CARE/ASAS Action

CARE/ASAS Activity 2: Validation Framework - Project Management Plan

DOCUMENT REVIEW

Version	Date	Description	Modifications
0.1	5/11/01	First version	
1.0	12/11/01	First issue	Dates inserted and comments by EUROCONTROL incorporated
1.1	7/1//02	Revisions	Plans for WP2 & WP3 and date changes for meeting

DISTRIBUTION LIST

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1. OBJECTIVES, APPLICATION FIELD, RESPONSIBILITIES

1.1. Objectives and context of the project

EUROCONTROL has launched the CARE/ASAS programme to consolidate previous work on ASAS and to co-ordinate future EUROCONTROL sponsored research in this area. As part of this programme, EUROCONTROL invited tenders [1] for the development of a validation framework for the assessment of proposed ASAS applications.

The CARE/ASAS applications cover a wide spectrum of delegation of responsibilities and therefore a wide range of potential operational concepts that will need to be evaluated. An evaluation process or validation is required in order to ensure that application is able to deliver the anticipated benefits and therefore be a worthwhile investment for the ATC providers and airlines. The commonly agreed European definition of validation is stated below.

The process through which a desired level of confidence in the ability of a deliverable to operate in a real-life environment may be demonstrated against a pre-defined level of functionality, operability and performance.

While there is consistency in the definition of validation, the many approaches used in past validation exercises has meant it has been impossible to compare their results and conclusions, and thereby identify the best future operational concept on a Europe-wide basis. Projects such as CAVA, DEVAM and MAEVA have started to provide more detailed guidance to those responsible for the conduct of validation exercises to meet this need.

The aim of this project is to specify this Validation Framework (VF). This framework should allow for comparability and consolidation of results. The wide-range of potential operational concepts and diverse techniques that may be used for their validation have led to the requirement for the framework to be generic.

This project management plan describes the work being undertaken as described in [2] by the NATS-led consortium comprising:

- Aena
- Isdefe
- NLR
- QinetiQ.

The project is divided into one management and four technical work packages defined as follows:

- WP0 – Management
- WP1 – Identification of ASAS operational scenarios
- WP2 – System performance metrics
- WP3 – Human performance metrics
- WP4 – Application of validation framework.

1.2. Purpose of the document

This document is intended for the EUROCONTROL CARE/ASAS Manager and the CARE/ASAS Management Board and the members of the CARE/ASAS VF consortium.

The goal of this plan is to provide a common and clear view between the stakeholders on the objectives of the project, the deliverables, the organisation, the tasks to be completed, the schedule, the procedures to be followed and the relation with the client.

To prevent minor changes from impacting the plan, information subject to change such as the status of the deliverables and the contact list, will be maintained as separate documents, respectively in the Project Document List and in the Project Contact List.

1.3. Associated responsibilities and procedures

The Project Manager is in charge of developing and maintaining the PMP.

The PMP is updated by the Project Manager in case of significant changes occur regarding major drivers of the project such as the deliverables, the activities, the organisation or the schedule.

Changes are proposed and discussed with the consortium members and the EUROCONTROL CARE/ASAS Manager either during progress meetings or informal discussions.

Each new version of the PMP follows the review process as defined in section 3.3.6.

2. REFERENCES

[1] EUROCONTROL “Call for Tender n°AO/HQ/EC/01”, 17th July 2001.
[2] NATS “CARE/ASAS Action Activity 2 Follow on: Validation Framework” Ref. CARE-ASAS/PRIP/001, September 2001.

2.1. Abbreviations and Acronyms

ASAS	Airborne Separation Assurance System
ATC	Air Traffic Control
ATM	Air Traffic Management
C	Contributor
CARE	Co-operative Actions of R&D in EUROCONTROL
CAVA	Concerted Action for the Validation of ATM
DEVAM	Development of EATCHIP/EATMP Validation Methodologies
EMERALD	Emerging RTD Activities of Relevance for ATM Concept Definition
FAA	Federal Aviation Authority
INTEGRA	Advanced ATM Tool Integration project
KOM	Kick Off Meeting
L	Leader
MAEVA	Master ATM European Validation Plan
MFF	Mediterranean Free Flight
NATS	National Air Traffic Services Ltd
PMP	Project Management Plan
RTD	Research and Technical Development
SAE-G-10	Society of Automotive Engineers – Aerospace Behavioral Technology (G10)
TSG	Traffic Sample Generator
VF	Validation Framework
VGH	Validation Guideline Handbook
VMP	Validation Master Plan
WP	Work Package

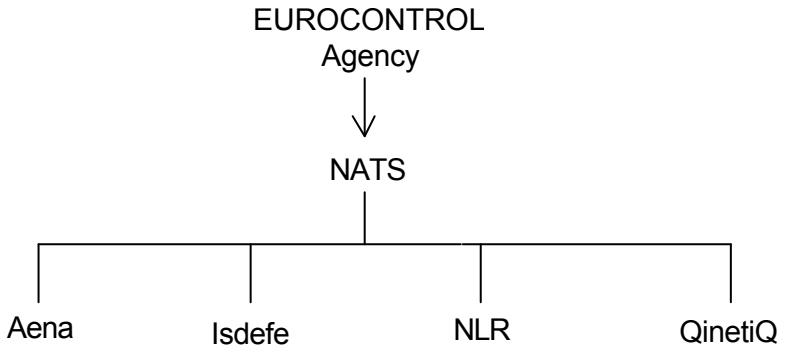
3. ORGANISATION

3.1. Organisation of participants

The CARE/ASAS Activity 2 project is being performed by a consortium of research and service provider organisations with one clearly identified leader.

NATS is the leader of the consortium, as such it is the Project Manager and the sole contractor to EUROCONTROL HQ. NLR, QinetiQ, Aena and Isdefe are sub-contractors to NATS.

The structure of the team is described in the following organisation chart:



At EUROCONTROL, the project is managed by the EUROCONTROL CARE/ASAS Manager.

The different persons representing these organisations are identified by name in the Project Contact List.

3.2. Partner roles

According to the different Work Packages (WP), the partners have different possible roles within the several work packages.

The possible roles are:

- WP Leader role (L)
- WP Contributor role (C)

The role for the WP0 Leader is the Project Manager (PM).

The following table summarises the different role of the partners.

	NATS	***Aena***	***Isdefe***	***NLR***	***QinetiQ***
WP0	PM	-	-	-	-
WP1	-	C	L	C	-
WP2	-	C	-	-	L
WP3	C	-	-	L	-
WP4	L	-	C	-	C

3.2.1. Project Manager

The Project Manager represents the consortium with EUROCONTROL, and takes overall responsibility for ensuring the project meets its technical and schedule objectives. The responsibilities involve:

- Relationship with the CARE/ASAS Manager
- Co-ordination of all development tasks activities between teams involved in the project, in order to ensure maximum effectiveness
- Development and maintenance of the project management plan (including the schedule, the work package description) and all necessary procedures to ensure that all project tasks are accomplished within schedule and to the required technical standard
- Control and Authorisation of each deliverable before transmitting it to the EUROCONTROL CARE/ASAS Manager for approval
- Organisation of regular Progress Meetings
- Maintain financial control of the study and be responsible for transferring payments from the EUROCONTROL to the Consortium members
- Quality assurance.

3.2.2. Partner Leader

The Partner Leader is in charge of:

- Completing contractual tasks
- Co-ordination of all development tasks activities within its team
- Execution of all necessary procedures to ensure that all project tasks are accomplished timely and effectively
- Liaison and reporting to the Project Manager.

3.2.3. WP Leader

Each partner responsible for a Work Package appointed a Work Package Leader who is in charge of:

- The work organisation within the Work Package, the work progress monitoring, the co-ordination between the different participants involved in the work to be done, the collection of technical contributions for the final report of the Work Package and compliance with the planning
- The production of the WP deliverables.

3.2.4. WP Contributor

The WP Contributors are the partners directly involved in the production of the WP activities. They have to carry out specific tasks, to write specific parts of the WP Report through technical contributions.

3.3. Co-ordination, communication, project management

3.3.1. Co-ordination between the consortium and the EUROCONTROL CARE /ASAS Manager

The Project Manager is the point of contact for the EUROCONTROL CARE/ASAS Manager for all project management and contractual matters.

The co-ordination is by letter, fax or e-mail.
The co-ordination is conducted by means of:

- Scheduled progress meetings, face to face and by teleconference (See sections 3.3.4 and 3.3.5)
- Day-to-day communications by e-mail (especially for circulating reference documents and/or for notifying comments, questions and answers on contractual deliverables) or by phone (e.g. for minor information/clarification issues not requiring that a written record be kept.). Any decision taken by phone should be confirmed by e-mail.

3.3.2. Internal consortium co-ordination

Day-to-day communication between the Project Manager and the consortium members is done by e-mail and by phone. Risks may be identified by any member of the consortium and reported to the Project. The Project Manager is responsible for methods for risk mitigation and taking corrective actions accordingly (possibly after consultation with the Client if the problem and the proposed solution impact the delivery dates and/or the quality of the deliverables).

3.3.3. WP Co-ordination

The WP co-ordination is under the responsibility of the WP Leader.

3.3.4. Meetings

There are five formal meetings planned for duration of the contract:

- Kick-Off Meeting
- Three technical Progress Meetings
- The Dissemination forum.

There will be additional video and teleconferences arranged to support the technical development of the work.

After the Kick-Off and Progress meetings, the Project Manager will produce meeting minutes within ten working days (including the consortium approval), and the Client is expected to revise/approve the minutes within another ten days. These minutes include information on the documentation exchanged, the problems discussed. The minutes will include an Action List.

These minutes will be approved by the consortium prior to being provided to the EUROCONTROL CARE/ASAS Management Board

3.3.5. Review Process

Internal Review and Reviews are performed.

3.3.5.1. Internal review

The internal reviews concern the intermediate productions (defined in section 4) and the deliverables.

They consist of a cross-reading of the various notes and draft deliverables among the WP Leader and the Contributors. Suggested modifications and editorial amendments are gathered in written form, using revision bars and file naming conventions to keep track of the proposed modifications and their authors. The internal reviews are circulated via e-mail. The

documents are approved implicitly if no comment is received within ten days from the delivery date.

3.3.5.2. Reviews

Scheduled reviews are proposed prior to the delivery of deliverables. A review consists of comments on the draft deliverable by other consortium members and the EUROCONTROL CARE/ASAS Manager. Suggested modifications and editorial amendments are gathered in written form using revision bars and file naming conventions to keep track of the proposed modifications and their authors.

The reviews are circulated via e-mail. The date of the review is the date at which the final drafts are sent to the EUROCONTROL CARE Action Manager for review. The draft deliverables are sent to the EUROCONTROL CARE/ASAS Manager thirteen working days prior to the delivery of the deliverables. The reviews last eight working days. Comments are sent back to the Work Package Leader eight working days after the reception of the documents.

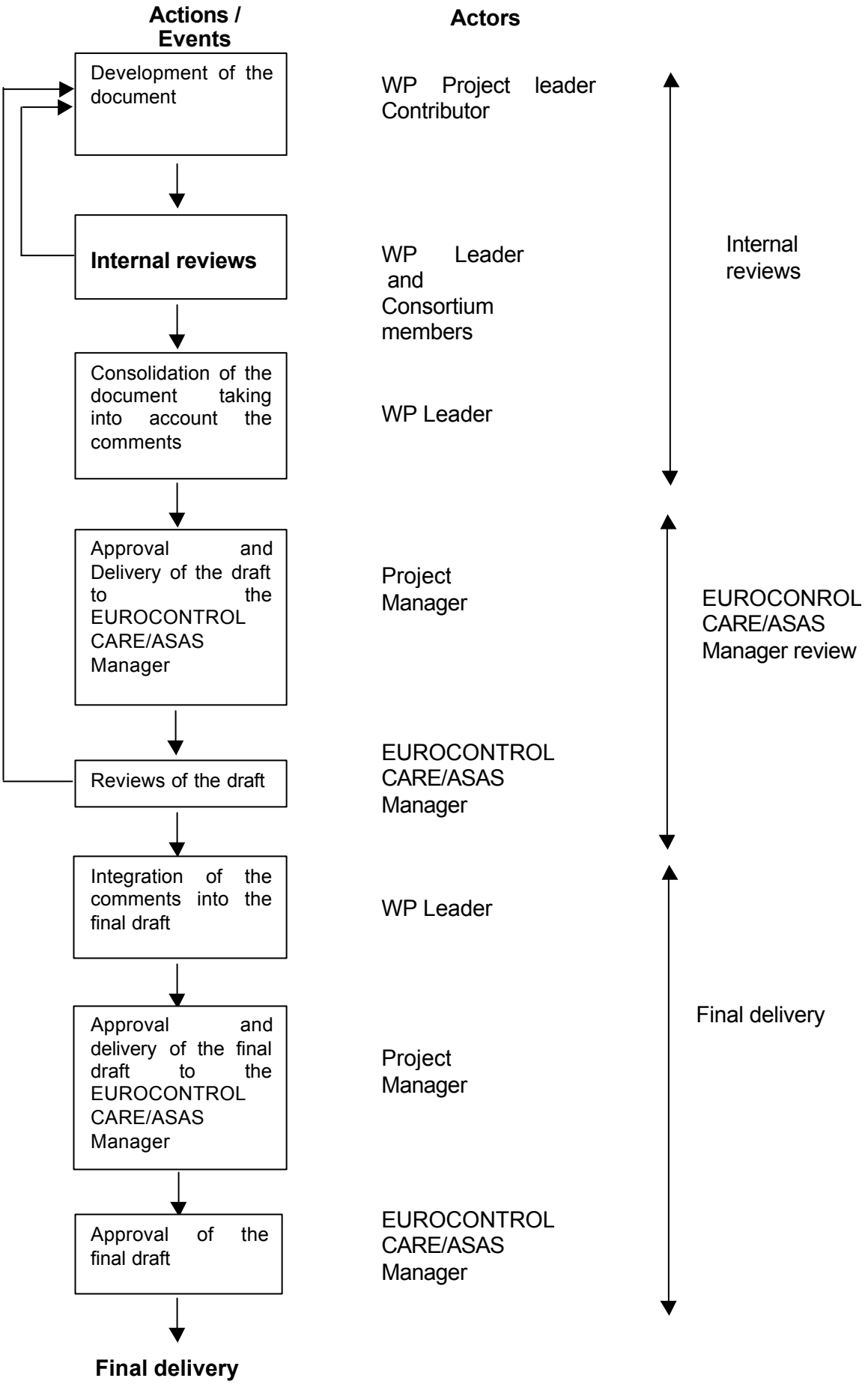
The Work Package Leader is responsible for integrating the comments and sending the final delivery to the Project Manager for approval. The Project Manager is responsible for sending the final delivery to the EUROCONTROL CARE/ASAS Manager at the expected date.

3.3.5.3. Control procedures

Deliverables must be authorised by the Project Manager before any submission to the EUROCONTROL CARE/ASAS Manager. Deliverables are submitted to the EUROCONTROL CARE/ASAS Manager for provisional acceptance. If not approved otherwise, a deliverable is approved implicitly if no comment is received within one month from the delivery date.

3.3.5.4. Summary

The following graph summarises the process of development and control of the deliverables and identifies the actors associated to each step.


Actions / Events
Actors
Development of the document
WP Project leader Contributor
Internal reviews
WP Leader and Consortium members
Internal reviews
Consolidation of the document taking into account the comments
WP Leader
Approval and Delivery of the draft to the EUROCONTROL CARE/ASAS Manager
Project Manager
EUROCONROL CARE/ASAS Manager review
Reviews of the draft
EUROCONTROL CARE/ASAS Manager
Integration of the comments into the final draft
WP Leader
Approval and delivery of the final draft to the EUROCONTROL CARE/ASAS Manager
Project Manager
Final delivery
Approval of the final draft
EUROCONTROL CARE/ASAS Manager
Final delivery

3.3.6. Risk Management

Risk	Mitigation
Feasibility of a generic framework	*Both 'bottom-up' and 'top-down' approaches will be used to ensure that the framework is practical while being as generic as is possible.*
Acceptability of the Validation Framework	*The framework will be presented to the user community through a dissemination forum.*
Too many scenarios to consider	*Apply experience from consortium to select most relevant.*
Unavailability of MAEVA Validation Master Plan in time	*Early release of draft (through Isdefe as MAEVA project co-ordinator).*
Scope of EMERALD RTD Plan	*Apply experience from consortium to select most relevant*
Uncertainty of operational concepts	*Apply experience from consortium and consult with other CARE/ASAS projects*
Availability of data from third parties for the scenario repository	*Liaise with and request data from third parties as early as possible in the schedule.*

The risk register will be updated at the progress meetings or when significant risks are identified to the PM by the consortium members or EUROCONTROL.

4. TASK DEFINITION

4.1. Introduction

This section presents the breakdown of the CARE/ASAS Activity 2 project into five work packages. All work packages taken as a whole describe the complete work programme to be carried out.

4.2. WP0: Management

Workpackage number and title: WP0: Project Management	
Start date: 1 November 2001 Duration: 12.5 months	
Partners involved	Activities of partner
NATS	Lead partner

Objectives
The objectives are to:

- To co-ordinate the activities performed under WP1, WP2, WP3 and WP4;
- To ensure that the results from the study are disseminated to the intended audiences;
- To raise the awareness of the CARE/ASAS validation framework within the ATM development community.

Inputs
The inputs will be:
- Agreed work plan, based on the plans in this proposal;
- Inputs from the four technical work packages.

Description of work
WP1.1: Co-ordination and Management
The work plans will be agreed with EUROCONTROL and the CARE/ASAS manager. The tasks will be monitored and communication between the partners encouraged. Maximum use will be made of email, WWW facilities and video and teleconferences as well as formal technical meetings to ensure rapid progression of the work, minimise costs and ensure effective sharing of information on work in progress.
WP1.2: Reporting
The work will be reported through the Interim and Final reports as required in the Call for Tender and through the organisation of a Dissemination Forum and provision of Web pages for inclusion on the CARE web site. The Final report will present the technical results from the four technical work packages, a summary of the most important results achieved and will include appropriate feedback from the Dissemination Forum.

Deliverables
Minutes of progress meetings
D0: Project Management Plan
D3: Interim Report
D7: Final report

Milestones
M0: 30/11/01 Project Management Plan
M1: 31/05/02 Interim Report
M2: 10/10/02 Dissemination Forum
M3: 15/10/02 Draft of Final Report
M4: 15/11/02 Final Report

Expected Results
The co-ordinated and efficient execution of the tasks to be performed and transfer of the CARE/ASAS validation framework into the user community.

4.3. WP1: Identification of ASAS operational scenarios

Workpackage number and title: WP 1: Identification of ASAS operational scenarios	
Start date: 7 November 2001	**Duration:** 4 months
Partners involved	**Activities of partner**
Isdefe	WP Leader, WP1.1, WP1.2, WP1.3, WP1.5, WP1.6
NLR	WP1.2, WP1.4
Aena	WP1.4, WP1.6

Objectives
To describe operating environments for en-route and TMA operations that are relevant to ASAS applications. The terms of the definition of such environments must be twofold: first, considering type and class of airspace; second, also considering air traffic conditions, focusing on air traffic density and route structures.

Inputs
- CARE/ASAS Activity 1 – Problem dimensions / Evaluation of past studies;

- CARE/ASAS Activity 2 – Towards a validation framework for ASAS applications;
- CARE/ASAS Activity 3 – Airborne Separation Minima - WP1 technical results;
- CARE/ASAS Activity 3 – Investigation of Experience in Modelling and Determining Separation Minima;
- INTEGRA Traffic Sample Generator (TSG);
- MAEVA Validation Guideline Handbook;
- MAEVA Scenario Definition;
- MAEVA Initial Master Validation Plan;
- EMERALD RTD Plan;
- Previous ASAS experiments.

Description of work

To achieve the stated objectives this work package will perform the following activities:

WP1.1: Consolidation of draft scenario template

Based on the scenario template proposed within the initial report from Activity 2 preliminary work, and using the guidelines for scenario definition carried out within MAEVA project, this task will develop a scenario template identifying all the dimensions and parameters required to perform the validation of the ASAS concept. Taking advantage of MAEVA generalist aims, the template will permit the creation of scenarios for the ASAS applications independently of the validation technique. The definition of the template will also benefit from the EMERALD RTD Plan, in order to create scenarios permitting a simple transition from current airlines' avionics to future avionics required by ASAS. With the consideration of EMERALD RTD Plan, WP1.1 will advance the work to be performed within WP4.

This task will also develop a high level logic describing the way to apply the template. This logic will be refined within WP4 activities.

WP1.2: Review of selected ASAS previous experiment scenarios

This task will apply the scenario template defined in WP1.1 to a representative set of previous ASAS experiments scenarios selected in agreement with the CARE/ASAS manager. Prior to this application, the rationale for the selection of the most appropriate experiments will be established and documented. The ASAS experiments will be selected from those available from NLR, NATS and QinetiQ. The EEC will also be a source of data from experiments.

WP1.3: Dimension definition for ASAS reference scenario

After the application of the scenario template defined in WP1.1 to the selected previous experiments in WP1.2, some gaps or inconsistencies may be detected in the template. These gaps would indicate that the developed scenario template does not fit the needs for validating ASAS and some modifications have to be made to it. The required modifications will be extracted from the analysis of the gaps, resulting in a new scenario template being developed.

WP1.4: ASAS reference scenario

Making use of the scenario template defined in WP1.3, WP1.4 will create several generic scenarios covering different ASAS applications (including at least the two addressed in Activity 3: Autonomous operation and Sequencing/merging as co-operative application). Each scenario will provide a complete description on the procedure and resultant dimensions and parameters. The proposed scenarios will cover the needs for the Real-Time, Fast-Time, Statistical and Analytical validation techniques, defining clearly and in an independent way the dimensions and parameters correspondent to every technique within each application. It is important to highlight that scenario requirements usually play a significant part in determining the decision on validation technique, which is needed before selecting the metrics.

The scenarios developed in this task will serve as a basis for the work to be performed in WP4.2.

WP1.5: ASAS scenario repository
A collection of representative, previous scenarios used in ASAS experiments from the organisations included in the consortium will be carried out. The Consortium will also contact other organisations involved in ASAS activities in order to ask them for their scenarios developed for ASAS experiments. The selection of scenarios to be included will be agreed with the CARE/ASAS manager. A database will be created gathering the results of the application of the scenario template to the past ASAS scenarios. A repository of these scenarios will be provided in electronic format. The success of this task is critically dependent on the timely provision of suitable data. The EUROCONTROL VDR will be used, if possible for the storage of this data.

WP1.6: Scenario report
Using the results from tasks 1.1, 1.2, 1.3, 1.4 and 1.5 (mainly tasks 1.3 and 1.4), this task will produce a report providing the scenario definition for the different ASAS applications (at least the Activity 3 ones).
The scenario report (D1) shall contain the following information:

- Draft scenario template from WP1.1;
- Rationale for selecting previous ASAS experiments from WP1.2;
- Report on the application of the scenario template to the selected ASAS experiments;
- Report on the refinement of the scenario template after its application to the selected experiments;
- Final scenario template from WP1.3;
- Reference scenarios from WP1.4;
- Report on the application of the scenario template to past ASAS scenarios from WP1.5.

Deliverables
D1: Scenario Report
D2: Scenario Repository from WP1.5

Milestones:
M0: 07/11/01: Start Work Package
M1: 29/11/01: Consolidation of the template for the ASAS draft scenario
M2: 31/12/01: Intermediate report
M3: 01/02/02 Liaison meeting with WP2 & WP3
M3: 18/01/02: Template for ASAS scenario
M4: 15/02/02: ASAS Reference Scenario
M5: 6/03/02: Final Draft of Scenario report and Scenario Repository

Expected Results
The main expected result from this WP is a template to create validation scenarios for any ASAS applications. Added value from this WP is the creation, as examples of how to apply the template, of several scenarios for the two ASAS applications addressed in Activity 3 considering different validation techniques. To finalise, WP1 provides a repository in electronic format of some scenarios used in previous ASAS experiments.

4.4. WP2: System performance metrics

Workpackage number and title:	WP 2: System Performance Metrics
Start date: 1 December 2001	**Duration:** 6 months
Partners involved	**Activities of partner**
QinetiQ	Lead partner, WPs 2.1, 2.2, 2.3
Aena	WPs 2.1, 2,.2, 2.3

Objectives

1 Identification of system performance metrics to assess, validate and compare schemes for operation and implementation of ASAS applications (also taking account of human performance measures).

2 Provide recommendations in terms of methodology, tools and achievable measurements, which can be used at various stages in the validation process.

Inputs

- CARE/ASAS Activity 2 Initial Report;
- Project INTEGRA reports on metrics;
- EMERALD RTD Plan;
- PO-ASAS;
- MAEVA Validation Guideline Handbook.

Description of work

WP2.1: Metrics population, in different types of simulation and type of ASAS activity.

This task will be guided by the initial review of metrics provided by Activity 2 and will aim to analyse further the links (defined in Activity 2) between ASAS performance indicators and ASAS performance areas. The work will adopt three viewpoints to ensure that the links are both sensible and realisable for ASAS experiments:

- A top-down approach using the Activity 2 taxonomy related to high level metrics, encompassed in the validation aims of the EMERALD RTD plan and supported by the high level aspects of the INTEGRA metrics;
- An initial bottom up approach taking account of the measures used for the INTEGRA metrics;
- The type of simulation used for the experiments – real time, fast time and analytic as well as consideration of validation experiments in 'shadow' or pseudo-operational modes.

This linkage will be used to derive a set of ASAS system performance metrics that can be used in future experiments. This will also take account of the human performance metrics being investigated in WP3. Then, for each system performance metric, a complete definition will be derived for any simulation type covering the requirement under assessment and criteria developed for deciding whether that requirement is met (or not). This will also encompass the name, units and means of computation.

WP2.2: Recommended measurements per application/type of simulation.
This task aims to provide a set of achievable, pragmatic and relevant low-level measurements that can be applied during ASAS experiments. It runs in parallel with WP3.2 and will build on the viewpoint analysis undertaken in WP2.1 in two ways:

- A further bottom up approach using descriptions within the Activity 2 report, the INTEGRA algorithms and possible measures given in the MAEVA handbook, in order to focus on achievable and pertinent low-level measurements;
- The two Activity 3 applications and the appropriate likely system performance measures that would be generally applicable.

Then, for each application, recommendations will be made covering the low-level measurements that should be made depending on the different types of simulation being adopted. This will also form a basis for the detailed case studies in WP4.2.

WP2.3: Metrics report
The final task in WP2 will be to present details of the ASAS system performance metrics to be used in future experiments, how those metrics should be selected and the low-level measurements which could be made during experiments with the two Activity 3 applications.

Deliverables
D4: System Performance Metrics Report

Milestones

M0: 03/12/01	KOM for WP2
M1: 05/04/02	Liaison meeting with WP3
M2: 01/06/02	Completion of Report on System Performance Metrics

Expected Results
A comprehensive set of defined ASAS system performance metrics together with achievable measurements for experiments with ASAS applications that will form a basis for comparison within the agreed context of the validation framework.

4.5. WP3: Human Performance Metrics

Workpackage number and title: WP 3: Human Performance Metrics	
Start date: 1 December 2001	**Duration:** 6 months
Partners involved	**Activities of partner**
NLR	Lead partner, WP3.1, WP3.2
NATS	WP3.1, WP3.2

Objectives

1. Identification of human performance metrics to assess, validate and compare schemes for operation and implementation of ASAS applications (also taking account of system performance measures);
2. Provide guidelines for the application of such metrics (in real-time, fast-time and survey data collections), including assessment of the relative strengths of each;
3. Identify metrics suitable for analysis of both air (pilot) and ground (ATC) perspectives.

Inputs

The inputs for WP3 are:

- CARE/ASAS Activity 2 Initial Report
- EMERALD RTD Plan
- MAEVA VGH
- PO-ASAS.

Description of work

WP3.1: Review of ATM human factors studies applicable to ASAS

WP3.1 will involve reviewing and synthesising human factors studies relevant to ASAS. An important input to this effort will be the CARE/ASAS Activity 2 preliminary report, part of which focuses on a state-of-the-art review of validation techniques. This activity reviewed a number of EUROCONTROL and European Commission projects and provided, for the present purposes, a preliminary identification of human factors metrics suitable for ASAS scenarios. The output of this activity would be augmented through more exhaustive bibliographic review (to include, for instance, FAA, SAE G-10), as well as interchange with ongoing projects (e.g. MFF).

WP3.2: Human factors analyses and metrics applicable to ASAS.

This task will parallel WP3.2, in which ASAS appropriate ATM system performance metrics are identified. The two tasks will proceed in parallel, and will use a similar framework for structuring their results. This task will rely on knowledge from several areas, including human cognitive function, human performance assessment, instrument design, and experimental design methods. WP3.2 will identify for each of three study types (fast time, real time, and survey studies) a number of candidate human factors measures, along with relative advantages of each, and general guidelines for their use. It is expected that such candidate measures will fall broadly into one of three groups:

- Subjective techniques—such as surveys, mental walkthroughs, verbal protocols;
- Objective behavioural markers—such behavioural counts and system state measures;
- Psycho-physiological indicators—such as eye tracking or heart rate related measures of workload, awareness, etc.

WP3.3: Human performance metrics report

The final task in WP3 will be to present details of the human performance metrics to be used in future experiments and the low-level measurements to be made during experiments with the two Activity 3 applications.

Deliverables

D5: Human performance metrics report

Milestones

M0: 03/12/01	KOM for WP3
M1: 05/04/02	Liaison meeting with WP2
M2: 01/06/02	Completion of report on human performance metrics

Expected Results

A comprehensive set of defined human factors metrics together with measurements for experiments with ASAS applications, that will form a basis for comparison within the agreed context of the validation framework.

4.6. WP4: Application of Validation Framework

Workpackage number and title: WP4: Application of Validation Framework	
Start date: 1 May 02	**Duration:** 3 months
Partners involved	**Activities of partner**
NATS	Lead partner, WP4.1 & WP4.2
QinetiQ	WP4.1
Isdefe	WP4.2 & WP4.3

Objectives

The objectives of WP4 are to:

1 take the generic ASAS validation framework developed in the earlier work packages and ensure it is consistent with the MAEVA frameworks;
2 provide further detail to the EMERALD RTD plan for ASAS;
3 ensure that the generic framework can be used to define specific validation frameworks for two CARE/ASAS Activity 3 applications.

Inputs

The inputs for WP4 are:

- EMERALD RTD Plan;
- CARE/ASAS Activity 2 Report;
- ASAS validation framework and logic of application from WP1, 2 & 3;
- CARE/ASAS Activity 3 Report;
- MAEVA Validation Guideline Handbook;
- MAEVA Validation Master Plan (available December 2001).

Description of work

WP4.1 Identification of links between ASAS VF and MAEVA validation framework

The initial phase of this work package will compare the ASAS VF with the MAEVA validation frameworks as represented by the Validation Guideline Handbook and the Validation Master Plan. The two approaches, those of CARE/ASAS and MAEVA, will be compared to ensure consistency and any links between the two will be identified. Where possible, opportunities will be taken to enrich the proposed ASAS VF with advice from the MAEVA framework. The EMERALD RTD plan will then be analysed against the ASAS VF to provide an indication of the types of validation exercises necessary to completely meet the specified RTD programme aims. Where it is necessary to be specific, the plan will focus on the RTD plans for the two Activity 3 applications, 'in-descent spacing' and 'autonomous operations'.

WP4.2 Guidelines for application of ASAS VF

The ASAS VF, with any enhancements added through WP4.1, will be used to perform the two specific case studies on the CARE/ASAS Activity 3 applications. This task will benefit from the team responsible for this task not having been involved in the development of the framework. The ASAS VF and the generic guidance notes will be refined in the light of experience to produce guidelines for its application.

WP4.3 Guideline report

The final task in this work package is to present the guidelines developed in a format suitable for use on other CARE/ASAS applications, this will include the case study examples and the EMERALD RTD plan.

Deliverables

D6: Guideline for Application of ASAS Validation Framework

Milestones

M0: May 02	KOM for WP4
M1: 23/05/02	Liaison meeting with WP2 & WP3
M2: 31/07/02	Completion of WP4 report

5. SCHEDULES

5.1. Schedule of deliverables

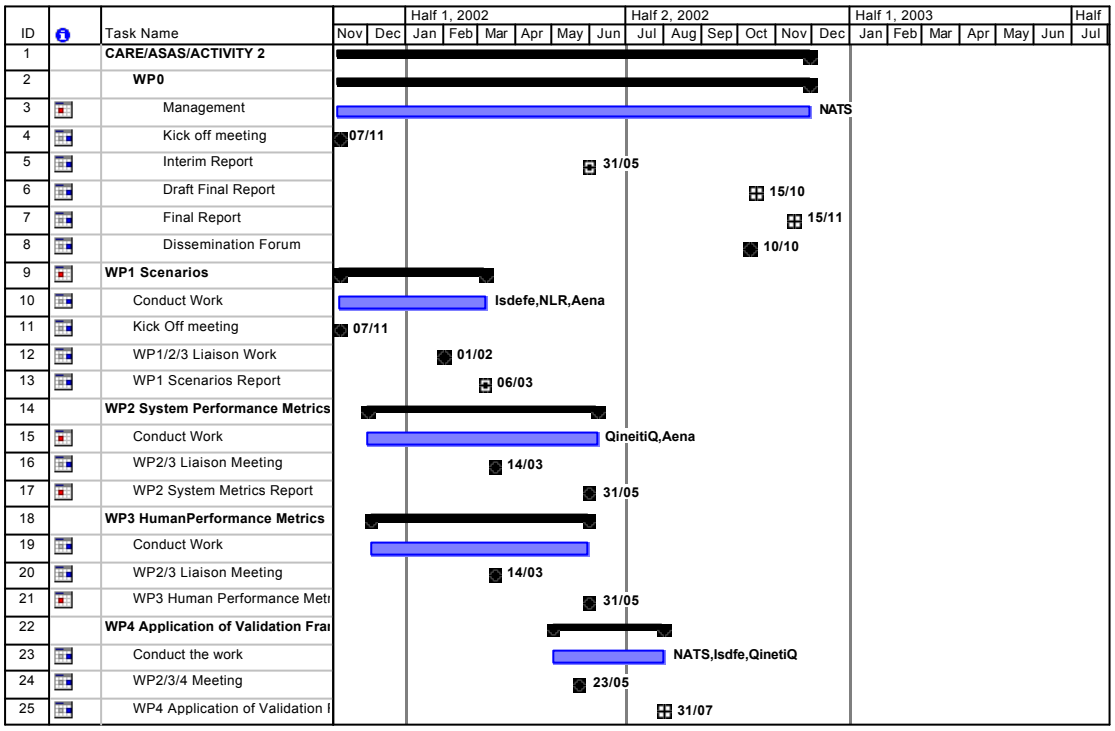
Work Package	*Deliverable Title*	*Reference/Filename (CARE/ASAS reference)*	*Delivery Date*	*Responsibility*
WP0	Project Management Plan	CARE-ASAS-VF-NAT-WP0-D0 (CARE/ASAS/NATS/ 01-029)	30/11/01	NATS
	Interim Report	CARE-ASAS-VF-NAT-WP0-D3 (CARE/ASAS/NATS/ 02-032)	31/05/02	NATS
	Final Report	CARE-ASAS-VF-NAT-WP0-D7 (CARE/ASAS/NATS/ 02-036)	15/11/02	NATS
WP1	Scenario Report	CARE-ASAS-VF-ISD-WP1-D1 (CARE/ASAS/Isdefe/02-030)	06/03/02	Isdefe
	Scenario Repository	CARE-ASAS-VF-ISD-WP1-D2 (CARE/ASAS/Isdefe/02-031)	06/03/02	Isdefe
WP2	System Performance Metrics Report	CARE-ASAS-VF-QIQ-WP2-D4 (CARE/ASAS/QinetiQ 02-033)	01/06/02	QinetiQ
WP3	Human Performance Metrics Report	CARE-ASAS-VF-NLR-WP3-D5 (CARE/ASAS/NLR/ 02-034)	01/06/02	NLR
WP4	Guideline for Application of VF Report	CARE-ASAS-VF-NAT-WP4-D6 (CARE/ASAS/NATS/ 02-035)	31/07/02	NATS

5.2. Meeting schedule

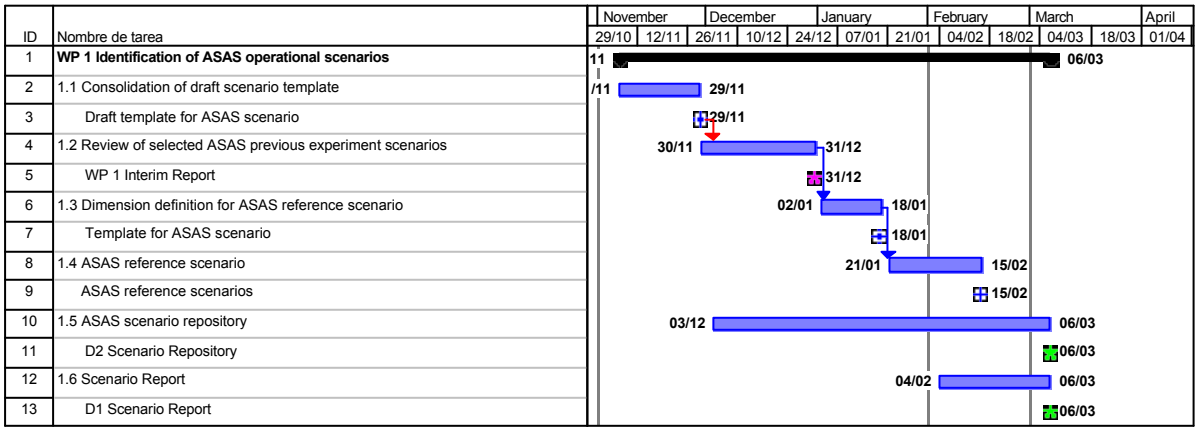
	Review / Meeting / Delivery	*Location / Means*	*Date*	*Invitees*	*Comment*
WP0	Project KOM	London	07/11/01	All + EUROCONTROL	
	Dissemination Forum	Brétigny	9&10/10/02	All + EUROCONTROL + ASAS Projects	
WP1	WP1 Kick-off	Teleconf	07/11/01	PM + WP1 Partners	
	Progress & WP1, 2 & 3 Liaison and Progress Meeting	Madrid	01/02/02	PM + WP1, WP2 & WP3 Partners + EUROCONTROL	
WP2	WP2 Kick off	Teleconf	Dec 01	PM + WP2 Partners	
	Progress & WP2/3 Liaison	Amsterdam	~~05/04/02~~ 14/03/02	EUROCONTROL + PM + WP2 & WP3 Partners	
WP3	WP3 Kick off	Teleconf	Dec 01	PM + WP3 Partners	
WP4	WP4 Kick off	Teleconf	May 02	PM + WP4 Partners	
	Progress & WP2, 3 & 4 Liaison	Malvern	23/05/02	PM + WP2, WP3 & WP4 Partners + EUROCONTROL	

5.3. GANTT Charts

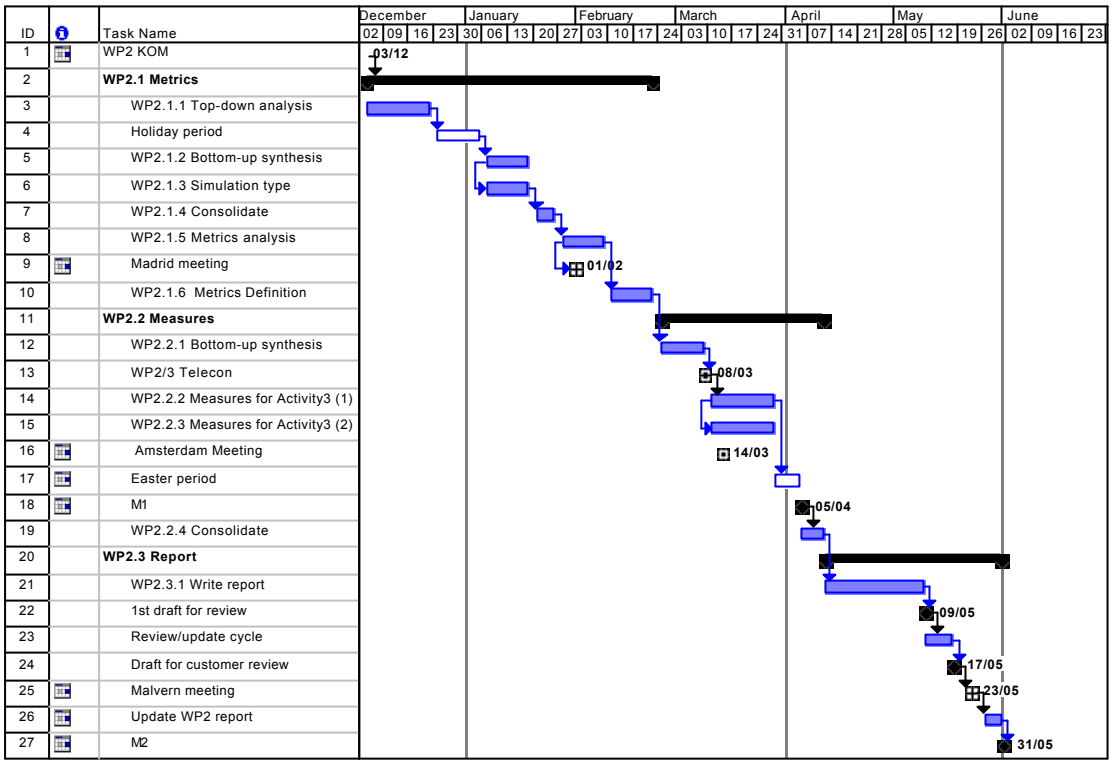
5.3.1. Overall work plan



5.3.2. WP1 work plan

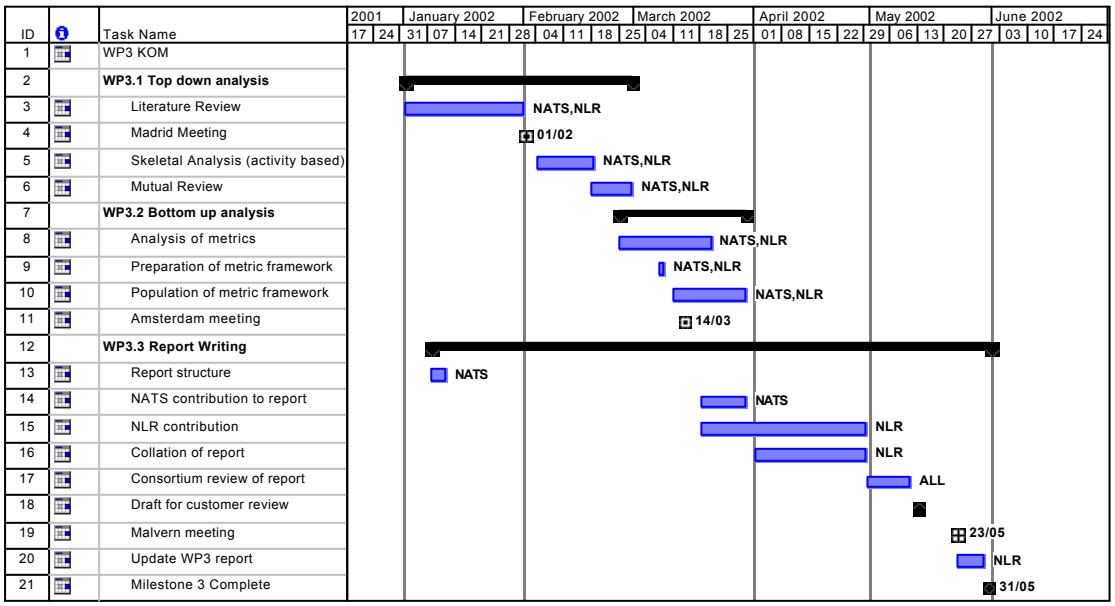


5.3.3. WP2 work plan



ID	Task Name
1	WP2 KOM
2	**WP2.1 Metrics**
3	WP2.1.1 Top-down analysis
4	Holiday period
5	WP2.1.2 Bottom-up synthesis
6	WP2.1.3 Simulation type
7	WP2.1.4 Consolidate
8	WP2.1.5 Metrics analysis
9	Madrid meeting
10	WP2.1.6 Metrics Definition
11	**WP2.2 Measures**
12	WP2.2.1 Bottom-up synthesis
13	WP2/3 Telecon
14	WP2.2.2 Measures for Activity3 (1)
15	WP2.2.3 Measures for Activity3 (2)
16	Amsterdam Meeting
17	Easter period
18	M1
19	WP2.2.4 Consolidate
20	**WP2.3 Report**
21	WP2.3.1 Write report
22	1st draft for review
23	Review/update cycle
24	Draft for customer review
25	Malvern meeting
26	Update WP2 report
27	M2

5.3.4. WP3 work plan



ID	Task Name
1	WP3 KOM
2	**WP3.1 Top down analysis**
3	Literature Review
4	Madrid Meeting
5	Skeletal Analysis (activity based)
6	Mutual Review
7	**WP3.2 Bottom up analysis**
8	Analysis of metrics
9	Preparation of metric framework
10	Population of metric framework
11	Amsterdam meeting
12	**WP3.3 Report Writing**
13	Report structure
14	NATS contribution to report
15	NLR contribution
16	Collation of report
17	Consortium review of report
18	Draft for customer review
19	Malvern meeting
20	Update WP3 report
21	Milestone 3 Complete

6. MANAGEMENT OF DOCUMENTATION

6.1. List of the documents

The deliverable documents are listed in the deliverables para 5.1. A list of documents and their status will be held in the documents list.

6.2. Documentation standard

The documents produced during the project conform to the following rules:

- Each document is identified by a unique reference, with a version and revision number;
- Each deliverable comprises the front page, the change log, the version number, the distribution list, the table of contents;
- Page headers and footers to state document identification throughout the document;
- The format should comply with the style and formatting of this document;
- Microsoft Office 97 formats are the standard electronic formats for each kind of file (text, slides, spreadsheets).

6.3. Documentation control

6.3.1. Document types

Documents types are:

- Project deliverables (D)
- Agenda (AG) and minutes of meetings (MM)
- Technical notes (TN)
- Reviews (RV)

Templates for these document types will be provided by the Project Manager.

6.3.2. Naming convention

The document naming convention is CARE-ASAS-VF-Company Code-Work package No-Document name. For example, the project management plan is CARE-ASAS-VF-NAT-WP0-D0_01.doc.

The company codes are as given below:

Company Name	Company Code
NATS	NAT
Isdefe	ISD
Aena	AEN
NLR	NLR
QinetiQ	QIQ

The Document names are constructed as given below:

- Deliverables: Dn_vr.DOC, where n is the number assigned to the deliverable (cf. the list of deliverables).
- Technical notes: TN_vr.DOC, where is n a sequential number.
- Reviews: RV_vr.DOC, where is n a sequential number.
- Agenda and Minutes of Meetings: {AG/MM}ddmmaa_vr.DOC, where ddmmaa is the date of the meeting;

- Review notes on reviewed documents: Dn_vr_rrr.DOC denotes deliverable Dn_vr with revision marks added by reviewer rrr. The same rule applies to annotations made informally by a reader of a technical note.

6.3.3. Versioning

Documents are versioned as follows: vr = <version number> . <revision number>

- version number is set to 0 for the initial draft (0.1, 0.2, ….); it is incremented when a stable/deliverable version has been achieved (1.0) or when a major modification to the previous version has been made;
- revision number is incremented when minor modifications have been made to the associated version (1.1, 1.2 … 2.1, 2.2, …..).

Version and revision numbers are assigned by the author of the document. The change log of the document is updated to reflect the changes made.

6.3.4. Emails

Emails will be sent with the prefix CARE/ASAS/VF, followed by a title indicating the subject of the email.

7. METHODS AND TOOLS

The UK Microsoft Office 97 package is used for the production of electronic documents.
Exchanges of documents are made using e-mail facilities. Attached files are “ZIPped” when necessary.

8. REPRODUCTION, PROTECTION, DELIVERY

The successive versions of all the documents and deliverables are be stored on the NATS Hurn server which is backed up regularly. The documents will be delivered in electronic form.