##### Simulation Partnership.

A Simulation Partnership Scheme was established in 1997 in order to make use of existing simulation capacity in Europe when that of the EEC is not sufficient to meet EATMP requirements. Under this scheme simulations have been run for Portugal Oceanic at NATS and for RVSM at ENAC, DFS and Skyguide.

##### Industrial Partnership and Industrialisation Policy

A report on the relationships between the Agency and Industry was produced in 1997 by the Industrial Policy and Supplier Relations Task Group. The EEC contributed to this work and subsequently built on this foundation in order to develop its own industrialisation policy. An EEC Task Force on Industrialisation Policy was set up from October 1997 to April 1998 to evaluate the different options to be considered for the deployment of R&D products by industry so that proper support, maintenance and training would be ensured by industrial partners. Its report was endorsed by ECCG in November 1998.

The development of partnerships with industry is now a cornerstone of EEC strategy. The EEC Business Plan contains an action to further develop co-operation with Industry. The EC-sponsored 5<sup>th</sup> FP and TEN-T projects encourage the involvement of Industry in the specification and development of EEC simulation platforms.

A framework was defined in co-operation with the legal service of EUROCONTROL HQ to address licensing and intellectual property rights issues. A standard licensing agreement was developed that can be used most cases. This EEC policy was widely presented to and was well received by industry.

A notable success of the industrialisation strategy was the AudioLAN product, an innovative venture exploiting voice-over-IP technology, which is now commercialised with a

non-exclusive licensing agreement via more than five separate companies.

The monitoring of the industrialisation approach has been reinforced since the end of 2000 by initiatives to create dedicated user groups. The AudioLAN user group gathers seven user establishments (EEC, MUAC, IANS, CRDS, ENAC, DFS and ENAV). The group's objective is to ensure that an adequate level of development and support is provided for the product through appropriate outsourcing of effort. It meets 4 times a year.

The ECAPE User Group was formed in 2002 to gather the users of the ESCAPE real time simulation platform (EEC, MUAC, IANS, CRDS, SICTA, and two ANSPs). The group meets x times per year. A Service Level Agreement (SLA) between the EEC and the CRDS has been drawn up. The support for the distribution of the simulation platform is provided by EEC/SFM. The service includes the provision of a hotline and a problem reporting channel.

The objective of the ERIS business area is to provide an industry based reference validation platform and integration facility to EATMP and EC validation projects. The outsourcing approach has been used to provide external components to the main platform (Flight Management and Trajectory Prediction: INDRA, Arrival Management: Barco/Orthogon, Integrated Datalink Server: ThalesATM).

ERIS is based on the development of the AVENUE standard created between 1998 & 2001 in the context of a project sponsored by the European Commission. This has led to an EEC/Industry/ANSP partnership around commonly agreed simulation architecture and interfaces.

#### AECMA

The European Association of Aerospace Industries (AECMA) represents the aerospace industry in Europe in all matters of common interest. EUROCONTROL and AECMA established formal working relations through a bilateral steering group. Its aims are to identify, propose, promote and monitor joint initiatives aimed at preparing a joint Master Plan for a pragmatic implementation of the European Single Sky.

#### Boeing

The Boeing Company has taken the view that congested skies and inefficient ATM will hamper market growth for commercial airline sales. The company has consequently created new business area committed to the development of an efficient and secure ATM system. The EUROCONTROL Experimental Centre has over the years established excellent working relations with Boeing through the exchange of staff and through the development of aircraft performance modelling.

#### EUROCAE

The European Organisation for Civil Aviation Equipment (EUROCAE) was formed at LUCERNE on the 24th April, 1963 as a forum where administrations, airlines and industry could meet to discuss technical issues. EUROCAE minimum performance specifications for airborne electronic equipment (MOPS) documents are considered by Joint Aviation Authorities (JAAs) to be referenced by the JAA Joint Technical Standard Orders and other regulatory documents. The main European administrations and the main aircraft and equipment manufacturers are members of EUROCAE and actively participate in the Working Groups, which prepare these specification documents. The EUROCONTROL Experimental Centre actively participate in some of the working groups:

WG61 : standardisation of intra-centre architecture. EEC participation includes drafting the development plan, participation to meetings and will also include contribution to technical standardisation. In principal WG61 will use AVENUE as the basis for architecture standardisation.

WG59 : Interoperability. Primarily concerned with the standardisation of FDP interoperability, using the ODT as the basis for most of the requirements. EEC participates in meetings. There is a strong connection with AVENUE.

WG51 : Automatic dependant Surveillance. Primarily concerned with the use of broadcast communication for increased airborne surveillance information, the EEC participates in the context of Airborne Situation Awareness Systems (ASAS).

#### Gate-to-Gate

In 2002 the EC 5<sup>th</sup> FP Gate-to-Gate project started work. This project brings together EEC, Industry (INDRA, ThalesATM, Alenia Maconi, BAE, Airbus and Sextant), ANSPs (DNA, AENA, ENAV, DFS, LFV) and R&D Centres (NLR, CENA). The project will develop and validate operational concepts including departure, en-route and arrival management. It will also develop a reference validation platform using AVENUE standards.

### **Ensuring cultural compatibility**

Management training applied throughout the Agency helps management and project leaders to be responsive to multicultural aspects in projects and working groups. This training has been reinforced at the EEC by the unique EEC language training policy. Knowledge of foreign languages is an important enabler of multicultural understanding. Courses at all levels in the principal European languages are organised at the EEC. The courses are open to everyone working at the Bretigny site.

### **Supporting mutual development**

#### **Internal partnerships**

The activities of the EEC directly contribute to the agency programmes and are developed in close co-operation with the corresponding sponsors (EATMP, MUAC, CRDS, IANS, CFMU, PRU, SRU ..).

These partnerships are formalised and supported by agreements such as EATMP Project Delegation Agreements, Service Level Agreements and Project Charters. Progress is reviewed with sponsors at regular intervals.

#### **CRDS**

The EEC led the Agency project to implement the CRDS in Budapest. The CRDS is one of the support units of CEATS, which will establish a regional ATC system in central Europe. The CEATS ATC centre will start operations in 2007.

The CRDS implementation project started in 1999 and was completed in 2001. It was a

complex cross-Agency project since expertise was drawn from most Agency services. The EEC Core management Special Advisor led the project. The EEC was well placed to lead this project to set up the new ATM R&D centre since the EEC is regarded as the leading ATM R&D centre in Europe.

The CRDS is now running a simulation programme in support of CEATS. The EEC has also helped the CRDS to initiate research activities and partnerships, including collaboration with of Belgrade University. The CRDS is expected to provide synergies and contributions to the overall ATM R&D effort and to the opening of EUROCONTROL to central & Eastern Europe

### **European Commission Projects and Relationships.**

Since 1995 the EEC has been extending its relationship with the European Commission through participation in successive framework programmes for research and development.

The EEC successfully negotiated in 2001 its participation in eleven new projects of the 5<sup>th</sup> Framework, TEN-T and Thematic Networks projects as peer to the principle research institutes and to major players in the European Aeronautics supply industry. These projects further strengthen the strategic development orientations of the EEC's business areas.

The accession of the European Community to EUROCONTROL in 2002 further strengthened the partnership with the EEC. Throughout 2002 the EEC continued to work on the following 11 EC projects: AERONET II, EVP, LEONARDO, TALIS 2, ASAS-TN, Gate to Gate, NUP II, Wakenet 2, ATC Wake, HYBRIDGE, SAFESOUND.

#### **Research Partnership**

Specific partnerships are established with peer research establishments. Research topics are selected that may include collaboration on specific products or work on operational procedures and methods.

Particular fields of co-operation were identified with CENA. A co-operation agreement has been established between the EEC and CENA that has allowed mutual progress and development of tools such as the COSAAC ATFM simulator. It has also resulted in collaboration and exchange of staff as in the context of the CARE ASAS project. The Directors of both establishments meet each year to monitor the co-operation.

The EEC has started a cycle of visits to its peer research establishments in order to complement the mutual information and actions. Results are provided in section 9b below. Such visits are an opportunity to inform partner establishments on the strategy and the work programme as well as getting direct feedback on the approach. The contact allows to better position the EEC business plan prior to presentation to the ECCG.

The Innovative Research Advisory Board was set up in 2002, comprising three external prominent scientists and experts, among which 1 University Professor from the US, and 1 Head of National Research Center in ATM from Europe. The board is functioning and provides input to all proposals and theses.

### **Generating and supporting innovative and creative thinking through the use of partnerships**

#### **Research Co-ordination.**

A research and development review process exists in the Agency in the form of the R&D Review Group. Although this process is currently being revised, the data gathering process which is the key element of the review is still in place under the form of the ARDEP database. The EEC contributes to the provision of data to ARDEP.

An annual review, led by EUROCONTROL headquarters, of the ARDEP data is conducted by all R&D establishments. ARDEP web site: <http://www.eurocontrol.int/ardep>.

A similar framework (ARDA) to ARDEP has been established in the US by the FAA to collect information on Aviation R&D in the US. This action is co-ordinated with EUROCONTROL and includes a common classification by domains of European and US R&D.

#### **University partnerships.**

Contacts are maintained with universities of potential interest due to their specific fields of knowledge. Study topics fall generally into three areas: in-depth studies in a PhD context, study of specific topics (such as optimisation) and exploratory experiments.

The R&D conducted in co-operation with universities is reviewed by an internal EEC group that examines the progress of co-operation topics and reviews the requests for PhD work. Results are provided in section 9b.

The EEC also receives requests from trainees who wish to take part in our activities. An internal committee makes the selection of candidates. Results are provided in section 8a.

Other contacts with universities are taken by all business area managers on subjects of direct concern to their activities.

### **Creating synergy in working together to improve processes and add value to the customer/supplier chain.**

The EUROCONTROL Agency has developed a series of Action Plans in co-operation with the US FAA. The EEC contributes to the planning and implementation of these co-operative actions in all areas of common interest. The topics covered include: ASAS, VDL, Decision Support Tools, Flow Management, ATC Working Methods, and Wake Vortex. The practical development of the co-operation is performed through Technical Interchange Meetings, which allow an exchange of views as well as sharing of data, methods, and software. The overall process is monitored twice a year through meetings of a dedicated R&D Committee including staff from the two Agencies, FAA and EUROCONTROL.

The US/Europe ATM R&D seminar, which convenes every 18 months, is another forum where the ATM community exchanges research results. A selection committee examines and selects research papers for inclusion in the seminar. The papers are made available on an Internet site managed by the EEC.

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## **4b Finances are managed**

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### **Financial Planning**

The budget of the EEC is prepared annually based on a cycle applied to all directorates of the Agency. A five years budget proposal is elaborated on the basis of the business plan and therefore based on EEC strategy. The draft budget is reviewed by the ECCG and endorsed by the EEC Management Board before being submitted to the EUROCONTROL Advisory Financial Group (AFG). The proposal is made in October of Year N for the plan starting in Year N+2. The budgetary envelope for the whole Agency is examined in May of year N+1. Adjustments are made in the period May-October and the first year of the plan is

approved by the Agency governing bodies based on the AFG proposal.

### **Financial Regulations**

The application of the financial regulations of the Agency is guaranteed at the EEC by procedures and tools developed to facilitate their direct use by expense managers. The definition and use of the EEC financial procedures and tools is facilitated by the Financial Tools and Regulation Interface (FTR) unit, which also monitors the consistency of their application.

The Local Procurement Review Group (LPRC) meets weekly to review procurements in order to verify that financial regulations are followed and procurements are in line with EEC strategy. The LPRC regularly issues process measures.

The Financial Unit of the EEC operates as a service to Project Leaders/Expense Managers, in the implementation of procurement requests. Approval of the agreed procurements is given by designated officials from the Core Management, or the head of the financial unit, or by the Director of the EEC depending on the amount of the procurement. The Technical Manager confirms that a service or good has been delivered according to contract. After confirmation, the accounting department pays the invoices.

### **Budget Monitoring**

The use of the budget is monitored through a series of quarterly budget checkpoints. Initial budget allocations to expense managers are based on the agreed annual allocations derived from the Business Plan and hence from the Five Year Plan. Budget checkpoints are based on a number of indicators showing the performance of payment planning and the use of the allocated budget to date. Credits allocated are renegotiated based on new planned needs and cash flow planning and financial performance to date. The ACB tool has been updated with features allowing Project Managers to enter their own Planned Payments.

### **Cash flow management**

An increasing level of performance in budget consumption has been achieved since 1996. Once contracts are passed with service providers, the payments can be monitored directly by the expense managers through the ACB. The ACB has in 2002 been enhanced with reports showing budget allocation, usage and payments. The actual payment of services and goods is subject to a validation process initiated by the financial services who seek approval of

deliverables by expense managers and project leaders.

### **Financial Relationship with sponsors**

Many projects of the EEC are co-financed with funding from sponsors either internal or external to the EUROCONTROL Agency (EATMP, CFMU, CEATS, FAA, ENAV, PRU, MUAC, STS, and EC). Support is provided by the Financial Planning and Analysis unit in the monitoring of the associated budgets as well as in establishing relationships at financial level with the sponsors.

A specific support is provided in all aspects linked to the management of contracts with the European Commission. This support covers the preparation of formal responses to call for proposals, setting up of contracts, and setting up of cash flow. In addition, support is given to facilitate relationships with consortia members.

### **Missions Office**

The provision of a travel service for EEC staff missions has been outsourced to a travel agent under the framework of the Agency Travel Policy. The fixed costs of the travel agency are financed by EUROCONTROL, while as a counterpart, the commission obtained by the agency is refunded to EUROCONTROL.

In order to facilitate the reimbursement of mission expenses to staff, an agreement has been signed with a finance company, which provides staff with corporate individual credit cards. An extensive partnership in this area would facilitate the invoicing of mission expenses.

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## **4c Buildings, equipment and materials are managed.**

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### **Infrastructure management**

Most aspects linked to buildings, equipment and materials are managed as outsourced projects monitored by the TIG unit.

Since January 1<sup>st</sup> 2001, for a period of 3 years, the EEC building maintenance has been let to an external company. This single outsourcing contract replaced over 30 individual contracts. The contract covers air conditioning, purification, power etc. The company keeps a representative permanently at the EEC site, and a team of four people, which can be extended to ten people, can be called on if required. The problems are managed using a GMAO system (Computer Assisted Maintenance Management)

which allows the monitoring of problems and provides maintenance checklists for each piece of equipment on the basis of information gathered during the renovation of the building. A hotline service is provided using a generic email address, and problems are tracked and solution reports are provided to the initiators of requests. It is planned to introduce a more direct interface with the GMAO system on the Intranet, which will provide more widely visible feedback.

### **Building reconstruction, evolution, maintenance**

The EEC building renovation was initiated in 1998 following an expert examination regarding conformity to building regulations. A staff monitoring group was created in order to guarantee that staff opinions and interests were taken into account. Although the reconstruction was heavily constrained by the initial structure of the building the facilities were designed to allow high degrees of synergy and interaction within the building. The renovation was successfully completed, within time and budget, in July 2000. The renovated building was inaugurated on 29 September 2000 in the presence of the President of the EUROCONTROL Permanent Commission, the French Minister for Infrastructure, Transport and Housing, the President of the EUROCONTROL Provisional Council, the Director of the European Commission's Air Transport Directorate, and the EUROCONTROL Director General.

New infrastructure projects are managed depending on the magnitude of their funding. For projects over 100K€, it is considered that the corresponding proposals should be aligned and reflected in the Business Plan. Once validated, and the budget agreed, initial contracts may be initiated to prepare technical requirements, with possible sub-contracts to address specific requirements issues (security, supervision). An overall consultation for the main project is then launched on the basis of the technical requirements.

Smaller infrastructure projects, up to 100K€, (which may concern limited improvements to the infrastructure) can be initiated on the basis of a request formulated to the TIG unit, which enters in a cycle of budget allocation and execution, most generally through an external contract.

To ensure that staff concerns and expectations are taken into account wherever possible, a consultation group of staff representatives has been created: Groupe de Co-ordination Infrastructure (GCI). This group is consulted during the initiation phase of infrastructure

projects and it monitors progress during the implementation phase.

During 2002 a contracts were let to install air conditioning in the so-called extension. As well as the installations themselves, work was done to provide temporary accommodation to staff and to move them out and back in stages so that work disruption was kept to a minimum.

### **Transport and Mail**

The TIG unit manages EEC Service Vehicles, which is in charge of the monitoring of their use and their maintenance. More extensive transport requirements, for example to transport the controllers participating in real time simulations, are also managed by TIG.

The handling of mail and parcels has been contracted to an external company, which also assures the internal mail distribution.

### **Print shop service**

Since September 1999, the printing facilities of the EEC are provided under an external contract. This includes:

- a printshop facility onsite for large print requests;
- a number of self-service print facilities by means of networked printers/copiers;
- the management of supplies (paper, toner).

Staff previously allocated to the printshop were reallocated to other tasks.

During 2002 a project was initiated and completed to replace all network printers.

### **Meals and refreshments**

During the building renovation, meals and refreshment facilities were created which would facilitate and encourage staff to mix and meet in informal surroundings. This increases formal and informal information exchange and fosters internal and external communication. A large and attractive cafeteria is located in the central area of the building, close to the atrium, meeting rooms, and showroom. This is the place to meet people from outside the normal professional circle and the place to meet and talk to visitors. The second informal meeting point is the modern canteen, which is also situated near to the centre of the building complex. The catering service is outsourced, and provides lunch to over 250 people each day, including visitors. A separate room, which anyone can reserve and use, is available for small groups.

### **General Support**

General support is provided through specific contracts with external companies, which are monitored by the TIG unit. One example is the reception desk service. Tools were either designed or made available at the reception to improve its efficiency. These tools include the web access to the Intranet where the daily events are published, and an access to a specific interface allowing recording and keeping in contact with current visitors to the EEC.

Cleaning of the offices and common space is also provided under contract. A quality check procedure is being defined. Part of this service is a continuous cleanliness check during the daytime, which also allows reporting of defective equipment to the infrastructure team.

Office and workspace management and allocation of office tools are facilitated by an Intranet application, which allows indicating and monitoring of new planned arrivals. External staff performs necessary furniture removals under a specific contract agreement, which allows a removal to be performed within 72 hours.

### **Security**

The protection of EEC premises is covered by a security service contract. Security measures to be applied by the security company are defined in a handbook written by the TIG unit.

The access to the building is monitored by video cameras. Security staff initiate actions according to the security procedures. Access to the recorded video information is restricted and can be viewed only by the Security Officer in the presence of the Staff Committee chairman.

### **Safety**

The Service Prevention and Protection at Work (SPP) provides assistance and advice to define and implement the Prevention and Protection at Work policy. The SPP assesses risks at the EEC, and supervises the application of the policy defined by the Central Service for Prevention and Protection at Work, in co-operation with the EEC Director or his representative and the Local Committee for Prevention and Protection at Work (CLPP).

The 2002 SPP programme is as follows:

- to further develop a prevention and protection at work policy at the EEC;
- to follow the implementation of the regulatory mechanism concerning the management of prevention;
- to develop a prevention culture EEC-wide (staff and contractors).

### **Equipment**

The IT systems of the EEC are managed by the ITM unit, which establishes the data processing, needs in line with the business orientations of the EEC through dialogue with the Business Areas and the Centres of Expertise. Policy and strategy are documented in the IT Strategy Document. ITM also provides support to projects in defining their needs in IT systems, and solving usage problems. The ITM unit assists in the preparation of acquisitions through price enquiries and preparations of calls for tenders. A large proportion of the IT budget is dedicated to maintenance contracts and licences which require a significant monitoring effort. An inventory of all equipment and licences is maintained.

The computing facilities of the EEC have dramatically evolved over the past decade in keeping with technological advances. The original central IBM mainframe, used for batch processing, gradually evolved (1992-1995) towards the General Computing Facility (GCF) which added local area networks, a Novell system, PCs for general purpose computing, and Unix workstations for technical work. The mainframe was finally decommissioned in 1997, leading to a fully distributed network computing facility.

In 1999 the entire IT service was outsourced and staff were reallocated to core business and support tasks. The reliability and efficiency of the service has increased significantly. Overall system availability is now close to 100% and problem solution times are well within the targets set by the service level agreement, 4 hours for level 1 problems, and 8 hours for level 2 problems. The IT service provision contract was awarded for a period of 3 years. The IT contract is monitored by means of various procedures and meetings:

- The evolution of systems is jointly elaborated between the contractor and ITM in technical meetings;
- A Pilot Committee meets monthly to check the contract status, examine on-going problems and user requests, examine the evolution of the equipment stock;
- A strategic committee meets annually to review the overall status of the contract and control evolutions.
- A Users Committee meets every 2 months with the objective to review the IT strategy, to propose evolutions, and discuss and validate IT approaches.

The procedures dealing with the services provided are being progressively documented and published through a web site on the Intranet, as part of the quality improvement effort of the EEC.

The ITM unit in co-operation with its Peer Agency unit, DF/MIS, manages specific information technology projects. Such projects have included Agency wide corporate tools such as electronic mail and calendar, information security systems. The governing body at the Agency level is the Corporate Information Systems Committee (CISC).

During 2002 the ITM unit conducted an internal satisfaction survey. The results of this will be examined and needed improvements implemented starting in 2003.

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#### **4d Technology is managed**

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##### **Managing technology - Technology watch.**

All business areas and units where it is relevant monitor the evolution of technology. In the domain of large ATC screens and simulation equipment, a common EUROCONTROL policy including CRDS and EHQ has been elaborated with the aim to set up a framework agreement for the procurement of simulation equipment.

##### **Leading edge technology**

Advanced display technology is monitored for its potential applicability in the fields of ATM. Exploratory projects involving 3-D visual and sound systems development have been launched in view of augmenting the realism of data representation in a more human-centred direction. Examples of investigations include Controller Working Positions using techniques in Augmented Reality for applications such as Stack Management at Airports and 3D volume sectorisation at Terminal Areas (Project VIRTUAL and 3 Ph.D. Theses). Other alternatives for short-term capacity improvement are also explored by focusing on the use of proven technology to suggest new operational procedures.

The latest Internet technology was exploited to develop the voice-over-IP functionality, which culminated in the AudioLAN product, see section 2b above.

Web technology is used to implement many administrative support tools to provide generalised access. See sections 3a and 4b above.

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#### **4e Information and knowledge are managed**

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##### **Knowledge management.**

Both the Think-Tank initiative of 2001 and the feedback from the 2002 EFQM self-assessment pointed out the lack of a knowledge management policy and system at the EEC. This is of special concern to the EEC because of the probability of early retirement which will result in much knowledge being lost, and because of the large number of contract staff working on key projects.

To respond to these concerns the EEC has launched a knowledge management study supported by a specialist consultant to see what approach to knowledge management would best fit the EEC situation and needs. The EEC is determined to take a very practical approach. Initial conclusions of the study will be available in July 2003. A questionnaire has been issued to senior and middle management to start to map the current state of knowledge at the EEC.

##### **External communication**

The creation of a Marketing and Information Management unit in 1999 has contributed to an overall reflection on how marketing approaches could be relevant to a research establishment such as the EEC. Although most of the stakeholders and partners are well known in the ATM environment, the reflection around the preparation of regular stakeholder surveys allows to review the existing range of partners while consulting the current base of stakeholders. The evolution of the strategy is taken into account by including in the survey those partners who are becoming directly concerned by the EEC actions. It is planned to include lobbies and pressure groups in the next stakeholder survey, considering the increased importance of society and environmental aspects in the EEC strategy.

A large part of external communication at the EEC is based on the dissemination of the EEC reports and technical notes. The reports and notes are distributed to around 250 representatives of our stakeholders. Since 2001, taking into account the wider use of the Internet, the reports and notes are announced to our stakeholders by emails pointing to the download address of the reports. Postal mailings of reports and notes are maintained for a smaller number of requests, either in paper form or in CDROM form. This approach has greatly reduced paper consumption. See results in section 8b.

Information is also communicated through participation to conferences, the organisation of internal workshops, seminars or events as well as numerous visits. Procedures have been set up to deploy these communication actions.

The installation of a permanent showroom in the renovated building has given the ability to perform demonstrations without pre-notification on a series of selected projects. Projects in the showroom are changed several times per year.

Short interviews with the press and the media are sometimes provided either by the Director EEC or by staff members. These declarations are co-ordinated with EUROCONTROL headquarters when the subject goes beyond the work programme of the EEC. During 2001, two French TV magazines, broadcast on ARTE and FR3, featured sequences shot at the EEC.

External web sites are extensively used for communicating. They are tailored either for general-purpose information on the EEC or designed for specific groups of ATM users. The design of the official EEC web site conforms to the corporate style defined for the EUROCONTROL web site. The EEC was the first directorate in the Agency to provide all its staff with Internet access.

Information on innovative technology is disseminated through the OpenATC web site, which includes data on research projects, and specific software.

### **Internal Communication**

All staff meetings are held twice per year, in June and December. Middle management meetings which target different domains of EEC activity are held quarterly. Following the recommendation of the think-tank in Q4 2001, these information meetings have been complemented from 2002 by a "weekly information corner" and by an internal newsletter. These two new media, as well as internal communication in general, are monitored by an internal information monitoring group in order to detect information needs and opportunities, and to respond to these needs

The Intranet and electronic newsgroups are key aspects of EEC internal communication.

The Intranet is a repository of information of general interest as well as project information. It offers an access to administrative, financial and general-purpose tools. It also includes an "Infocentre" where all information and working documents are accessible by category. The

Infocentre allows the creation of categories and subcategories and to manage the documents.

A classical library service is available which offers subscriptions to periodicals, purchase of books, loan of books, as well as assistance for information search through databases. External database searching is co-ordinated with other Directorates.

While electronic mail has been extensively used for professional external and internal communication since 1996, questions of general and social interest to staff are also posted and discussed on dedicated internal newsgroups.

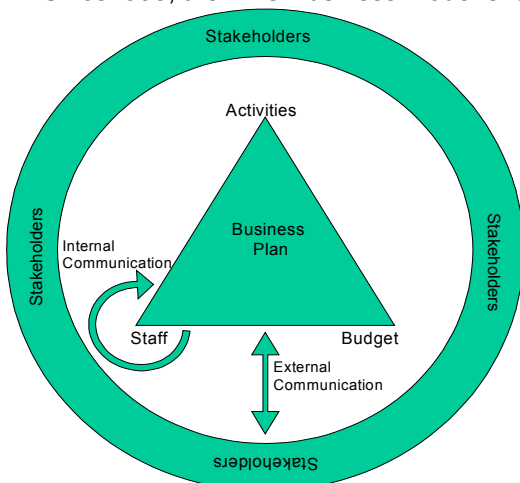
## 5 PROCESSES

Excellent organisations design, manage and improve processes in order to fully satisfy, and generate increasing value for, customers and other stakeholders.

### 5a Processes are systematically designed and managed

Since its origins in the 1960s, the main activity of the EEC has been simulations and more specifically real time simulations. Formal process mapping started in the early 1990s and not unnaturally, concentrated on real time simulations which is a large and complex undertaking. Processes were well initially documented in what was then called the Real Time Simulation Handbook but their application was erratic and they were not kept up to date. Since these early attempts, the management process of real time and fast time simulations has matured and is consistently applied. Typical teams are being set-up to manage each simulation using a recognised efficient approach. The facilities are managed by a dedicated centre of expertise (SFM). The access to simulation facilities is managed through a common schedule and there is a common access to the tools allowing change requests and problem reporting. The simulation process itself will have its description updated and made available through the intranet on which reference documentation are available. However, there is already a wide collection of supporting documentation for the technical actors of simulations.

Since 1998, the EEC Business Model evolved in



concert with the development of the EEC matrix organisation. The model represents the fundamental entities and principles within the

EEC and its market context. Staff, budget and activities (projects) combined through the business plan, and stimulated by internal and external communication and consultation, deliver value to stakeholders through projects, services, and products. The staff-activity-budget triangle is the heart of the ACB tool which is the repository for all work programme information.

A key process framework has been established, through reviews at Core Management level and in consultation with Middle Management, wherein EEC top level processes are structured in order to match the strategy needs. This top level framework has started to evolve towards a set of common processes for all Core Business areas as well as support units. See section 2d above.

At the end of 2002, as part of the reorganisation, was created a unit in charge of defining and implement processes based on sound project management principles. This unit initiated a general process mapping in view of checking consistency of the processes with the top level process framework as well as identifying redundancies and possible gaps. A web based matrix view of the process map was developed which includes identified processes, their owners and the supporting documents. It will allow in the continuous improvement trend, to better identify potential interface issues of our processes with internal and external stakeholders.

A particular emphasis was given in 2002 to complementing the documentation of existing processes and in particular to :

- Project Management processes
- Finance and Procurement Procedures
- Support Services (Human Resources, Finances, IT, Programme Support, Communication, General Services, Prevention, Health)

The processes are documented in standard text format and available on the intranet through dedicated web sites cross referenced in the various levels of the intranet entries.

The process framework and the processes which it contains is also indexed in the "How to?" Guide, a Web based key word facility which

guides staff via the intranet to useful procedures and information.

### Applying standards

In the field of software development, the SEU promotes the use of norms and standards, for EEC project management. A series of references to standards are provided on the intranet .

SEU standards are based on IEEE software engineering standards and ISO9000 standards.

SEU also provides support for software quality in three areas:

1. Quality assurance techniques
2. Definition of quality requirements
3. Software quality audits

Training in project management methodology is provided as part of the staff general training plan.

The safety key methodology uses the standard industry Safety Culture Maturity Model to implement and measure deployment of the safety culture at the EEC. See survey results in section 9a below.

In the field of security a Service for Prevention and Protection at work (SPP) has been created. As an example of the deployed security approach, 2002 saw the establishment of the compulsory periodic checks of the technical installations (electricity, heating etc.) by an independently approved company. A prevention plan was also established for all the external companies working more than 400 hours in the EEC according to the Decree of 20 February 1992. The EEC is currently considering an approach to using the ISO14001 environmental standard.

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### **5b Processes are improved, as needed, using innovation in order to fully satisfy and generate increasing value for customers and other stakeholders.**

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The significant step towards management by process taken in 2002, where the existing processes were systematically reviewed started from the interview of Heads of Unit in order to understand what they considered as their key business processes, and to obtain their view of what is not working well and what can be done to improve. Initial interviews identified

financial processes and the testing processes of the real time simulation life cycle. This has led to documenting the corresponding processes.

Innovation and creativity is stimulated at the EEC through the open and democratic trust culture and the flat matrix organisation. This has not only benefited core business activities but also support activities and continuous improvement. Opportunities for process improvement are sought from as many sources as possible, and have resulted in incremental changes and some breakthroughs. In this flat organisation the development of methodologies is the role of the Centres of Expertise as well as their promotion to staff. This is particular the case for the common validation methodology which has been introduced as a specific process mentored by a dedicated unit created in ???.

Project management method deployment has been monitored through the introduction of a KPI on project management quality and timeliness of milestones.

Since year 2000, during which were introduced new financial regulation including multi-annual budget planning, improved cash-flow planning processes were developed. A strict budget monitoring process was already in place since 1999. These improvements allowed an increasing awareness of budget status through targeted internal communication and improved information, and training in the essentials of budget and finance for project managers. EEC budget usage performance is now best in Agency. An integrated information system (ACB) is providing support to the project planning and budget processes and is also supporting the procurement process since early 2003. The use of this integrated tool by project leaders and business area managers has drastically improved the budget planning.

The 1997 stakeholder satisfaction survey (section 5e) revealed that stakeholders were not receiving adequate information concerning projects and research results. This prompted a review of the external distribution process for EEC reports, notes (section 4e), and for the Annual Report . The management and content of the stakeholder database was also reviewed and improved, and the accessibility and speed of delivery of documents was improved by gradual transition from paper distribution to a web based service.

The self assessment process itself is a valuable source of process improvements. The 1998 self

assessment generated an improvement action to develop a people satisfaction survey (section 3a). This was a breakthrough as far as the EEC was concerned. A small multi-disciplinary team developed a questionnaire based on standard practice and the process was initiated with the first survey in 1998. This process has since evolved and from 2002, the people satisfaction survey uses a questionnaire which is common to the whole of the Agency. This will enable data to be aggregated and conclusions to be drawn for the Agency as a whole.

The learning culture ensures the establishment of focus groups when particular issues need to be addressed. The matrix organisation is assessed and reviewed periodically with a view to further improvement. In 2001, a review took place in the form of a brainstorming exercise with the participation of representatives of senior and middle management and with the support of an external facilitator. Details of the exercise, the findings and the improvement actions, are given above in chapter "Overview", section "Journey to Excellence", year 2001. (????)

In 2002, the matrix structure was extended to the support units and the core business matrix was aligned to better fit the proposed reorientation of the EEC towards a longer term strategy as proposed by the "strategy task force". The management structure of business areas was adapted to larger size units by setting-up management teams (early 2003).

Electronic newsgroups (section 3d) are a valuable source of improvements especially regarding improvements to the working environment. Senior management and Suggestions Board members regularly monitor newsgroups to identify potential improvements. In 2002, the newsgroups, as well as the minutes of management meetings, were the source of a semiotic analysis in the context of the EEC VALUES project. See section 1a above.

The suggestions box (section 3c) is an established method for identifying and implementing improvements. Results are given in section 7b below.

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### **5c Products and Services are designed and developed based on customer needs and expectations.**

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Work at the EEC is organised in projects, ranging from large scale projects to portfolio of smaller studies. Unlike production-line companies, where the client is buying the end product, each of the EEC projects involves a great deal of interaction with stakeholders due to the required link of our research with field experience. For some of our projects, our stakeholders are part of the project teams at our or at their premises. This gives a very direct and open feedback, and allows the client to have a direct influence on the end product during the process. Other forms of projects involve a high degree of partnership with members of consortia from industry and research bodies; the EEC has developed this ability take part and manage this type of interaction since the early days of collaborative ATM research programmes (PHARE 1989).

Project outcomes are reports, demonstrators and prototypes. "Products" which do emerge from the projects are, as a general rule, made available to stakeholders free of charge. We also deliver open source products to industry, allowing them to commercialise and sell a new product.

All customer related activities, based on projects, have commonly agreed project plans that are approved and signed by the client at the beginning of the project. These project plans are regularly submitted to peer reviews by the business area managers, heads of centres of expertise and the work programme manager in order to assess their adequacy with the EEC overall strategy as well as to the customer/stakeholder needs. A change procedure ensures that changes can be agreed and accommodated based on mutual understanding. We use the result of each project to build up our know-how and expertise, in order to serve present and future customers.

Stakeholder/market surveys (section 2a) seek to determine stakeholder satisfaction with the scope and structure of current EEC activities as well as their expectations for future activities. In 2002, the customer survey conducted by IPSOS included interview of a group of personalities as well as a parallel mirror survey of staff opinions. See results in section 6a below.

ECCG meetings (section 2a) are also used to validate re-orientations of EEC strategy, services, and products through the ECCG review and endorsement of the draft EEC business plan.

Some examples of EEC re-orientations based on the perceived future needs of stakeholders follow.

In 1998 a major initiative was launched to expand the partnership with the European Commission (EC) because of the increased importance given to ATM in the EC 4<sup>th</sup> framework programme for research and technological development. Because of its neutral and objective positioning, the EEC was able to respond to the ATM community requirement to provide a site for the development of the first instance of a European integration and validation platform for the future unified European ATM system. Further responding to the needs of the ATM community and the EC, the EEC work has been expanded and restructured into the ERIS programme which now also contains the Gate-to-gate-2005 project of the EC 5<sup>th</sup> framework programme.

In support of the EATMP 2000+ strategy and in order to contribute to an increased understanding of safety risks in the European ATM system, safety activities have been gradually expanded at the EEC from the early ACAS activities which started in 1991. Since 1997, the ATM Automatic Safety Monitoring Tool (ASMT) has been developed by the EEC. It provides an automatic monitoring facility for safety related occurrences based upon operational data. The tool encourages the concept of automatic safety monitoring in a non-punitive safety culture. The tool underwent operational evaluation at Maastricht UAC, and entered into operations in August 2002. Several specific or generic implementations of ASMT were achieved or initiated in 2002 (Bratislava, Gatwick) and interest was shown by other sites.

The long development lead time and the enormous financial, regulatory, social, and operational impact of new concepts makes it mandatory to work extensively with all stakeholders when researching and developing new tools and systems. A very promising research area concerns the delegation of separation responsibility from the ground to the air. The work at the EEC comprises several inter-linked projects most of which are collaborative efforts where the EEC is an active

partner. Mediterranean Free Flight (MFF) is a major project led by ENAV, and supported by EC TEN-T funding. AFAS and MA-AFAS are EC collaborative 5<sup>th</sup> framework projects with strong involvement of airframe manufacturers.

The EEC has provided extensive support to States for controller working position specification in preparation for new system procurement. The DSI project started in 1997 and produced an HMI specification for the future Danish ATC system, DATMAS, and the future Swedish ATC system S2000.

The HMI specifications are much appreciated by the ATM system providers and the HMI is emerging as a de-facto industry standard. The final specifications were delivered in 1999. The SWI project started in 1999 and took results provided by the DSI project as a model to start developments to define the HMI of the future en-route and approach controller working positions of the future Swisscontrol ATC system. A similar project is being undertaken with ENAV, the Italian ANSP.

Creativity coupled with the consideration of the longer term stakeholder expectations as expressed by high level white papers of the ATM community has been the approach taken by the Strategy Task Force created in 2002 in order to identify potential conceptual orientations of the EEC research; this has been achieved through the application of creativity methods through numerous organised brainstorming sessions within a multidisciplinary expert group.

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#### **5d Products and Services are produced, delivered and serviced.**

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The business of the EEC as expressed in its mission is to carry out research and development in order to improve ATM in Europe. It is not the business of the EEC to deliver and support operational products, nor to build operational ATM systems, this is the domain of the ATM system supply industry. To implement this policy, the EEC has adopted an approach whereby industry is involved as early as possible in the lifecycle through partnerships and consortia membership, and through the ERIS business area by progressively greater involvement of industry in ATM system component prototyping. Results are given in section 9a below.

The infrastructures provided by the ERIS and SFM units are used internally by business areas to achieve their objectives in terms of concepts and operational validation. The facilities allow to

explore the feasibility and benefits of new airspace organisations, new traffic flow management schemes, and new working methods and systems. The EEC offers the unique service of large multi-ATC-centre, multi-state real time simulations. The total lifecycle of a large real time simulation lasts up to 18 months. The ANSP customers are involved from the very beginning of the project to accurately specify the requirements, and controllers from the participating member states work at the EEC for up to 4 weeks during the simulation execution. The results of the project are a set of recommendations to improve the efficiency of the airspace under consideration. These recommendations are then considered for operational deployment by the participating ANSPs.

In the field of flow management research, the EEC is providing the Central Flow Management Unit and its stakeholders with a research environment where the exploration of specific flow management issues can be performed. Such projects result in recommendation for new operational procedures as well as prototypes which are then raised to the standard of real time systems. The use of macroscopic simulations allows to evaluate the potential improvement identified and eventually to check their performance following their implementation.

An industrialisation process (section 4a) was started in 1998 as a direct result of feedback obtained from the 1997 stakeholder survey. The objective was to transfer EEC products to industry thereby allowing the EEC to better focus on research projects.

There is one notable exception to the policy of focusing on research rather than the support of operational products, and this concerns the EEC real time simulation platform based on the ESCAPE, IPAS, and AudioLan components. This simulation platform is probably the most powerful real time ATC simulation platform in the world, but its complexity is such that until now industrialisation is judged to be impossible. Instances are deployed at three Agency sites, Luxembourg, Maastricht, and Budapest. To reduce to a minimum the support workload on the EEC, extensive training is provided to recipients so that they can be as autonomous as possible. Platform development is centralised at the EEC and new versions are delivered to other sites after they have been validated at the EEC. The EEC has set up the SFM coordination cell which interfaces with remote sites to co-ordinate deployment and to provide a hotline service. ESCAPE deployment is further described in

section 4a above. Further results concerning spin-off products and services are given in section 6b below.

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## **5e Customer relationships are managed and enhanced**

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An essential feature of the matrix organisation, (see "Overview") is that the responsibility for customer relations related to our products is centred on the Business Areas (BAs). When looking at each BA it becomes clear that the types of customers and the products are different for each BA. Different BAs have different customers that range from airlines, airports, ATM service providers to the European Commission and other Eurocontrol units. Each Business Area Manager (BAM) is responsible for the improvements in his own BA.

A project for a corporate contact management tool was launched in late 2000; the selection of the relevant products was made in 2001 and in 2002 was dedicated to the population of the database and correction of discrepancies. The recording of customer details and contact management is now made through the deployment and use of this agency contact database which allows to identify the links to the numerous working groups; this corporate tool allows as well to perform targeted mailing lists. to be expanded...

Stakeholder/market surveys (section 2a) are designed to provide satisfaction levels for different aspects of the stakeholder relationship such as EEC ability to deliver results on time, the professionalism of EEC staff, the availability of EEC staff, and the relevance of services offered. Results are detailed in section 6.

On a project basis, the greatest numerical involvement of customers occurs in real time simulation execution where up to 40 controllers can participate in a real time simulation. After each simulation we ask the participating air traffic controllers to rate our performance. An example of improvement based on this feedback concerns the simplification of the payment of daily allowance to the controllers. The simplified procedure satisfied controller wishes and simplified the administration for the EEC.

Proactive involvement of customers has been organised for customers of the ESCAPE real time simulation platform. User groups have been established and meetings are organised on a regular basis to discuss their needs and

expectations with respect to platform support and also with respect to simulator functionality. This is further described in section 4a above. As explained in section 5d, day to day contact is assured by the SFM co-ordination cell.

At a strategic level, as explained in section 1c above, stakeholder VIPs are periodically invited to the EEC. The objective is to exchange views, to understand their needs and expectations, to present EEC strategy, and to explore opportunities for collaboration. Visits are organised by the Public Relations unit.

A high emphasis has been given to external communication; a long experience of EEC site visit showed the benefits of such a communication and an approach has been taken to reinforce communication with stakeholders and the media. The communication is targeted explicitly towards groups such as :

- ECAC members states representatives
- ATS service providers
- Airlines and airlines organisations
- Professional ATC and aeronautical organisations
- Aviation press
- Research establishments
- Industry
- European Union representatives and other international organisations

The communication is customised according to the visitors profiles. A database project has been initiated to enhance the visits organisations and to better plan future visits. The needs has been recognised that this database could be evolved to track the visits to our stakeholders as well as feedback concerning visits from and to stakeholders.

A considerable increase in the number of visits was noted in 2002. Guests are not only Europeans, but originate from a wide variety of countries world-wide including America, Japan, and China.

	2001	2002
Workshops, seminars	12	17
Major Visits, VIPs	51	10
Visitors	220	347

Visits of EEC staff to stakeholder sites also maintain and enhance stakeholder relations. Missions have decreased for two main reasons. Firstly as a contribution to overall cost reduction measures, and secondly as a result of the increased use of visio-conferencing and the increased use of electronic networking.

	2001	2002
missions to ECAC (European Civil Aviation Conference)	1546	1037
missions to non ECAC countries.	128	97

Among these missions, external contacts are enriched through participation to external events and seminars. In 2002 , the EEC took part in several major international exhibitions: ATC Maastricht, ATCA Washington and NAVSAT Nice.

At the project level, project leaders and project team members are in regular or constant contact with customers and partners in order to clearly establish objectives and specifications and subsequently to ensure continued alignment with customer needs and expectations. Customer representatives are frequently integrated into project teams.

## 6 CUSTOMER RESULTS

Excellent organisations comprehensively measure and achieve outstanding results with respect to their customers.

The EEC is a public service organisation, which exists in a complex environment comprising the public and corporate/private sectors. A careful line must be steered between partnership and competition and consequently it is often more appropriate to use the term stakeholder rather than customer. The EEC does not sell anything. The primary deliverable of the EEC is research results in the form of reports, demonstrators, and prototypes. It is not the role of the EEC to deliver operational products and services. That is the role of industry. Nevertheless, because of the unique position and expertise of the EEC there are research spin-offs, which can be directly valuable to the ATM community, and this does lead to the provision of some operational products and services.

The demonstration of customer results is a major challenge to a public service organisation and even more so to a research unit which works with lifecycles which are often ten to thirty years. Despite this the EEC is constantly seeking ways to better measure the benefit that it delivers to its "customers", and to increase the feedback from "customers" in order to improve EEC performance.

### 6a Perception Measures

#### Business Plan deliverables

Business Plan deliverables cover all business areas. Starting in 2002 a short e-mail questionnaire was sent to each customer of a Business Plan deliverable, in order to determine their satisfaction level. This covered 81 deliverables.

Business Plan deliverables satisfaction		
	2002	target
Response rate	25%	90%
Very satisfied	70%	75%
Rather satisfied	25%	
Not satisfied	5%	

The response rate was low due to the fact that the questionnaire was not issued at the time of delivery but when the survey action was initiated. The process is being improved in 2003

in order to make the feedback a part of the delivery process. Despite the modest result in 2002 the deployment of this process is seen as a major step forward for the EEC to improve customer feedback. The "not satisfied" responses are being followed up in order to identify problems and improvement actions linked to the business area concerned.

#### Stakeholder Satisfaction

The EEC aims to conduct a comprehensive stakeholder survey every two years in line with Agency policy. The 1997 survey was organised to gather data for the first EEC Business Plan. It concentrated on EEC positioning. The 1999 survey expanded the scope of the survey and this trend continued in 2002. In 2002 for the first time an internet based survey was used. Prior to that date the EEC conducted a paper/postal survey. In the following table, satisfaction levels are the sum of "completely satisfied" and "rather satisfied".

Stakeholder satisfaction				
	1997	1999	2002	target
Overall satisfaction	73%	80%	82%	85%
responds well to its mission	-	99%	98%	90%
Positioning	-	73%	72%	90%
Loyalty	73%	71%	94%	90%
Recommendation	-	-	95%	90%
Relations with EEC staff	86%	93%	95%	90%
Communications media		90%	89%	90%
Project management	61%	75%	85%	90%

Not all subjects were addressed in earlier surveys. In general, satisfaction levels have been sustained or are increasing. Detailed results segmented by Business Area are obtained in order to target the detailed feedback. These detailed Business area results are not reproduced in this report.

The survey response rates are shown in the following table.

Stakeholder survey response rates			
1997	1999	2002	target
62%	30%	20%	↑

Several factors contributed to the decrease in response rate over the three surveys. The 1997 survey was a pioneer and the novelty and the intense lobbying resulted in an exceptional

return rate. Because of the exceptional return rate of 1997, a significant decrease was expected in 1999. The decrease in 1999 and 2002 can also be attributed to the lack of maintenance of the stakeholder database. This weakness is being tackled in 2003 by the MIM business area in collaboration with the Business Development Manager.

### Qualitative market survey

In 2002 for the first time a qualitative market survey was carried out by a specialist consultancy, IPSOS. High ranking managers in the air transport industry were interviewed to obtain their views on sector evolution, EUROCONTROL, and the EEC. See section 2a above.

### ECCG Feedback

The Experimental Centre Consultation Group (ECCG) is the main consultation forum for EEC stakeholders. The ECCG advises the Director General on the strategy and performance of the EEC. During the meeting participants are asked to complete a short satisfaction questionnaire, which addresses two separate issues:

1. The strategy and positioning of the EEC
2. The ECCG process

In the following table, satisfaction levels are the sum of "completely satisfied" and "rather satisfied".

ECCG feedback			
		2002	target
	Response rate	70%	90%
Strategy and positioning	EEC strategy is well focused on critical European issues	90%	90%
	EEC strategy fits well with other R&D programmes	71%	90%
ECCG process	Meeting style and subjects	95%	90%

The questionnaire also asks for comments. In 2002 many participants asked to be better informed of EEC events and project results via a regular newsletter. To respond to this request the EEC now issues a regular newsletter to all stakeholders. See section x.x.

### Real Time Simulation satisfaction

Real time simulation is one of many tools used in research projects. The larger multi-State real time simulations require a very large investment in terms of technical equipment, funding, project

staffing and controller involvement. A dedicated questionnaire is sent to sponsors after project completion in order to obtain specific feedback. The table illustrates the results for the three largest real time simulations in 2002: LINK2000+, COSIBA, and TRAMS.

Real Time simulation sponsor satisfaction				
	2002			target
	Link 2000+	Cosiba	Trams	
Overall satisfaction	80%	85%	70%	80%
Project management	75%	75%	100%	90%
Meeting timescales	100%	100%	75%	90%
Meeting objectives	75%	75%	75%	90%
Simulation facilities	75%	75%	75%	90%
Analysis and reporting	50%	100%	25%	90%

## 6b Performance Indicators

### Business Plan Deliverables

A process to track the timeliness of Business Plan deliverables has been in place since 2001. Figures for each project are aggregated at Business Area level and are then averaged to produce the overall EEC performance indicator. Projects are reviewed at the initiation of each phase and at least twice per year. Business Area portfolios are reviewed twice per year. These review mechanisms coupled with the budget checkpoints which are held quarterly, enable problems to be detected early, and corrective action is initiated as necessary. The detailed Business Area results are not reproduced in this report.

Average timeliness of BP milestones		
2001	2002	target
72%	76%	85%

### Research publications

The principal deliverables of the EEC are research papers in the form of reports, conference proceedings and publications in refereed journals. They cover all research activities of the EEC. They contribute to the body of ATM research knowledge. Based on the work programme in the Business Plan, at the beginning of the year, each Business Area announces the planned output for the year. Plans and results are reviewed quarterly as part of the quarterly key performance indicator review, and corrective action is taken as appropriate. The table shows the aggregated EEC indicator, the total number of research

papers. The detailed Business Area results are not reproduced in this report.

Aggregated number of research papers					
1998	1999	2000	2001	2002	target
39	32	60	92	93	90

## Products

Operational products are a spin-off of research. The following table shows the main operational products and their deployment.

EEC unit	Product	Deployment
NCD	COSAAC	CFMU (B)
SSP	CORE	Prague Budapest
SFM	ESCAPE	Prague (CZ) IANS (L) Maastricht (NL) ENAV (IT) SICTA (IT) ENAC (F) CRDS (H)
SAS	InCAS Interactive collision avoidance simulator	D, UK, DK, CH,NL,US, MUAC

## Services

Operational services are a spin-off of research or are initiated to support the delivery and deployment of a spin-off product.

EEC unit	Service
SSP	Validation of ARTAS v6
	Validation of VDL2 for ICAO
	Aircraft and transponder monitoring for the Mode-S implementation programme
SAS	ACAS analysis
ACE	BADA
SFM	ESCAPE support
NCD	Capacity planning
	RVSM height monitoring
SEE	Noise studies

## 7 PEOPLE RESULTS

Excellent organisations comprehensively measure and achieve outstanding results with respect to their people.

### 7a Perception Measures

The EEC has conducted three staff satisfaction surveys in 1998, 2000, and 2002. As a consequence of the EEC's first EFQM self-assessment in 1998, a 'people satisfaction' task force was formed and entrusted with developing a questionnaire for the EEC. The same questionnaire with minor modifications was used in 2000. The Agency has recognised the importance of staff satisfaction surveys and the 2002 survey was the first one to be conducted Agency-wide with a unique Agency developed questionnaire, thus allowing for comparison and transparency within the Agency. This questionnaire was more comprehensive than the EEC local questionnaire but key questions remained enabling trend identification.

The conduct of staff satisfaction surveys is now part of the annual EEC operational cycle. The aggregated overall staff satisfaction and the response rate are both elements of the EEC balanced scorecard. The survey results are communicated internally, via the EEC's Intranet and at a dedicated weekly information corner for all staff. A detailed and comprehensive action plan is set up and executed in order to address the issues identified by the survey results.

Category	Satisfaction factor	1998	2000	2002	Bench mark
Overall results	Overall job satisfaction			86%	lp85
Working conditions	Overall satisfaction with working conditions	73%		89%	
	I have the resources and technology I need to do my job well	58%	56%	89%	
	I can cope with the stress levels of my job	72%		92%	
Advancement and personal growth	Overall satisfaction with advancement and personal growth			53%	
	I believe I have the opportunity for personal development and growth	58%	38%	71%	
	In my current job I have sufficient opportunities to receive training	65%		85%	
	Staff are rewarded according to their job performance			23%	
Leadership	Overall satisfaction with leadership through the direct manager	75%	70%	72%	
	My manager is available when I need him			80%	lp80
	My manager delegates adequate authority to me to do my job	84%	70%	88%	
	My manager provides adequate coaching/guidance to me			70%	
	Overall satisfaction with leadership by EEC core management			53%	
	EEC core management demonstrates teamwork			39%	
	EEC core management will act on problems identified through the survey			47%	
Teamwork	Overall satisfaction with the personal and professional contact with my team colleagues	78%	70%	89%	
	There is a good team spirit in the EEC	12%		56%	
	I have good working relations with my team colleagues	73%		93%	
	Successful team efforts are appropriately rewarded			24%	
Responsibility and Job challenge	Overall satisfaction with responsibility and job challenge	79%	67%	83%	
	The EEC makes good use of my abilities and skills			71%	
	I have documented measurable objectives for the current year			68%	lp72
Communication	Overall satisfaction with the level of communication			55%	lsr37
	The information I need to do my job is readily available	76%	75%	76%	
	Internal communication in the EEC is effective			46%	
Organisational clarity	Overall satisfaction with organisational clarity			47%	
	Mission, goals and objectives of the EEC are clear	70%	66%	70%	
	I have a good idea of what is happening in other parts of the EEC			48%	

The coding of benchmarks in the last column is as follows: lp=IPSOS, lsr=ISR. The list of measures which were taken as a result of the 2002 survey are provided in section 3a above.

## 7b Performance Indicators

### Staff satisfaction survey return rate

Staff satisfaction survey return rate				
1998	2000	2002	Target	Benchmark
33%	20%	86%	80%	92%

The benchmark is Yellow Pages 1999.

The participation in the staff satisfaction survey is an important measure of staff involvement and motivation. Participation at the EEC is optional. The exceptionally high return rate in 2002 is due to a particular middle management initiative to explain to staff the importance of their opinion. Also in 2002 and for the first time, an external consultant (IPSOS) collected the questionnaires and performed the analysis. This would have contributed to the feeling that privacy was preserved and thus probably had a positive effect on the return rate.

### Absences

Absences are a standard indicator of staff motivation. The EEC records two types of absence. Absenteeism is defined as the average number of days of unjustified absence per staff member per year. Sick leave is defined as the average number of days of justified sick leave per staff member per year.

Absences				
	1999	2000	2001	2002
Absenteeism	2.2	2.2	1.9	2.0
Sick leave	12.7	15.5	16.47	12.72

There is a small decreasing trend for both of the absence indicators. Regarding absenteeism, the EEC compares well with the UK national average for absenteeism which is 3.6%. For the EEC, 3.6% equates to 7 days per staff member per year.

### Accident levels

Two standard indicators are tracked, accident frequency and accident seriousness. Accident frequency is normalised and measured as the number of accidents per 1 million hours exposed. An accident is defined as an event at the place of work or on the journey to work which results in death or inability to work for at

least one day. There were three accidents in 2002 all occasioned on the journey to work.

Accident frequency		
2000	2001	2002
4.33	0.00	3.94

Accident seriousness is defined as the total number of calendar days lost per 1000 hours exposure.

Accident seriousness		
2000	2001	2002
0.0173	0.0217	0.1955

The considerable increase in 2002 is due to one accident on the journey to work which resulted in a long absence.

### Training

The EEC offers their staff professional training courses in areas relevant for their work. These courses encompass management and project management skills as well as ATM-specific issues, people issues and technical subjects. The figures are days training per staff member per year. The EEC performs well and is very close to the TNT benchmark.

Staff training					
1999	2000	2001	2002	Target	Benchmark
10.6	9.0	9.8	9.3	10	10

### Suggestions Box

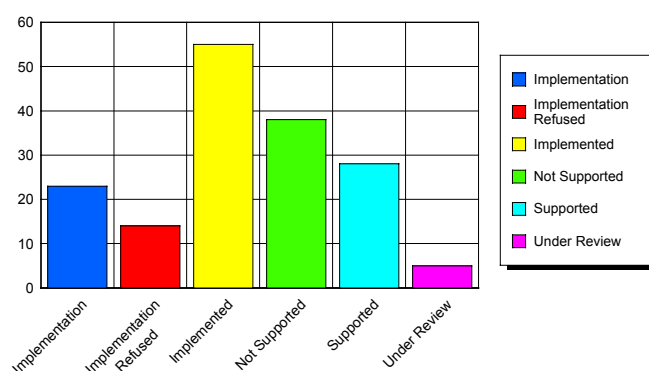
The submission rate of suggestions to the suggestions box (section 3c) is well above industry standards. This is an indicator of high people motivation.

Suggestions submitted				
2000	2001	2002	Target	Benchmark
52	46	44	45	25

The benchmark is based on the figure of 40-50 suggestions per year per 1000 staff for the private sector. The figure for the public sector is 25 suggestions per year per 1000 staff. There are approximately 500 people on site at the EEC

A set of KPIs and targets have been defined to monitor the implementation of suggestions.

### Suggestions By Status



### Services provided to the EEC's people

The EEC has recognised that moving to and living in a foreign country brings about some difficulties for their staff and thus encourages and initiates social activities and provides assistance to problems linked to expatriation. Often, spouses and family members are included in these activities. Foreign language courses are open to spouses and partners. Assistance is provided to newcomers to find accommodation, and to find work for spouses and partners.

The *Association Internationale du Personnel EUROCONTROL* (AIPE) serves as our social committee and provides social and sporting facilities for staff and contractors. This includes sports classes at the EEC, social activities, a spouses club, and special conditions for the purchase of cars, for insurance and bank accounts. The Club Evasion offers reduced airfares for staff on certain airlines. AIPE also organises festivities on a regular basis, such as barbecues and Christmas parties for EUROCONTROL staff and contractors and their families. The activities of AIPE are strongly encouraged by the EEC management. The AIPE subsidy figures are in euros

AIPE subsidy	
2002	2003
21000	21000

Other benefits that EEC staff and contractors benefit from are free coffee at vendor machines, flexitime, personal telephone account for private calls. The tennis court on the EEC premises is available to staff and contractors alike and sports classes are offered in the EEC's gymnastics room during the lunch breaks.

## 8 SOCIETY RESULTS

Excellent organisations comprehensively measure and achieve outstanding results with respect to society.

### 8a Perception Measures

#### Involvement with the Communities

The EEC seeks to provide training opportunities for both local and international students. Internship duration varies from 2 months to 12 months.

Students at EEC		
2001	2002	2003 to date
18	17	7

The EEC has introduced a scheme to encourage staff to contribute small amounts of foreign currency to charity when they return from mission. A collection box is placed in the EEC main entrance. The charity "Secour Populaire" received the donation. The figure in the table is in euros.

Donations to charity
2002
224

A partnership has been entered into with another local employer, SNCF, the French national rail company, to ensure the viability of a local childrens' activity centre. The activity centre was threatened with closure because of a reduction in the numbers of children. The Eurokids project has delivered benefits on all sides, to local children, and to the children of EUROCONTROL staff. The increase in the numbers of children has ensured the sustainability of the activity centre and has enabled more ambitious and interesting activities to be undertaken.

Eurokids (number of kids)			
	2001	2002	2003
February		19	22
April		25	26
Summer	52	50	
Autumn	12	20	
Wednesdays		10	10
Christmas Show	17	50	

Eurokids (number of days)			
	2001	2002	2003
February		127	97
April		153	126
Summer	573	510	
Autumn	45	66	
Wednesdays		69	20
Christmas Show	17	50	

### 8b Performance Indicators

#### Ecological impact

##### Home-working

The EEC has pioneered home-working in the Agency. See section 3e. This facility gives significant added flexibility to staff who need it and it also has a positive impact on the environment by reducing the number of kilometers driven.

	2001	2002	2003	Target
Number of staff home-working	5	15	24	↑
Estimated kms not driven per month			3100	↑

##### Printer paper consumption

Despite the steady increase in the number of persons working on site there has been a steady decrease in the amount of printer paper consumed. This has been due to two approaches. Firstly research reports and notes are now made available and distributed electronically, and secondly, printing equipment has been continually upgraded to enable easy printing recto-verso and 2-up. Recto-verso printing is now the default printing mode.

Printer paper consumption/tons/yr				
1999	2000	2001	2002	target
19.5	18	16.5	15.3	↓

## Reduction and elimination of waste and packaging

The EEC has started to systematically measure waste. The approach was initiated in the course of 2001 when only partial measurement was conducted. The 2001 figure is an estimate. The tonnage shows a reduction in 2002 because of the introduction of some recycling measures.

Waste (tons)		
2001	2002	Target
55	48.2	↓

## Usage of utilities

The water figure for 2001 is an estimate since measurement was started during the course of 2001. Despite the gradual increase in the number of persons working on site, there is a reduction in both electricity and water consumption. The reduction in electricity consumption is due to measures such as use of better insulating materials during the building renovation, and the use of lower consumption bulbs. Measures to decrease water consumption include the installation of taps which switch off automatically and the installation of two-flush systems in the toilets.

Utilities			
	2001	2002	Target
Electricity (kw/m2/yr)	373	321	↓
Water (m3/m2/yr)	0.38	0.34	↓

## Recycling

The EEC has started several recycling initiatives.

### Waste recycling

The figures in the table are in numbers of standard skips.

Recycling (standard skips)			
	2001	2002	Target
Paper/cardboard	8	15	↑
Neon lights	-	1	↑
Glass	-	2	↑

### Batteries

We encourage everybody working on site to bring used batteries to the EEC and to deposit them in a container in the main cafeteria. They are brought regularly to the local waste collection/recycling site. The weight is estimated as being the average weight of a full container.

Batteries/kgs/mth (estimated)	
2002	Target
20	↓

### Printer cartridges

A specialised company (Les Cartouches Ramassees) collects all the inkjet cartridges and toners. The cartridges which can be reused are sent on to other specialist companies. Those which cannot be reused are sent to a specific site (SARP Industries) for ecologically friendly destruction.

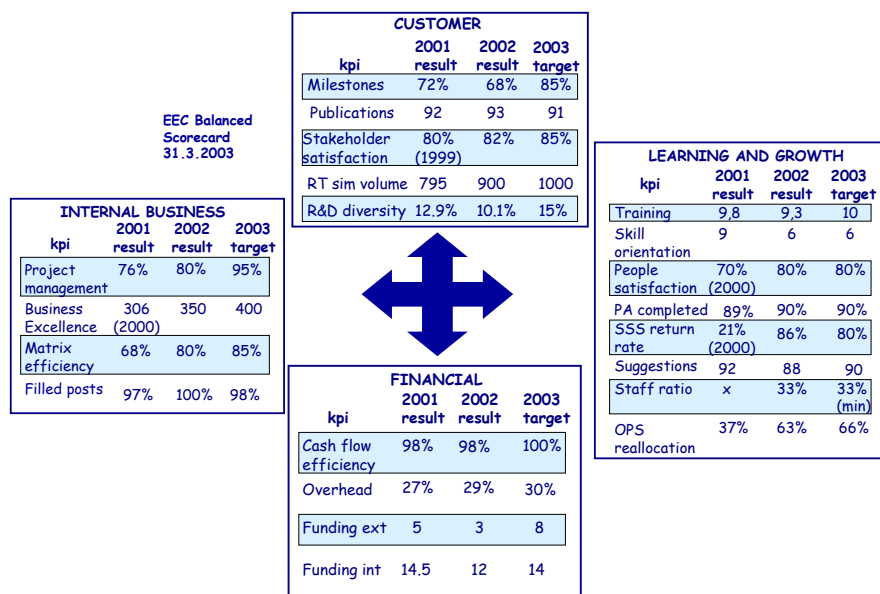
Printer cartridge and toner ecological disposal		
2001	2002	Target
100%	100%	→

## 9 KEY PERFORMANCE RESULTS

Excellent organisations comprehensively measure and achieve outstanding results with respect to the key elements of their policy and strategy.

### EEC Balanced Scorecard

The EEC has identified and tracked performance indicators for many years, and is continuously seeking to improve. During 2002 in collaboration with other directorates in the Agency, an EEC balanced scorecard (BSC) was developed. This enabled the EEC to identify and mitigate shortcomings in the coverage of EEC performance indicators.



The EEC BSC is a distillation of the most important EEC performance indicators and contains selected indicators from customer, people, and key performance results. The BSC is reviewed quarterly in a joint meeting of core management and performance indicator owners. Corrective action is triggered if an indicator is off track regarding its target. The EEC BSC is an integral part of EEC management and it is included in the standard EEC visitor presentation. See chapter 2 for further details.

### 9a Key Performance Outcomes

These measures are key results defined by the organisation and agreed in their policy and strategies.

#### Funding the strategy

The fundamental enabler of strategy implementation is funding. Business areas (BAs) implement strategy and funding is allocated accordingly. The following two tables correlate EEC strategic choices with BA funding. The first table indicates the main BAs which implement EEC strategy.

Strategy implementation	
Strategy	Implementing BAs
Safety first	SAF
Implement concepts	ACS
Sustainable growth	ENV, PFE
Innovative research	INO

The three year trends in the second table demonstrate that the EEC has largely succeeded in aligning funding with strategy by increasing funding to the main strategy implementing BAs.

Funding aligned with strategy					
BA	2000	2001	2002	Trend	Strategy
ACS	6.55	8.73	12.97	↑	↑
ATI	3.83	4.82	2.98	↓	↓
CNS	4.53	4.38	3.23	↓	↓
ENV	0.86	1.84	3.14	↑	↑
ERS	7.61	7.87	6.51	→	→
GNS	2.49	2.69	3.73	↑	→
INO	2.49	3.50	3.18	↑	↑
PFE	5.20	5.75	6.76	↑	↑
SAF	1.72	1.94	3.00	↑	↑
SFM	3.96	7.68	3.29	→	→

In 2002 the EEC was set an objective by its governing body to increase internal and external funding in order to increase the total amount of funding available to research. Internal funding is defined as funding originating from other directorates in the Agency, currently mainly EATM, and external funding is defined as funding originating from outside the Agency, currently mainly from the European Commission. In order to gain insight into recent behaviour, the figures for 2001 were calculated in retrospect. Figures are in meur.

Internal funding		
2001	2002	target
14.5	12	14

External funding		
2001	2002	target
5	3	8

### Skilling the strategy

The skill orientation plan is derived from the skill needs of the strategy. See chapter 3 for a detailed description of the process.

Skill orientation				
1999	2000	2001	2002	target
6	9	9	6	6

The figures in the table are the net number of staff posts re-orientated from one skill to another based on the needs of the strategy. The decrease in 2002 is due to the difficulties induced by the freezing of 15 posts, which corresponds to the EEC contribution to the overall Agency staff cost reductions set by the Provisional Council.

Within the skill orientation plan a second level strategy aims to gradually reallocate a major part of the operational skills (ex controllers) from working on current operations projects to working on research projects. This indicator is the % of operational staff working on research projects.

OPS reallocation		
2001	2002	target
37%	63%	66%

### Strategy implementation: Safety first

Business area SAF implemented the safety first strategy. The extract from the table above shows that funding is aligned with strategy.

Funding aligned with strategy					
BA	2000	2001	2002	Trend	Strategy
SAF	1.72	1.94	3.00	↑	↑

Safety is an essential aspect of research and design in ATM and therefore it is important that the EEC strives for higher levels of safety awareness, more positive attitudes, and commitment to safety. The deployment of this safety culture strategy at the EEC is measured by a set of leading indicators, and a series of lagging indicators based on a Safety Culture Maturity Model (SCMM) survey.

Safety culture deployment (leading)		
	2002	2003 planned
PMPs addressing safety	18%	40%
Safety related training - people	38	49
Safety related training - days	49	100

The SCMM which is used at the EEC has been used in high reliability industry sectors including ATM. The model contains 5 iterative levels of maturity whereby organisations can progress sequentially by building on their strengths and removing the weaknesses. The five levels are:

1. Emerging
2. Managing
3. Involving
4. Cooperating
5. Continually improving.

The four main elements on which organisations can progress are highlighted in bold in the detailed survey results table below.

The SCMM survey was carried out in the EEC during March 2003. There were 36 respondents from different projects and business areas. Both staff and contractors participated. The survey characterised each level of maturity of each safety culture element, and respondents gave their opinion of where the EEC was positioned.

Average Maturity Scores for Each Safety Culture Element				
<b>1. Management Demonstration</b>	<b>Average</b>	<b>Std Dev</b>	<b>Min</b>	<b>Max</b>
Management Commitment to Safety	2.77	0.79	1	5
Safety Performance Goals Impact	2.77	0.80	1	5
Investment & Resource Allocation	2.4	1.10	1	5
Policy & Strategy on Safety	2.68	1.00	1	4.5
Safety versus Productivity	2.68	0.80	1	4.5
Safety versus Productivity	2.44	0.82	1	4
<b>2. Planning &amp; Organising for Safety</b>				
Safety Planning	2.40	0.80	1	5
Training & Competence	2.07	0.64	1	3
Knowledge of ATM Risks	2.57	0.83	1	4
Risk Assessment and Management	2.01	0.81	1	4
<b>3. Communication, Trust &amp; Responsibility</b>				
Communication	2.57	0.97	1	5
Integrated Teams	1.96	0.86	1	5
Involvement/ Participation of Employees	2.13	0.89	1	4
Relationship with External Regulator	2.03	0.75	1	4.5
Involvement of Stakeholders	2.55	0.89	1	5
Trust & Confidence	2.62	1.09	1	4
Responsibility for Safety	1.90	0.83	1	4
<b>4. Measuring, Audition &amp; Reviewing</b>				
Organisational Learning	2.29	1.02	1	4.5
Safety Management System/ Auditing Safety	1.78	0.82	1	3.5
Achievement of Safety Targets	2.23	0.97	1	4
Test and Evaluation of Safety in Design	2.58	0.97	1	5

The overall results indicate that the EEC is at level 2.38, indicating that we are between level 2 (managing) and level 3 (involving). The overall standard deviation between respondents was +/- 0.88, indicating that respondents generally had similar points of view. A follow-up survey is planned for 2004.

**Strategy implementation:  
Towards a real implementation of new concepts**

Business area ACS is the prime implementer of the "towards a real implementation of new concepts" strategy. The extract from the table above shows the steady increase in funding which is aligned with strategy.

Funding aligned with strategy					
BA	2000	2001	2002	Trend	Strategy
ACS	6.55	8.73	12.97	↑	↑

As explained in BP section 4.1.2, one of the principal approaches to implement this element of strategy consists of technical consolidation of the live trials platforms and more systematic use of these platforms in the validation process. This allows us both to perform more realistic validations and to reach a wider audience of ATC controllers through the installation of prototyping platforms close to the operations rooms. This helps to obtain a real buy-in from ATC controllers and from ANSPs, which is a vital step towards real implementation. The following table depicts the current state of the results of this strategy.

Segmentation EEC unit	ATM Component	Field trials	Pre-operations	Operations	Transfer to industry
SSP	PROVE/MTCD	Roma ACC 2003 Malmo ACC 2002			Specs to be used for ANSP specs
	ASMT	NATS LGW Roma ACC	Bratislava ACC (SK)	Maastricht UAC (NL)	
	SHIELD ATM safety data exchange tools and support			>10 deployments	
	ADS-B	TLAT report			
NCD	CDM	Deployed at 4 EU airports soon to be increased to 7.			
	CPDLC datalink (Petal2e)		In Europe using SITA VDL2	In US using ARINC VDL2	
	DSI HMI specifications				Specs used for ANSP specs [Note 1]

Notes on above table

- 1) The DSI controller working position HMI specifications were developed by the EEC over many years in collaboration with ANSPs and industry. They were used as input to the specifications for the new Swedish ATC system currently undergoing pre-operational trials in Malmo. The main supplier is Thales who are basing their new core product on this system, S2K. Follow on clients include: Hungarocontrol (H), Skyguide (CH), ANA (PL), and Naviar (DK). All these ANSPs used the real time facilities of the EEC to develop their understanding of stripless systems and to prepare system requirements.

Co-operation with industry is another key approach to implement this element of strategy. The ERIS business area is the main enabler through its partnership with the European Commission's 5<sup>th</sup> framework programme and TEN-T projects. This co-operation bridges the gap between research and industrial development, and is a prerequisite for a real implementation of research results.

The following table lists the industrial components which have been integrated onto the ERIS platform at the EEC with a view to facilitating interoperability of ATM components supplied by different ATM system suppliers, through use of the standard ERIS platform application programming interfaces.

Integrated industrial components	
ATM system component	Industry partner
Arrival manager	Orthogon
Flight manager-trajectory predictor	Indra
Datalink	Thales (on-going)

### Strategy implementation: To support a sustainable growth

Until 2002 the business areas PFE and ENV were the primary implementers of the support sustainable growth strategy. The extract from the table above shows that funding is increasing for these two business areas and is hence aligned with strategy.

Funding aligned with strategy					
BA	2000	2001	2002	Trend	Strategy
ENV	0.86	1.84	3.14	↑	↑
PFE	5.20	5.75	6.76	↑	↑

A powerful approach to implement this strategy is to ensure that all projects, not only those which belong to the ENV and PFE business areas, address economic and environmental issues. This requirement is systematically checked in the regular project review cycle. The objective is that all projects shall comply. The EEC is at the beginning of the deployment of this approach.

% projects addressing sustainable growth		
	2002	Target 2003
Environmental issues	10%	40%
Economic issues	16%	40%

### Strategy implementation: To stimulate innovative R&D

Business area INO is the main business area which implements the "stimulate innovative R&D" strategy. Despite a small reduction in 2002 because of Agency imposed budget restrictions, the trend extracted from the table above shows that overall funding is increasing and aligned with strategy.

Funding aligned with strategy					
BA	2000	2001	2002	Trend	Strategy
INO	2.49	3.50	3.18	↑	↑

The first key approach to stimulate innovative R&D is to build partnerships with universities which have air transportation departments. A programme of visits is established and systematically carried out. Universities are situated in Europe, including eastern Europe, the US, and the far east. The table contains the number of different universities visited.

Partnership with universities	
2001	2002
8	14

The objective of the partnerships with universities is to identify areas of mutual interest where the EEC can sponsor PhD studies. PhD students either continue their EEC sponsored studies at their home university or come to study at INO laboratories at the EEC. The following table shows the number of PhD students. The target of 13 is considered to be the current optimum capacity of the EEC.

PhD studies at the EEC		
2002	2003	target
11	13	↑

The total INO sponsored PhD theses and university studies is shown in the following table.

INO sponsored PhD theses and university studies		
2002	2003	target
17	20	↑

## 9b Key Performance Indicators

### Financial measures

Cash flow efficiency measures total expenditure as a percentage of total allocated budget. This is an aggregated figure for the whole of the EEC. The indicator is tracked at lower levels of decomposition: business area, project, and business enabler.

Cash flow efficiency					
1998	1999	2000	2001	2002	target
89%	92%	99%	98%	98%	100%

Overhead measures the percentage of expenditure which is spent on non core business activities.

Overhead					
1998	1999	2000	2001	2002	target
39%	43%	33%	27%	29%	30%

The EEC has been using a combination of measures to reduce the overhead with the objective of transferring resources to core business:

- Improving support productivity
- Retraining and mobility to core business
- Selective outsourcing of internal services

The EEC judges 30% to be an optimum figure. Below this value the quality of the support services suffer and adversely impact core business.

### Process measures

	2001	2002	2003 target
Project management quality	76%	80%	95%
Matrix efficiency	68%	80%	85%
Filled posts	97%	100%	98%
Business excellence	306	350	400

Project management quality is measured as the percentage of projects which have a compliant project management plan which is regularly reviewed.

Matrix efficiency measures the percentage of staff in all Centres of Expertise who are allocated to projects. Excluded are management, secretaries and people working on non project horizontal activities.

Filled posts measures the overall efficiency of the recruitment process. On a monthly basis the people in post is compared with the number of posts which can be filled. This latter figure can vary from month to month because of freezing of posts to reduce Agency staff costs. The figure

in the table above is the average monthly figure across the year.

Business excellence tracks the EFQM self assessment score.

### R&D co-ordination

On 10 March 2003 the Director General agreed to the reorganisation of the Agency and research in particular whereby the EEC would become an EATM directorate and would assume total responsibility for research in the Agency and total responsibility, in collaboration with EATM and the European Commission, for the planning and co-ordination of ATM research in Europe. The EEC has been working towards this goal for many years and has deployed an approach to strengthen ties between the main R&D actors in Europe and the US. See section 4.3 of the Business Plan. A programme of visits to R&D units in ANSPs, R&D units in the supply industry, professional associations such as AECMA and AFATCA, and to national R&D establishments has been planned and executed. The Core Management R&D co-ordinator and other core management colleagues visit the different R&D unit and visits by R&D units to the EEC are arranged. The table shows the total number of visits to the EEC and to partner sites.

R&D partnership	
2002	2003 to date
16	9

Another performance indicator, R&D diversity, has been introduced in 2002 to measure the effectiveness of the EEC goal to increase the total value of tasking contracts which the EEC places with other research establishments in Europe. In recent years, as a result of the general economic slowdown, the budgets of research establishments have been decreasing. Diversity of ideas is essential in order to maintain a healthy and creative R&D community, so the EEC seeks to maintain this diversity by funding the particular expertise of partner R&D units. The table shows the value of contracts placed with R&D units as a percentage of total contract value.

R&D diversity		
2001	2002	2003 target
12.9%	10.1%	15%

## Continuous improvement

Using the EFQM model and techniques as vehicles the EEC has for many years sought to build a continuous improvement culture whereby quality and continuous improvement are a part of everyone's work. Consequently there is only a small amount of dedicated effort (2 persons\*50%).

We seek to maintain or increase the amount of resources devoted to continuous improvement by means of the operating budget which funds improvement projects, suggestions box activities, special events, and surveys. The figures in the following table are taken from the Business Plan and combine the cost of internal effort and the operating budget. The figures are in keur.

Continuous improvement funding		
2001	2002	2003 to date
119	264	308

## GLOSSARY

ACARE	Advisory Council for Aeronautics Research in Europe	EPDA	EATMP Project Delegation Agreement
ACB	Access to Business Information	ERS	EATMP Reference Industry-based ATM Simulation and Trials Platform (BA)
ACE	ATM and CNS Systems Engineering (CoE)	ESCAPE	EUROCONTROL Simulation Capability and Platform for Experimentation
ACS	ATM Concepts and Studies (BA)	EUROCAE	European Organisation for Civil Aviation Electronics
ADP	Aeroports de Paris	FAA	Federal Aviation Administration (US)
AECMA	European Association of Aerospace Industries	FIN	Finances (SET)
AFG	Advisory Financial Group	FREER	Free Route Experimental Encounter Resolution
AMAN	Arrival Manager	GNS	Satellite Navigation (BA)
AMI	Administrative & Management Information Software (SET)	HQ/MIS	Head Quarters/Management Information Service
ANSP	Air Navigation Service Provider	HRM	Human Resources Management (SET)
ARDEP	Analysis of Research and Development in EUROCONTROL Programmes	IANS	Institute of Air Navigation Services (EUROCONTROL)
AS	Administrative Services	IATA	International Air Transport Association
ASAS	Airborne Separation Assurance System	IEEE	Institute of Electrical and Electronics Engineers
ASC	Analysis and Scientific (CoE)	IFATCA	International Federation of Air Traffic Controllers Associations
ATC	Air Traffic Control	IFS	Infrastructure, Finance, Staff (EEC Core Manager)
ATCEUC	Air Traffic Controllers European Unions Coordination	INDRA	Spanish ATM system provider
ATFM	Air Traffic Flow Management	INO	Innovative Research (BA)
ATI	ATM Implementation (BA)	INSEAD	European Institute for Administration
ATM	Air Traffic Management	IP	Internet Protocol
BA	Business Area	ITM	Information Technology Management (SET)
BP	Business Plan	LPRC	Local Procurement Review Committee
CARE	Co-operative Actions of R&D in EUROCONTROL	MEUR	Millions of Euros
CEATS	Central European Air Traffic Services	MUAC	Maastricht Upper Area Control Centre
CENA	Centre d'Etudes de la Navigation Aérienne	ODID	Operational display and input development
CFMU	Central Flow Management Unit	OPS	Operational Services (CoE)
CIC	Continuous Improvement Centre	PFE	Performance, Flow Management, Economics and Efficiency (BA)
CM	Core Management	PMP	Project Management Plan
CNS	Communication Navigation Surveillance (BA)	PRIF	Procurement Interface Tool
CoE	Centre of Expertise	PRU	Performance Review Unit
COSAAC	Common Simulator to Access ATFM Concepts	R&D	Research and Development
CRDS	CEATS Research Development and Simulation Centre	RADAR	Results, Approach, Deployment, Assessment and Review (EFQM)
DAI	Development and Integration (CoE)	RTCA	Requirements and Technical Concepts for Aviation
DEEC	Director EEC	SAF	Safety (BA)
DFS	Deutsche Flugsicherung (German ANSP)	SDR	Special Advisor (EEC Core Manager)
DG	Director General	SET	Services Enabling Team
DGAC	Direction Generale de l'Aviation Civile (F)	SFM	Simulation Facility Management (CoE)
DG RTD	Directorate General Research and Technological Development (EC)	SICTA	Sistemi Innovativi per il Controllo del Traffico Aereo
DSI	Denmark Sweden Interface	SMU	Social Medical Unit (SET)
EATMP	European Air traffic Management Programme	SSS	Staff Satisfaction Survey
EC	European Commission	TIG	Transports & Mail Infrastructure General Support (SET)
EEC	EUROCONTROL Experimental Centre	TQ	Total Quality
EHQ	EUROCONTROL Headquarters	TQA	Total quality Agent
EMB	EEC Management Board	TRS	Task Requirement Specification
EMC	EATMP Management Committee	TS	Technical Services
EMM	Extended Management Meeting	VDL	VHF data link
ENAC	Ecole Nationale de l'Aviation Civile		
ENAV	Italian ATM Provider		
ENV	Environment (BA)		