EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION

EUROCONTROL

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Model for Task and Job Descriptions for ATM Technical Staff

HUM.ET1.ST01.2000-GUI-02

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EUROPEAN AIR TRAFFIC CONTROL HARMONISATION AND INTEGRATION PROGRAMME

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Abstract

This guideline outlines a model to describe the tasks performed by the Air Traffic Management (ATM) Technical Staff and the different jobs which they execute. It has been established within the framework of the European Air Traffic Control Harmonisation and Implementation Programme. It will contribute to the harmonisation of the training of ATM Technical Staff in the European Civil Aviation Conference (ECAC) area of competence. The model has been developed by a multinational team of experts from EUROCONTROL, IFATSEA and National Administrations.

Keywords

CONTACT PERSON:	B. Cassaignau	**TEL:** ++ 35 - 2 - 4360 510	**DIVISION:**	EATCHIP Support Bureau, IANS

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AUTHORITY	NAME AND SIGNATURE	DATE
Chairman of ATM Technical Staff Task Force	B. CASSAIGNAU	26/06/96
Chairman of Training Sub Group	J.-P. MAJERUS	28/06/96
Chairman of Human Resources Team	C. CLARK	03/07/96
SDOE	W. PHILIPP	

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0.3	08/03/95	Approval of Human Resources Team at Meeting no. 3	All
1.0	03/07/96	Released issue according to EATCHIP Documentation Configuration Management Requirements	All

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EXECUTIVE SUMMARY

The aviation community has devoted considerable effort to harmonise the work of controllers through Europe. This effort has been reinforced by EATCHIP through the efforts of the Human Resource Domain (HUM). No such effort had been utilised for the Technical staff in the Air Traffic Management environment.

EATCHIP has addressed this lack of harmonisation and made explicit the requirement for task and job descriptions for ATM Technical Staff in the HUM Business Plan. This orientation was confirmed by the Training Sub-Group and the Human Resource Team (HRT) when the harmonisation of training for ATM Technical Staff was addressed.

The ECAC Strategy for the 90's defines the Guidelines for the selection training and licensing of air traffic services staff in ECAC member states. It must be borne in mind that other categories of air traffic services staff, such as electronics and maintenance engineers, are also vital to the system as a whole. The current and future well-being of the system depends upon adequate staffing, a stable industrial relations climate and flexible working arrangements among this spread of disciplines.

This document highlights the adopted principles that allow analysis of the tasks to be performed by the ATM Technical Staff. It lays down a logic that is sufficiently flexible to adapt to the evolution of the work whilst remaining coherent enough to be applied to all aspects of selection, training and licensing, when appropriate. The concepts which are presented have been made as simple as possible in order to facilitate their distribution and adoption by the largest number of professionals. This model is the result of the efforts of a multi-national Task Force.

The requirement for Task and Job Descriptions for ATM Technical Staff was identified in the HUM Business Plan within the framework of the EATCHIP Work Programme Document (EWPD) [Ref. 1] and was confirmed when the harmonisation of training for ATM Technical Staff was addressed.

These tasks, which are part of the HUM contribute to the overall harmonisation process defined in the ECAC Strategy of the 90s.

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1. INTRODUCTION

The European Air Traffic Control Harmonisation and Implementation Programme (EATCHIP) is making provision for harmonisation in many professional domains within the area of the European Civil Aviation Conference (ECAC). This vast effort of harmonisation also encompasses the HUM.

As far as the HUM is concerned, a complete examination of the questions of Task and Job Description, Selection, Training and Licensing has been undertaken.

The Task Force (TF) for the “Training for ATM Technical Staff” which was created in the framework of this programme, has led to recognition that the completion of the documents related to “Models for Task and Job Description” are prerequisite guidelines for further work within the HUM.

Most of the constituent states in the ECAC area have different approaches and cultures for all the phases of Air Traffic Management (ATM) Technical Staff career training and as a consequence, the production of common proposals for the Models for Task and Job Description are essential.

This document is the result of work completed to date and recommends that the contents be applied by the Member States for their own purpose.

1.1 ECAC Strategy

Objective 5 of the ECAC Strategy for the 90's [Ref. 2] defines in paragraph 4 the guidelines for the selection, training and licensing of Air Traffic Services (ATS) Staff in ECAC Member States. This paragraph further states that it must be borne in mind that other categories of ATS Staff - such as electronics and maintenance engineers - are also vital to the system as a whole. The current and future well-being of the system depends upon adequate staffing, a stable industrial relations climate and flexible working arrangements among this spread of disciplines.

In paragraph 7 of the same document it is stated that, moreover, a common approach to selection criteria, staff training and licensing are natural prerequisites for labour mobility across national borders.

The objectives regarding Human Resources are clearly identified. All three aspects, selection, training and licensing are part of the ECAC Strategy and it is these aspects that are addressed by EATCHIP within the HUM.

1.2 Relations Between Task and Job Descriptions and the Human Resources Subdomains

The HUM covers several subdomains which include, inter alia:

- manpower and selection;
- training;
- licensing;
- resource management.

Task and Job Descriptions are a common interface and a common denominator to all these subdomains of human resources, as shown in diagrammatic form in Figure 1.

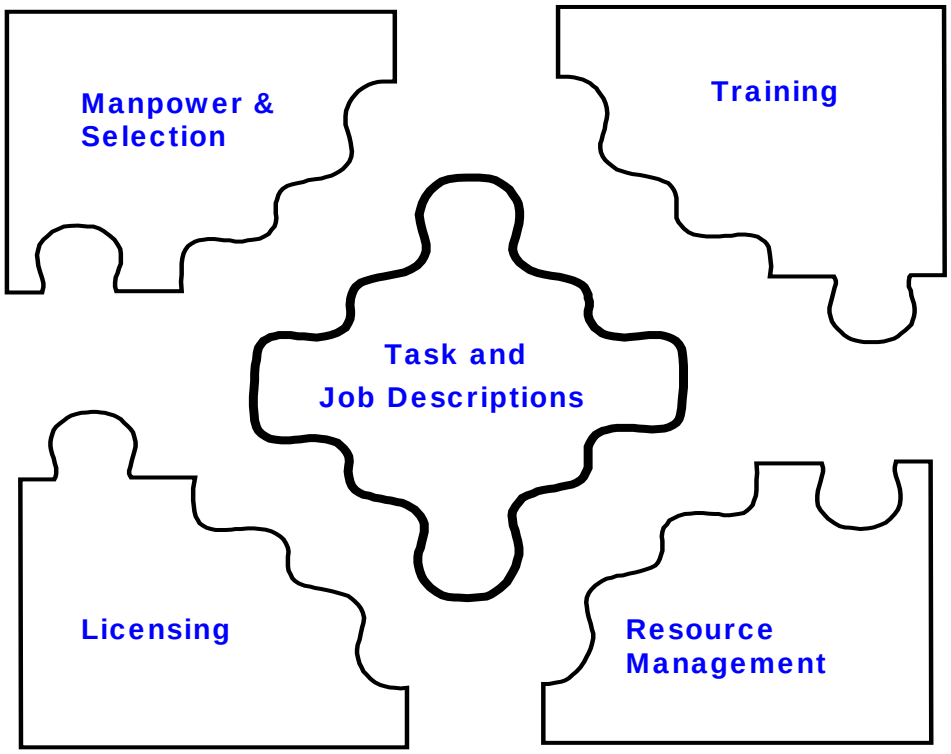

Figure 1 Task and Job Description within Human Resources

The approach proposed by the ECAC Strategy is best fulfilled when selection, training, licensing and working practices are all based on a shared concept at the Task and Job Description level.

2. BACKGROUND

2.1 Need for a Model Arising from other EATCHIP Work

The need for the Task Description has been recognised as a prerequisite to begin EATCHIP Work Package N^{o} 6230 (EWPD [Ref. 3]). This work package was introduced for the following reasons:

- the general increase in air traffic throughout Europe compels States to modernise their ATC installations;
- new technologies call for highly qualified engineering and technical staff;
- in the medium and long term, equipment and facilities should become harmonised through the systematic use of common operational specifications;

The objective of this task will be to define the training necessary to achieve equivalent qualifications for all staff of the same category within the ECAC area.

2.2 Decision Process

The Head of Training Establishments Meeting in December 1993 at IANS, supported the constitution of an ad-hoc TF.

The TF was created in March 1994 and it concentrated on establishing the Task and Job Descriptions for ATM Technical Staff. The nations, or bodies, involved were:

- Austria;
- France;
- Germany;
- Ireland;
- Poland;
- Switzerland;
- United Kingdom;
- EUROCONTROL;
- IFATSEA.

The continuation of the work on “Task and Job Descriptions” was endorsed by the Training Sub-Group Meeting held in Luxembourg on the 21st and 22nd June 1994. Further work for ATM Technical Staff was postponed until this task had been completed.

The Training Sub-Group Meeting held in Luxembourg on the 12 and 13th January 1995 took note that the present document was close to completion and that the Specialist Task (ST), ref. HUM.ET1.ST01.2000 could be resumed on the basis of the work described in this guideline.

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3. TASK AND JOB DESCRIPTIONS MODEL

3.1 Benefits

In order to describe the tasks, a model has been developed. Its flexibility makes it suitable to serve the needs of the ECAC Member States.

The tasks performed by ATM Technical Staff are, due to technological improvements, subject to regular changes. The task descriptions will, at some level, be affected by those changes and they will require to be reviewed regularly. The model permits the establishment of a list of all the tasks which, at the moment of the analysis, are performed by ATM Technical Staff. The model ensures that any update of this list may occur at the appropriate time, by modifying, adding or subtracting tasks.

3.2 Relation of the Model to Training

The accurate understanding of the tasks to be performed and their modelling using a well-defined set of concepts, will provide a precise description of the associated Knowledge and Skills (KS). A stable definition of both syllabi and contents will thus be assured as they will be based on a common and recognised model.

3.3 Relation of the Model to Selection

The accurate understanding of the tasks to be performed and a precise description of the KS required to conduct the work, will contribute to a consistent description of the KS required at the selection phase. The selection must be based on a common and recognised model.

3.4 Relation of the Model to Licensing

The accurate understanding of the tasks to be performed and a precise description of the KS requested to conduct the work, will contribute to accurate examination processes. The licensing must be based on a common and recognised model.

3.5 Relation of the Model to other Domains

All other complementary actions belonging to HUM will be best achieved if common and recognised task descriptions are available.

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4. METHODS USED BY THE TASK FORCE

4.1 Principles and Reasons

The objectives of the work of the TF were to produce task and job descriptions applicable to the Member States of the whole ECAC area.

It has been noted that Member States have developed, mainly under national initiative, various schemes for the ATM Technical Staff in human resource subdomains such as selection, training or licensing. This difference in approach has led to a method for identifying the common elements of the schemes rather than the differences. A bottom-up approach, called “Project Team Work”, has been followed in order to analyse the tasks carried out by ATM Technical Staff with the intention to determine common job categories. For full explanation of Project Team Work see [Ref. 4].

4.2 Use of Project Team Work

This technique permits a systematic gathering of ideas, and conducting the necessary analysis without being committed to previously existing practices in a domain where consensus does not yet exist.

At the first session the basic question of which of the tasks to be performed by ATM Technical Staff needed to be considered was answered.

4.3 Description of the Project Team Work

The TF members wrote their ideas on cards and a facilitator pinned the cards on movable walls. The participants developed additional ideas by reading the displayed cards.

When the ideas had been gathered in a raw form, a clarification exercise was conducted. Under the supervision of a facilitator each author explained his ideas and, if necessary, rewrote them with any improvements, in order to obtain a common understanding amongst all the TF members. The cards with similar contents were then grouped into clusters with main headings for these clusters being agreed.

4.4 From Project Team Work to Generic Model

Following this process, the TF arrived at agreed clusters of tasks performed by ATM Technical Staff. These clusters were then refined with a view to:

- removing the redundancies;

- bringing together similar tasks;
- improving the consistency of the concepts;
- grouping the tasks in such a way that the difference between main tasks and sub-tasks was highlighted;

On the basis of this work, the TF was then able to develop a generic model which is described in the following sections.

5. EVOLUTION OF THE GENERIC MODEL

5.1 Generic Model

The generic model, shown in Figure 2, has been developed in a progressive and iterative manner. It includes several concepts which are developed briefly in the following paragraphs. It is important to note the sequence which has been followed:

- the list of tasks for ATM Technical Staff has been established (see Table 1);
- the Knowledge and Skills for ATM Technical Staff cannot be acquired by a single person, and consequently there is a need to divide them into fields (see Figure 3);
- competence levels have been defined in order to classify Knowledge and Skills (see Table 3);
- additional categories (or families) of jobs may be established in the future;
- training phases have been agreed by the various Member States involved in the process (see Figure 8);
- the final objective will be to establish training programmes based on training modules.

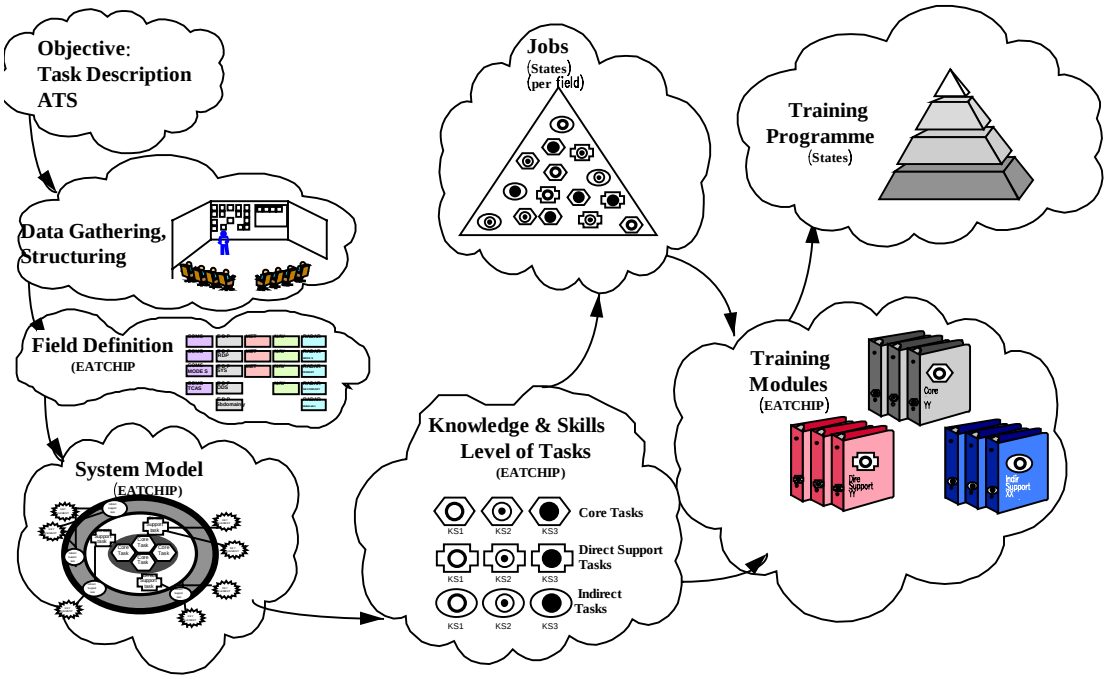


Figure 2 Generic Model

5.2 Data Gathering

The tasks performed by ATM Technical Staff have been established through Project Team Work, see Table 1.

Tasks performed by ATM Technical Staff	
Budget and Finance	Project Management
Certification	Quality Assurance
Corrective Maintenance	Research and Development
Customer related Communications	Software Management and Data Processing
Human Resources Management	System Management
Maintenance Policy	System Performance Analysis
Maintenance Support	Training (On-the-Job)
Preventive Maintenance	

Table 1 Final Lists of Main Tasks for ATM Technical Staff

These Tasks span various levels in a hierarchy; the work presented has been completed down to, and including, level 2 as defined by ICAO.

Table 2 illustrates the following concepts:

- a task, e.g. a maintenance cluster;
- a subtask, e.g. setting-up quality standards, specifying the level of maintenance, producing maintenance procedures;
- a raw cluster, i.e. the set of tasks under a given heading as they are produced in a initial step of the process;
- a refined cluster, i.e. the same tasks as described after a further effort of anaylsis.

Raw Cluster **Maintenance Cluster**	**Refined Cluster** **Maintenance Cluster**
• Maintain the understanding of the ATS use of the system; • Run the system according to operational requirements; • Ensure operational service of equipment whilst technically repaired; • Tactically establish priorities for maintenance/repairs; • Recognise the costs of maintenance; • Attendance at international meetings; • Establish maintenance procedures; • Work within defined limits and responsibilities; • Specify level of maintenance for optimal availability of equipment.	• Produce maintenance procedures according to policy; • Specify the level of maintenance; • Set-up quality standards.
NOTE - Any of the tasks that are listed in the raw cluster and not used may always be used at a later stage. Some tasks have moved to another cluster in order to improve the coherence of the exercise	

Table 2 Illustration of the Result of Analysis Refinement

5.3 Training Fields

Knowledge and Skills for the ATM Technical Staff cannot be acquired by a single person. There is a need to divide them into fields, see Figure 3. Where appropriate, fields may be subdivided into more specialised subfields.

The concept of fields refers to the different types of specialised knowledge which are part of ATM Technical Staff global knowledge, examples of this are:

- Communications;
- Data processing;
- Meteo;
- Navigation;
- Radar.

NOTE - New fields such as satellites or ATM may be appended later in the more detail.

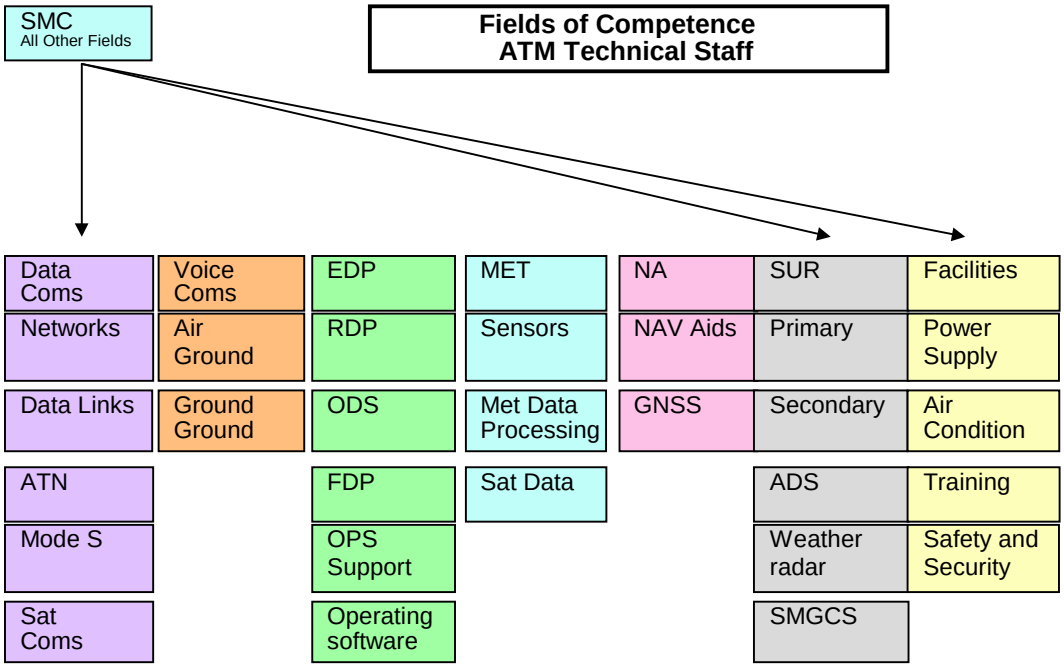


Figure 3 Fields

NOTE - System Monitoring and Control (SMC) is a field which applies to all the fields in a System Model.

5.4 System Model

5.4.1 Description

The system model shown in Figure 4 has been developed to represent in a diagrammatic form all ATM technical tasks. This approach allows, at any convenient time, the ability to change the tasks, without jeopardising the consistency of the model.

The basic model uses three layers:

- Core Tasks at the centre zone, which have a direct impact on system availability.
- Direct Support Tasks, in the next zone, which impact on system availability in the medium term.
- Indirect Support Tasks, at the outer zone, which have an impact in the longer term, and interface with the external world symbolised by Key elements.

Such a model can be used for any further work pertinent to ATM Technical Staff (for example training, selection, licensing) and can applied to other domains than ATM Technical Staff.

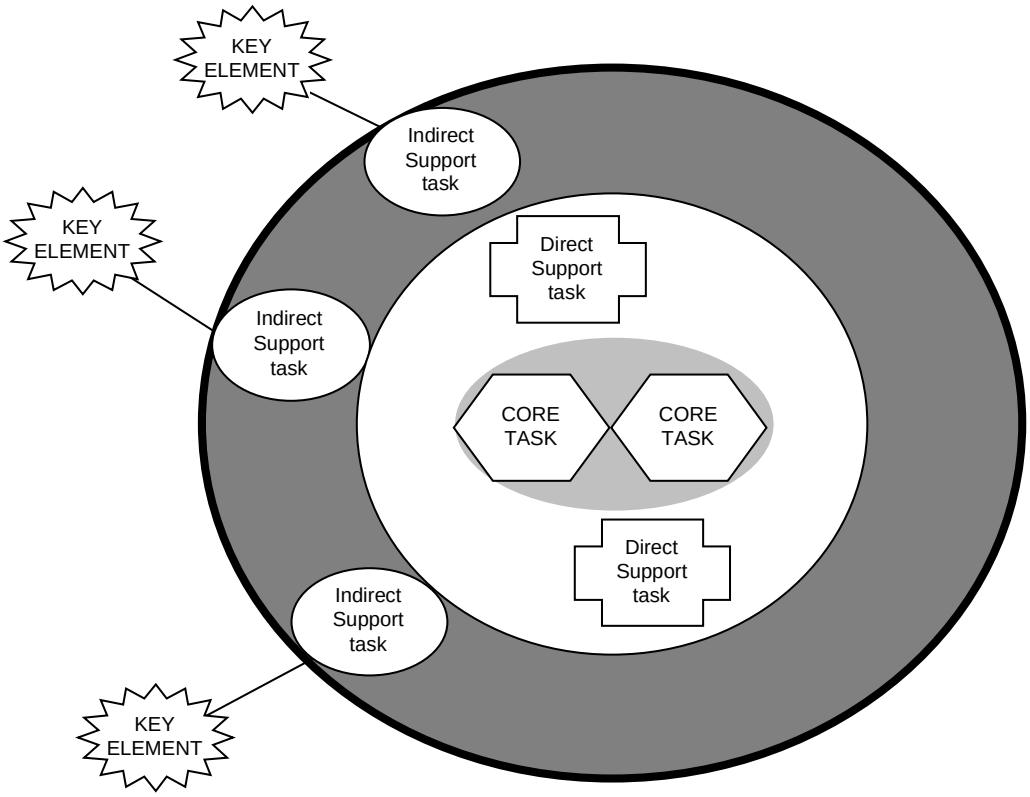


Figure 4 System Model for ATM Technical Staff

5.4.2 System Model Application

The model is intended to be general and able to cope with all staff categories and to be applied on a per field basis.

The main tasks shown in Table 2 have been mapped on to the System Model, Figure 4, to produce the ATM Technical Staff Tasks shown in Figure 5.

NOTE - In this generic model no differentiation has been made between engineers and technicians.

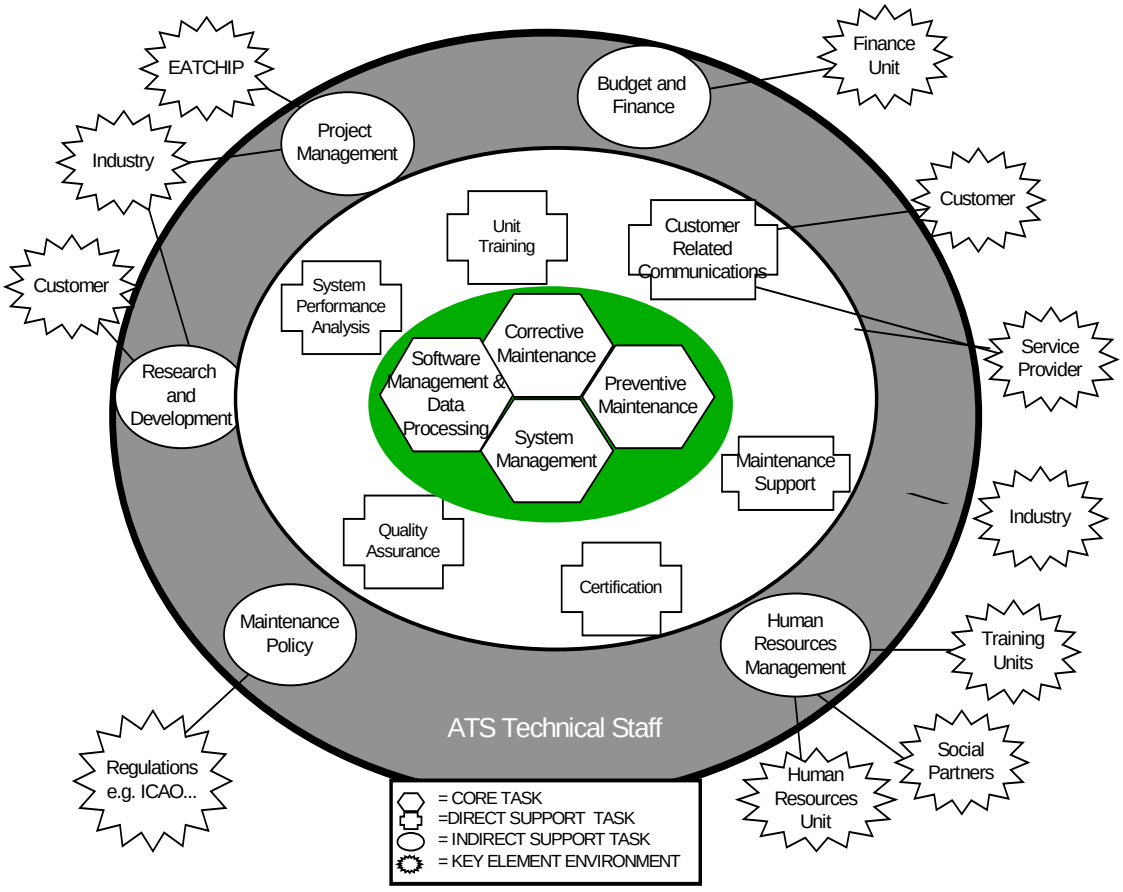
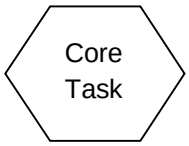


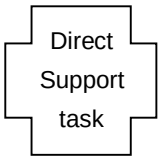
Figure 5 ATM Technical Staff Tasks

5.5 Knowledge and Skills, Levels of Tasks

Individual ATM Technical Staff members do not execute all the tasks included in the model. A “common core” has been defined on which the largest effort is deployed. The process model highlights this concept. A further refinement introduces the concept of Direct Support Task and Indirect Support Task.



Core Tasks involve the design and provision of a product or service



Direct Support Tasks contribute to the design and provision of the product or service in the short term

Indirect Support Tasks contribute to the development of products or services in the longer term

Within each of the conceptual Task Definitions, Core, Direct and Indirect support, three levels of Knowledge and Skills have been defined by the Task Force as:

- KS1 - Basic Knowledge and Skills level;
- KS2 - Functional Knowledge and Skills level;
- KS3 - Expert Knowledge and Skills level.

These levels of tasks are related to the levels of Knowledge and Skills in Figure 6.

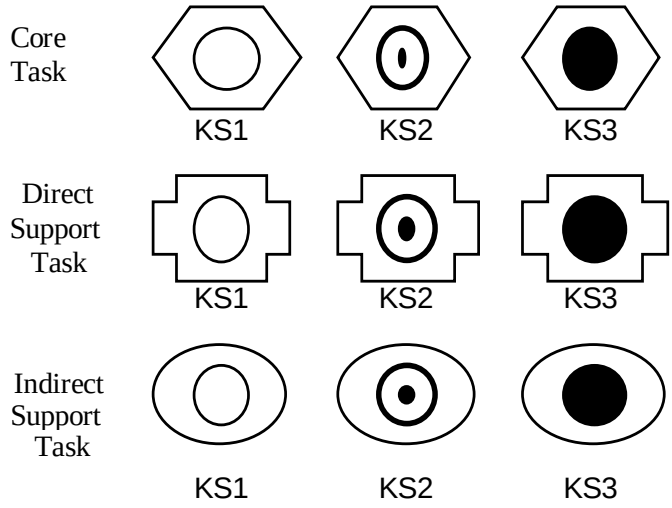


Figure 6 Knowledge and Skills Levels

5.6 Definition of Jobs

Figure 7 is the representation of the job descriptions and their related tasks. The TF will continue to work on recognising common job categories or families. The specific implementations will be based on one field or a group of fields.

A job is composed of a certain number of:

- core tasks;
- direct support tasks;
- indirect support tasks.

All of which require a certain level of knowledge and skills.

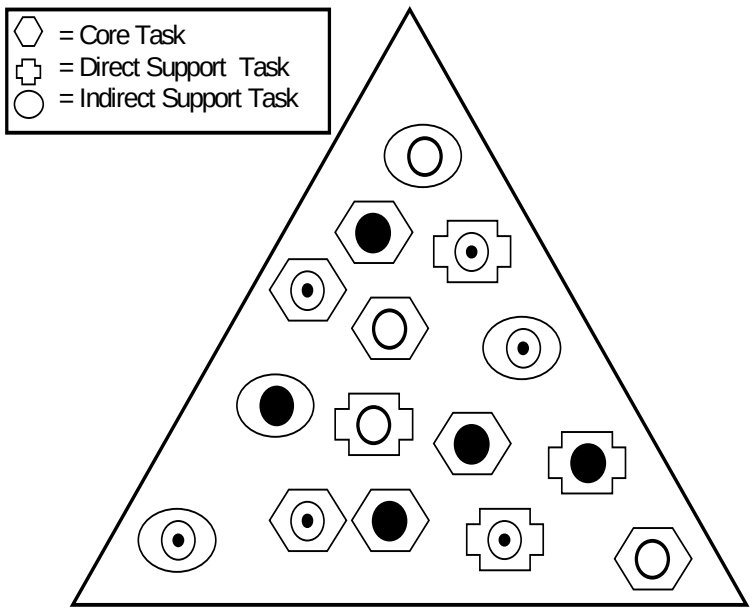


Figure 7 Job Description

5.7 Training Phases

The training will be conducted in phases. In order to use a common vocabulary in each of the domains. Figure 8 shows a graphical representation of those various training phases that are applicable to ATM Technical Staff and described in paragraph 7.2.

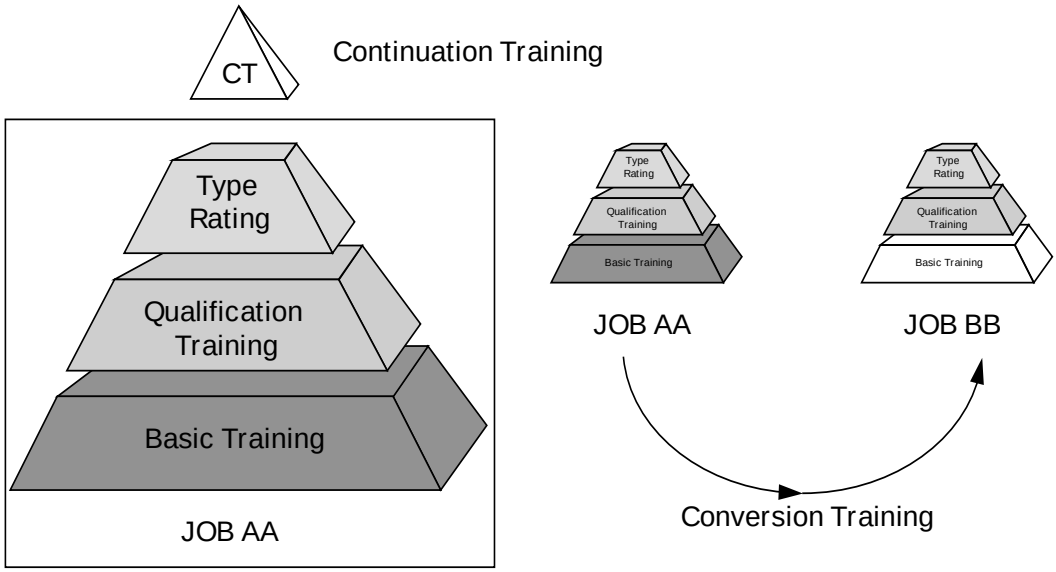


Figure 8 Training Phases

5.8 Training Modules

For the jobs defined per field, or per group of fields, each Member State will be able to access the following EATCHIP items:

- proposed training modules;
- supplied training syllabi;
- supplied training material.

Figure 9 shows a graphical representation of the training modules for ATM Technical Staff.

NOTE - The TF proposes to establish, or provide, these items as soon as job categories are available. The Member States will then be in a position to build their own training programmes based upon this material.

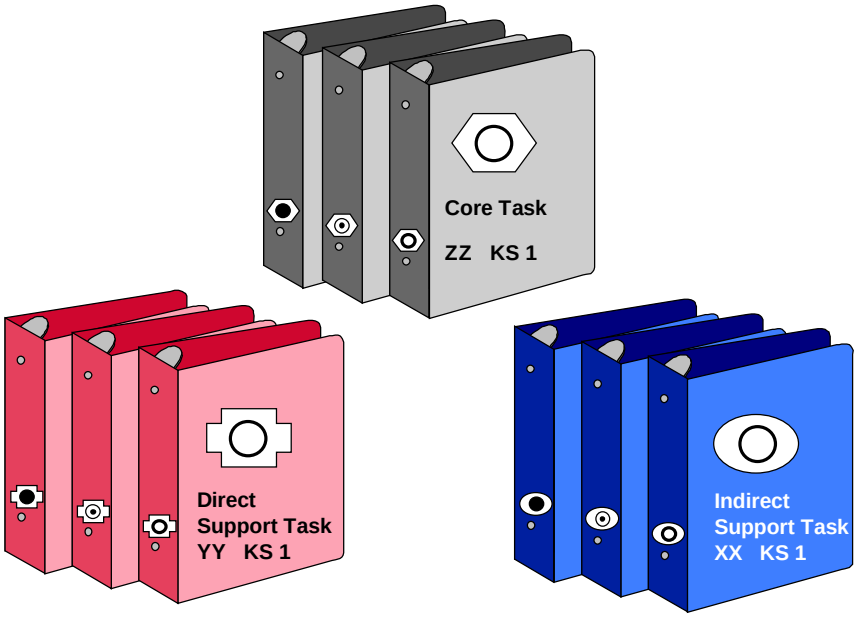


Figure 9 Training Modules

5.9 Training Programmes

The training programs are intended to be State driven, matching the training phases as shown in the Generic Model, Figure 2.

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6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The TF agreed on an evolutionary generic model for ATM Technical Staff training which is practical and capable of refinements

This generic model includes a system model which encompasses all staff categories. It can be applied on a specialist field basis, providing a vital link to Knowledge and Skills derived from levels of tasks for ATM Technical Staff.

From the concepts, job categories and families can be derived. With this information it will be possible to provide training modules and training programmes to match task requirements.

6.2 Recommendations

The TF recommended that:

- this Guideline Document be released as an EATCHIP deliverable, to the ECAC Member States for information and appropriate feedback.
- the definitions, training phases, levels of training and task definitions be accepted as standard for all work teams associated with ATM Technical Staff.
- further work be undertaken in order to collate, produce and distribute material related to training modules and training programmes. Individual Member States can then use such material to satisfy their own training requirements.
- the work is continued by looking at how jobs are organised by the Member States with the objective of:
  - further developing the common model;
  - identifying criteria for job families, in order to develop common core contents for training.

the model is considered for application where appropriate within other EATCHIP Domains.

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7. GENERIC TERMINOLOGY

7.1 Definitions

This glossary contains a range of terms associated with Tasks and Job Descriptions for ATM Technical Staff.

Ability: The capacity, or power, to do something.

Action: Something that somebody does knowingly, consciously and deliberately.

Boundary: A demarcation line used to separate a system from its environment.

Coach: A person monitoring the trainee in order to provide advice, guidance, help and encouragement towards the final achievement of the required goals or operational functions.

Customer: Any person, or unit, receiving a service or a product.

Element: A system component which, at the current level of analysis, is not intended to be further divided.

Field: A coherent group, or collection, of discrete functions which have a clearly recognised knowledge in common (e.g. Radar, Navigation).

Job Description: A list of tasks and their required level of knowledge and skills.

Job Family: The part of a Job Description that lists which tasks are components of the job.

Knowledge: Facts, information and understanding a person has gained, especially through learning or experience.

Objective: A short-term, practical and specific target.

Qualification: A formal document, or proof, which recognises that a person has:

- completed a specialised course of study;
- a particular skill.

Responsibility: The fact of being in charge of a certain job.

Skill: The ability to do something because of training and practice.

Sub-field: A component of a field.

Subsystem: A system component above the chosen limits of resolution, which contains elements within it.

System: A recognisable whole of components (sub-systems and elements), connected together in an organised way.

Task: A piece of work performed by an individual or individuals that:

- has definite beginning and end
- results in a product or a service

Training Module: Training material in order to gain the required knowledge and skills.

Training Programme: A job-related set of training modules.

7.2 Training Phases

In order to support common understanding between Member States a range of training phases have been defined. It is intended that the following definitions will to be used in further work:

Basic Training: Fundamental knowledge and skills appropriate to the discipline to be pursued in the ATS environment.

Continuation Training: Job Category related training in order to increase Knowledge and Skills and/or prepare for new technologies.

Conversion Training: Knowledge and Skills appropriate to changes in job category environment or systems.

On-the-Job Training (OJT): The integration in practice of previously acquired Knowledge and Skills under the supervision of a qualified coach in a live situation.

Qualification Training: Job Category related Knowledge and Skills appropriate to the discipline to be pursued in the ATS environment.

Refresher Training: Knowledge and Skills to maintain competency.

Type Rating: Equipment/System related Knowledge and Skills leading to recognised competency.

7.3 Levels of Knowledge and Skills

It is appropriate to define levels for Knowledge and Skills. A three level scale has been proposed (Table 3). These three level have been compared to the five level scale defined by ICAO (Tables 4 and 5).

Level Name	Definition
Level A - Basic	Basic Knowledge of a system or subsystem and its major components
Level B - Functional	Functional Knowledge and Skills of a system or subsystem and its major components
Level C - Expert	Overall Knowledge and Skills of a system or subsystem and its components

Table 3 Levels of Knowledge and Skills

Name	Definition
Level 1	Denotes an understanding of a principle
Level 2	Denotes a basic Knowledge of a subject
Level 3	Denotes Knowledge of the subject and the ability, where applicable, to apply it practically
Level 4	Denotes extensive Knowledge of the subject and the ability to apply it with speed and accuracy
Level 5	Denotes extensive Knowledge of the subject and the ability to apply procedures derived from it with judgement in the light of the circumstances

Table 4 Levels of Knowledge and Skills according to ICAO

ICAO	Group Defined Levels
Level 1	Level A - Basic
Level 2	Level A - Basic
Level 3	Level B - Functional
Level 4	Level B - Functional
Level 5	Level C - Expert

Table 5 Comparison Between the two Scales

7.4 Types of Tasks

Three types of tasks have been identified in the process. They are defined in Table 6.

Type of Tasks	Definition
Core Tasks	Involve the design and provision of a product or service
Direct Support Tasks	Contribute to the design and provision of the product or service in the short term
Indirect Support Tasks	Contribute to the development of products or services in the longer term

Table 6 Types of Tasks

7.5 List of Possible Task Actions

CUSTOMER RELATED COMMUNICATIONS

- Define common terminology
- Use common terminology
- Liaise with customers
- Establish communication channels with customers
- Establish working groups with customers
- Set-up customer feed back system

MAINTENANCE POLICY

- Produce Maintenance procedures according to policy
- Specify the level of maintenance
- Set-up quality standards

SOFTWARE MANAGEMENT AND DATA PROCESSING

- Analyse performance and stability
- Optimise system performance
- Program Application software
- Perform software testing
- Manage Software configuration
- Carry out software Release
- Update software documentation

SYSTEM MANAGEMENT

- Monitor and control systems
- Utilise relevant tools
- Evaluate impact of failure on other systems
- Re-configure systems
- Restore systems
- Co-ordinate with customer
- Provide data for analysis

SYSTEM PERFORMANCE ANALYSIS

- Evaluate faults and problem reports
- Evaluate status reports
- Use tools and data banks
- Provide feedback for information

CERTIFICATION

- Certify equipment according to standards
- Perform flight inspection
- Calibrate equipment

HUMAN RESOURCES MANAGEMENT

- Define manpower requirement
- Provide selection criteria
- Participate in selection process
- Define training requirement
- Participate in training planning
- Perform training
- Assess personnel

BUDGET AND FINANCE

- Budgets costs according to policies
- Control costs

TRAINING

- Organise management training
- Develop skills for technical training (trainers)
- Provide conversion training
- Train technical staff to perform software maintenance
- Develop training programmes
- On-the-Job Training (OJT)
- Manufacturer training
- Training programmes for new systems
- Assess staff
- Update and upgrade the knowledge of skills

PROJECT MANAGEMENT

- Provide solutions to agreed requirements
- Ensure proper finances for projects
- Implement agreed solution
- Plan system migrations
- Perform acceptance tests
- Hand over equipment

RESEARCH AND DEVELOPMENT

- Investigate solutions to potential requirements
- Assess new technologies
- Conduct short term Experiments
- Contribute to international projects
- Propose solutions

MAINTENANCE SUPPORT

- Execute logistics
- Manage actions based on contracts
- Produce and maintain necessary system documentation

QUALITY ASSURANCE

- Perform all activities to quality standards
- Perform required quality assurance procedures
- Perform quality assurance audit
- Report non-conformities

PREVENTIVE MAINTENANCE

- Co-ordinate with customer
- Perform scheduled preventive maintenance according to doc
- Update data banks

CORRECTIVE MAINTENANCE

- Confirm failure
- Restore the system if possible
- Diagnose failure
- Perform corrective maintenance according to doc
- Investigate origin of failure
- Update data banks

7.6 List of Possible Task Verbs

A
ACCUMULATE
ACT
ADD
ADHERE
ADJUST
ADMINISTER
ADVICE
AGREE
AID
ALIGN
ALLOCATE
AMEND
ANALYSE
ANSWER
APPLY
APPRAISE
APPROVE
ARRANGE
ASSEMBLE
ASSESS
ASSIGN
ASSIST
ATTEND
ATTRIBUTE
AUDIT
AUTHORISE

B
BALANCE
BATCH
BLEND
BOOK
BREAK
BRIEF
BRUSH
BUDGET
BUFF
BUILD
BUY

C
CALCULATE
CALIBRATE
CANCEL
CARRY
CERTIFY
CHALLENGE
CHANGE
CHARGE
CHASE
CHECK
CHOOSE
CIRCULATE
CITE
CLASSIFY
CLEAN
CLEAR
CO-ORDINATE
COACH
CODE
COLLATE
COLLECT
COMMUNICATE
COMPARE
COMPILE
COMPLAIN
COMPLETE
COMPUTE
CONDUCT
CONFIRM
CONNECT
CONSULT
CONTACT
CONTRIBUTE
CONTROL
CONVEY
COOL
COPY
CORRECT
COUNSEL
COUNT
CREATE
CURE

D
DATE
DEBRIEF
DEBURR
DECIDE
DELETE
DELIVER
DEMONSTRATE
DESCRIBE
DESIGN
DE-SUSPEND
DETECT
DEVELOP
DIAGNOSE
DIRECT
DISCHARGE
DISCIPLINE
DISCONNECT
DISCRIMINATE
DISPATCH
DISPENSE
DISPLACE
DISPOSE
DISSOLVE
DIVIDE
DOCUMENT
DOWN DATE
DRAW
DRIVE
DRY
DRY RUN

E
EDIT
EMPTY
ENCODE
ENCOURAGE
ENTER
ERECT
ESTIMATE
EVALUATE
EXAMINE
EXPLAIN
EXTINGUISH
EXTRACT

F
FABRICATE
FAULT FIND
FEED
FIGURE
FILE
FILL
FLUSH
FOLD
FORMULATE
FREE

G
GATHER
GAUGE
GIVE
GREASE
GROUP
GUARD
GUIDE

H
HANDLE
HELP
HIGHLIGHT
HIRE
HOLD
HOOVER

I
IDENTIFY
IMPROVE
INDICATE
INFORM
INITIATE
INPUT
INSERT
INSPECT
INSTALL
INSTRUCT
INTERVIEW
INVEST
ISOLATE
ISSUE

J
JOIN
JUDGE

L
LABEL
LEAD
LIAISE
LINK
LIST
LOAD
LOAN
LOCATE
LOG
LUBRICATE

M
MAINTAIN
MAKE
MAKE UP
MARK
MATCH
MEASURE
MEET
MODIFY
MONITOR
MOVE

N
NAME
NEGOTIATE
NEUTRALISE
NOTIFY

O
OBSERVE
OBTAIN
OPEN
OPERATE
ORDER
ORGANISE
OVERHAUL

P
PACK
PAINT
PASS
PATCH
PAY
PERMIT
PHONE
PHOTOCOPY
PICK
PLACE
PLAN

POLISH
POSITION
POST
POUR
PREPARE
PRESCRIBE
PRESENT
PRIME
PROBE
PROBLEM-SOLVE
PROCESS
PROGRAMME
PROPOSE
PULL
PUMP
PURCHASE

Q
QUALIFY
QUOTE

R
RACK
RAISE
READ
READY
REASON
REASSEMBLE
RECALL
RECEIVE
RECOGNISE
RECOMMEND
RECONCILE
RECONDITION
RECORD
RECTIFY
REDUCE
REFER
REFILL
REFIT
REGISTER
REGULATE
REJECT
RELAY
RELEASE
RELIEVE
REMOVE
RENEW
REPAIR
REPLACE
REPLENISH
REPLY
REPORT
REPRODUCE
REQUEST

REQUISITION
RE SAMPLE
RETRIEVE
RETURN
REVIEW
REVISE
RE-WEIGH
REWIND
REWIRE
REWORK
ROUTE

S
SAMPLE
SCAN
SCHEDULE
SCRAP
SCRUB
SCRUTINISE
SEAL
SECURE
SELECT
SENTENCE
SERVICE
SET
SET UP
SHAKE
SHARPEN
SIGN
SIGNAL
SIMULATE
SLIT
SOAK
SOLDER
SORT

SOURCE
SPECIFY
SPLICE
SPLIT
SPRAY
STACK
STAMP
STAND
STAND-IN
START
STOCK
STOCKTAKE
STOP
STORE
STRAP
STRIP
SUPERVISE
SUPPLY
SURVEY

SUSPEND
SWITCH

T
TABULATE
TAKE
TAP
TAPE
TENDER
TEST
THREAD
TIME
TRACE
TRAIN
TRANSCRIBE
TRANSFER
TRANSMIT
TREAT
TROUBLESHOOT
TUNE
TURN
TYPE

U
UNDERSTAND
UNSTRAP
UPDATE
USE
UTILISE

V
VALIDATE
VENTILATE
VERIFY
VISIT

W
WASH
WEIGH
WRITE

ANNEX A: REFERENCE DOCUMENTS

[Ref. 1] EUROCONTROL, EATCHIP Work Programme Document, Human Resources Business Plan, Edition 3.0, 29/03/96.

[Ref. 2] European Civil Aviation Conference, ECAC Strategy for the 1990s: Air Traffic Control in Europe, Paris, 24 April 1990.

[Ref. 3] EUROCONTROL, EATCHIP Work Programme Document, Edition 2.0.

[Ref. 4] EUROCONTROL, EWPD reference number HUM.ET1.ST01.1000-REP-01, Model for Task and Job Description of Air Traffic Controllers, EATCHIP Human Resources, Edition 1.0, 15/03/96.

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ANNEX B: ABBREVIATIONS AND MNEUMONICS

The following abbreviations and mneumonics represent a range associated Tasks and Job Descriptions for ATM Technical Staff:

ACT	Actualisation Message (OLDI)
ADS	Automatic Dependent Surveillance
AFTN	Aeronautical Fixed Telecommunications Network
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATM	Air Traffic Management
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Services
CAA	Civil Aviation Authority
CBE	Computer Based Examination
CBT	Computer Based Training
CWP	Controller Working Position
Data Comms	Data Communication
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EEC	EUROCONTROL Experimental Centre
ECAC	European Civil Aviation Conference
EDP	Electronic Data Processing
EPD	EATCHIP Planning Division
ET	Executive Task
EWPD	EATCHIP Work Programme Document
EUROCONTROL	European Organisation for the Safety of Air Navigation
FAT	Factory Acceptance Test

FDP	Flight Data Processing
FIS	Flight Information Service
FPL	Flight Plan
GNSS	Global Navigation Satellite System
GUI	Guideline/Guidance Material
HMI	Human Machine Interface
HRT	Human Resources Team
HUM	Human Resources
IANS	Institute of Air Navigation Services
ICAO	International Civil ATC Organisation
IFATCA	International Federation of ATC Associations
IFATSEA	International Federation of Air Traffic Safety Electronic Association
LAM	Logical Acknowledgement Message (OLDI)
MATS	Manual of Air Traffic Service
MET	Meteorology
MTCA	Medium-Term Conflict Alert
NAV	Navigation
NAV aids	Navigation Aids
NERC	New En-Route Centre
ODID	Operational Display and Input Device
ODS	Operational Display System
OJT	On-the-Job Training
OJTI	On-the-Job Training Instructors
OLDI	On-Line Data Interchange
OPS Support	Operational Support
PC	Personal Computer

RDP	Radar Data Processing
R/T	Radio/Telecommunication
SAT	Site Acceptance Test
SDOE	Senior Director of Operations and EATCHIP
SMC	System Monitoring and Control
SMGCS	Surface Monitoring and Ground Control System
SSR	Secondary Surveillance Radar
ST	Specialist Task
STCA	Short-Term Conflict Alert
SUR	Surveillance
SYS	System
TSG	Training Sub-Group
UK	United Kingdom
Voice Comms	Voice Communications
WP	Work Package

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ANNEX C: LIST OF PARTICIPANTS

Participants to the guidelines creation:

Name	Organisation/Nation
Mr Manfred Barbarino Mr Bernard Cassaignau (Chairman) Mr A.J.M. van Loosbroek	EUROCONTROL
Mr Heinz Floh Mr Erich Heyssler Mr Josef Klinger	Austro Control, AUSTRIA
Mr Egon Byck	Deutsche Flug Sicherung, GERMANY
Mr Marc Limare	Direction Navigation Aérienne, FRANCE
Mr Jean-Jacques François Mr Heinz Dirry	IFATSEA
Mr Sean Mc Adam-O' Connell	Irish Aviation Authority, IRELAND
Mr Ed. Joinson	National Air Traffic Services UNITED KINGDOM
Mr Miroslaw Gwardiak Mr Tadeusz Grocholski	Polish Air Traffic Agency POLAND
Mr Christian Baour Mr Michel Bryand	Swiss Control SWITZERLAND

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