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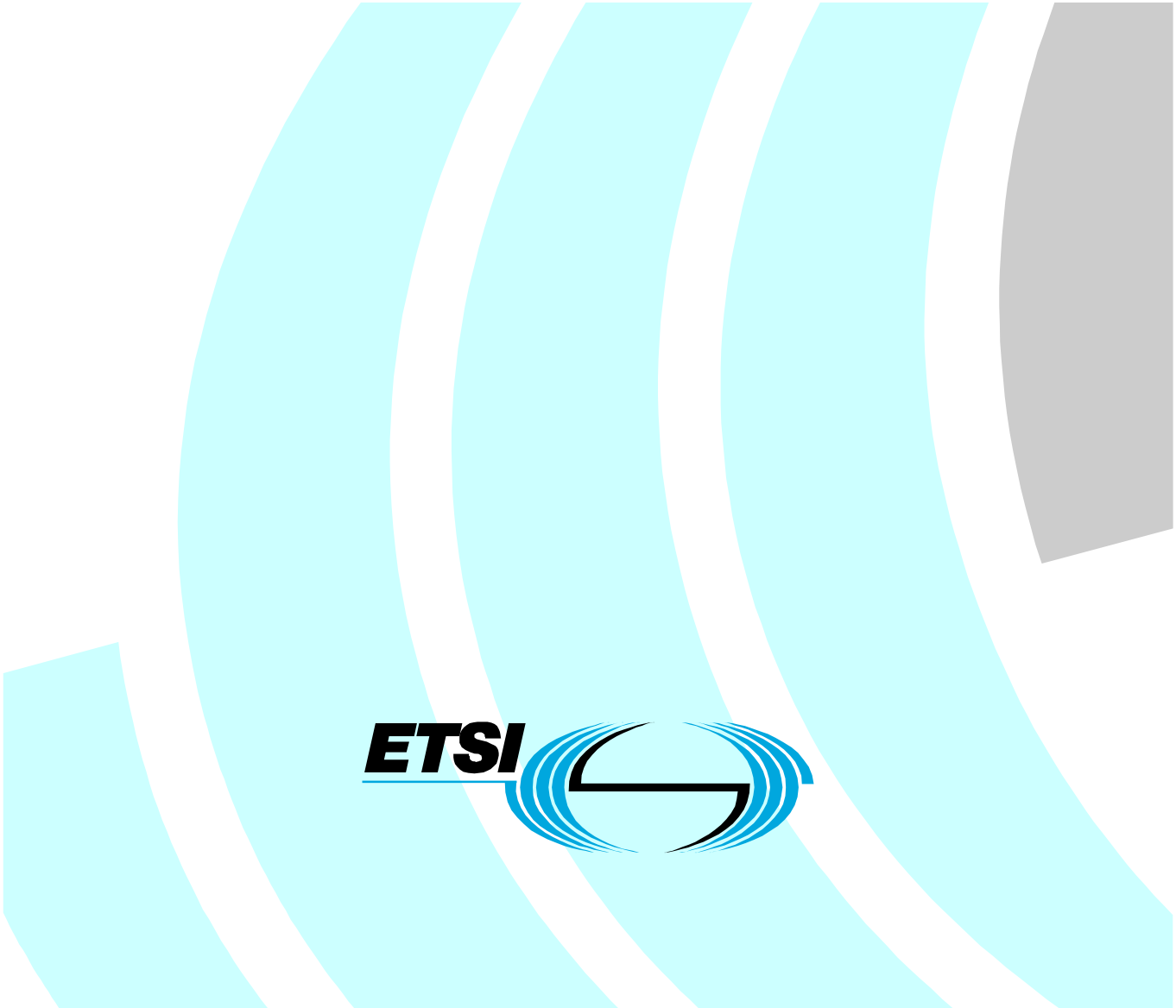
Technical Report

Electromagnetic Compatibility and Radio Spectrum Matters (ERM); European Air Traffic Management Network (EATMN); Part 2: Work programme



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Contents

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Foreword

This Technical Report (TR) has been produced by ETSI Technical Committee Electromagnetic compatibility and Radio spectrum Matters (ERM).

The present document is part 2 of a multi-part deliverable covering the Electromagnetic Compatibility and Radio Spectrum Matters (ERM); European Air Traffic Management Network (EATMN), as identified below:

Part 1: "Inventory of existing standards and specifications in progress";

Part 2: "Work programme".

Introduction

The Terms of Reference, TOR of the special task force STF 293 define the second step of its task as follows:

- This task is to develop proposals for the necessary work items identified as requiring ENs to implement mandate M/354.
- This programme should also identify scopes and proposed time schedules for the work that can be agreed by the managing body as being realistic and aligned with work going on in other bodies that is to be referenced.

1 Scope

The present document is based on the findings of the previous task of STF 293. These have been laid down in TR 102 395-1 [2].

For the work items outlined in above reference, which are potential Community Standards (CSs) requiring European Norms (ENs) to implement Mandate M/354, the present document will develop proposals based on the urgency of need and maturity of the candidate CSs as was previously defined.

In a next step the present document will identify the scope of work for the candidate CSs and propose time schedules for the development of standards.

Estimates on the efforts required for the individual candidate CSs will be based on the documented accomplishments achieved by various expert bodies (mainly ICAO, EUROCAE and EUROCONTROL) and also consider the status of work which is currently ongoing.

Last not least the present document will include Gantt diagrams outlining a sequence of activities for carrying out the standardization processes based on the preliminary priorities appointed by the stakeholders.

To this end it will outline the typical ETSI standardization process with its predefined schedules as this is one major parameter delimiting the potential schedules (see also annex A).

The other most critical constraint which will limit the amount of realistically achievable results is the availability of the essential experts. Therefore, the document will make an attempt to indicate which specific expertise will be required to attain the scope and the expected results of each candidate CSs.

Based on the above it will provide best practise estimates on the efforts required based on experience gained with similar standardization matters. It will also make an effort to "de-conflict" the working processes in such a way that the resources (limited number of experts) will not be overloaded but at the same time trying to ensure that the results will be available when needed.

The aim of this Work Programme is to facilitate the process of the selection of the candidate CSs which will actually enter the standardization process. This effort rests with the SES Programme authorities and comprises setting the priorities, determining the schedules and resources for the realization.

2 References

For the purposes of this Technical Report (TR), the following references apply:

[1] Terms of Reference for Specialist Task Force 293 (PJ) ERM TG25 - Mandate M/354 European Air Traffic Management Network (EATMN) Phase 1: Inventory of European specification work in progress.

[2] ETSI TR 102 395-1: "Electromagnetic Compatibility and Radio Spectrum Matters (ERM); European Air Traffic Management Network (EATMN); Part 1: Inventory of existing standards and specifications in progress".

3 Definitions and abbreviations

3.1 Definitions

European Norm (EN): document that has been ratified by one of the 3 European Standards Organizations, CEN, CENELEC or ETSI

NOTE: They are designed and created by all interested parties through a transparent, consensual process.

specification: document that defines design or performance requirements and methods of measurements that may be used by a manufacturer(s) or other related industry groups to achieve a measure of performance or commonality

NOTE: The document may be solely the responsibility of a manufacturer, an agreement with a customer or a collaboration between industrial members. The document may also be commercially available.

standard: document produced under the remit of a national or international standards institute intended to be adopted nationally as the definitive test, performance and assessment requirement for products in relation to specific applications or environments that have national or international significance

NOTE: The document must be agreed by relevant industry interested parties and organizations as part of a public consultation exercise and accepted by the National Standards Organization. To attain international standard status the document must be accepted by the government appointed Nation Standards Organizations and be publicly available.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATM	Air Traffic Management
ATS	Air Traffic Services
C-CS	Candidate Community Specification
CEN	Committee for European Normalisation
CENELEC	Committee for European Normalisation in the Electro-technical Field
CS	Community Specification
EC	European Commission
ECSS	European Cooperation for Space Standardization
EN	European Norm
ER	Essential Requirement
ESA	European Space Agency
ETSI	European Telecommunications Standardisation Institute
EU	European Union
EUROCAE	EURopean Organisation for Civil Aviation Electronics
ICAO	International Civil Aviation Organisation

ICB	Industry Consultative Board
IR	Implementing Rule
OMG	Object Management Group
SES	Single European Sky
SSC	Single Sky Committee
STF	Special Task Force (ETSI)
TOR	Terms Of Reference
TWP	Technical Working Procedures
WG	Working Group

4 Work programme

4.1 Introduction

The Work Programme is the second deliverable to be produced under Mandate M/354.
The Terms of Reference, TOR, of the special task force STF 293 define the second step of its task as follows:

"This task is to develop **proposals** for the necessary work items [candidate CSs] identified as requiring ENs to implement mandate M/354. This programme should also identify **scopes** and proposed time **schedules** for the work that can be agreed by the managing body as being realistic and **aligned with work going** on in other bodies that is to be referenced."

4.2 Proposals, scopes and schedules

We understand the first sentence to task STF 293 to devise an overview of the total efforts required provided all candidate CSs would get approved. We, therefore have outlined our findings and estimates in a draft **project plan** for all candidate CSs ("work items") requiring the production of ENs.

As the second sentence of the TOR demands, this plan shall identify the **scopes** of what needs to be performed, the resulting **schedules** which need to be realistically attainable and make reference to **work which is ongoing in** other bodies where the required know-how exists and the resources can be found. All these needs can be easier fulfilled by presenting the SES standardization process in form of a large project using the appropriate tools for project management.

Project Management describes the processes of planning, organizing, and administering of work items and resources which are needed to attain a defined goal within the constraints of time, resources and cost. The "project of SES related standardization" shows typical activities, which comprise the breaking down of the work into a structure of easily controllable packages, the calculation of the related work efforts, the allocation of resources and the communication with the team and stakeholders. Once the work is in progress the planning tool will be a great help in controlling and co-ordinating the activities, keeping the stakeholders informed by keeping the project plan up to date.

5 CS development process

5.1 Benchmarks from other industries

5.1.1 Introduction

We have reviewed the availability of relevant information from other industries and have found two areas of direct interest. Firstly, however, it is useful to discount other areas where we have been unable at this stage to find helpful information. The key to relevance is published information on timescales achieved or planned for EN or standards development on similar activities to those required for CS development for the Single European Sky.

There may be information available on the development of large-scale cross-industry standards developments of the type produced for ISO. We have not pursued this because we believe that such developments would not be as directed as our expectations for SES. Also, these standards are known to take a long time and involve extensive consultation. Information on costs and timescales is therefore unlikely to provide a useful benchmark for this exercise.

We have investigated the availability of information from ICAO and the Object Management Group (OMG). In neither case were we able to identify useful benchmarks. Such information may be available, but we were unable to find it.

The most relevant information which we have found is from the European Space Agency (ESA) and an organization entitled European Cooperation for Space Standardisation (ECSS). ESA have played a leading role in European Standardization for many years and are addressing many areas of engineering and process standards (see example) which are similar to the CS requirements for SES. They have a published work programme for 2005 which provides timescale expectations and achievements for the development of standards - from Initiation through to Steering Board approval in their terminology. A copy of the work programme is attached to the present document and the information is analysed in clause 5.1.3.

The other project which has direct relevance to the SES work is the Euro-Interlocking project which is concerned with the interoperability of railway control systems in Europe. This project publishes a list of deliverables, which is attached to the present document, but at this stage does not provide information on achieved timescales. They claim that they have completed over 30 requirements standards (Euro-Interlocking Requirements standards, Baseline 7.0) which are mainly concerned with engineering processes.

EXAMPLE: Human factors; Engineering Design model for data exchange; Space and Ground segments software engineering; and the translation of ECSS standards into ENs via CEN and CENELEC.

5.1.2 ETSI

Annex A provides an excerpt of the ETSI "Technical Working Procedures (TWP)" which govern the ETSI Standardization process and its typical time schedules.

Initiation

Starting point: existing documentation and its approval status:

- Source documents may be available from which to start drafting an ETSI EN. Organizations likely to have relevant reference documents include ICAO, EUROCONTROL, and EUROCAE.
- Source documents may be finalized or only in draft status. Source documents may also be in the process of being modified during the production of the ETSI EN, potentially causing problems with respect to the constant need to update the ETSI standard with the changes made to the source documents.

Note that for the ETSI process to work successfully, it is essential that the "Conception" (see annex A) process is well founded, particularly with respect to the Scope of the proposed standard.

Production

ETSI standards can be produced by a Specialist Task Force or STF, which are funded through ETSI, with funding provided, for example, by the EC, which may be through an EC mandate.

Alternatively, standards can be produced by an ETSI technical body with funding provided by a member or members of the technical body.

Consultation

Consultation occurs at various phases:

- If an STF is set up:
  - this will report at various intervals to an STF Steering Group;
  - the STF Steering Group will report to the ETSI Technical Body Sub-Group; in this case it is ERM TG25 Aeronautical.
- If not an STF, the group working on the standard, discusses with the ETSI Technical Body Sub-Group.

- The ETSI Technical Body sub-group, in this case ERM TG25, reports to the ETSI Technical Body, in this case ERM, at an interval of approximately twice per year.
- Consultation with bodies outside ETSI may occur during the drafting process, but will always occur in the approval process once the standard has been approved by the ETSI Technical Body.

Approval

Approval of ETSI standards takes place at the following levels:

- at the STF Steering Group, if one has been set up in support of an STF;
- at the ETSI Technical Body Sub-Group, in this case ERM TG25 Aeronautical;
- at the ETSI Technical Body;
- at Public Enquiry - the standards are distributed to nominated organizations in member states of the EU for approval;
- following Public Enquiry the standards must be modified as necessary by the ETSI Technical Body Sub-Group and approved by that group; then they must be approved again by the ETSI Technical Body;
- at National Vote - following Public Enquiry and final approval by the ETSI Technical Body the standards are sent to member states for voting.

Publication

Following a successful national vote, the documents are published free-of-charge on the ETSI website. The documents are finally published in the Official Journal of the EU.

Timescales

The timescales required for EN production vary, however an example of the timescales allocated by ETSI for production of one EN, for an EN that was created from EUROCAE and ICAO source material, is given in table 1.

Table 1

STATUS	Phase	Target
0	Creation of WI by WG/TB	2003-06-18
0 a	TB adoption of WI	2003-06-18
1	Start of work	2003-06-19
7	WG approval	2004-05-25
8	TB approval	2004-06-25
8 A	Draft receipt by ETSI Secretariat	2004-07-09
9 B	Start of Public Enquiry	2004-09-08
9 C	End of Public Enquiry	2005-01-07
9 D	Start of TB review of PE comments	2005-01-07
9 Da	TB approval	2005-03-18
9 E	Draft receipt by ETSI Secretariat	2005-03-25
10 F	Start of Vote	2005-05-23
10 G	End of Vote	2005-07-22
11	Vote result determination (adopted)	2005-07-22
12	Publication	2005-08-05
12 V	Delivery to the EC	2005-10-27
12 W	Citation in the OJ	2006-01-19

A table such as the one above is provided for each EN on the ETSI website.

Effort required

For the above example, approximately 250 man-days of expert effort were utilized in the production of the EN. In addition, it is estimated that approximately 20 days of ETSI staff effort were spent.

5.1.3 CEN/CENELEC

Drafting

There are several ways to start harmonizing a standard:

- An initial document comes from the International Electrotechnical Commission (80 % of cases).
- A document of European origin arises in one of CENELEC's own technical bodies.
- A first draft of a European document comes from one of CENELEC's Cooperating partners.
- A fourth source is the National Committees themselves. The NCs have agreed to notify CENELEC when they are planning any new work. CENELEC can, if it wants, take on this work.

Production

Public Enquiry

When a suitable draft is available, it is submitted to the NCs for CENELEC enquiry, a procedure which lasts 6 months. A second inquiry might be decided (between 2 to 4 additional months). Then the comments received are studied by the technical body working on the draft and incorporated into the document, where justified, before a final draft is sent out for vote.

Voting

The vote usually takes 3 months. At this stage the members have weighted votes corresponding to the size of the country they represent. For instance, the larger countries like France, Germany, Italy and the UK have 10 votes each while the smaller ones have one or two weighted votes.

There are two requirements for a standard to be approved. The vote must yield a majority of NCs in favour of the document and at least 71 % of the weighted votes cast are positive.

5.1.4 ECSS

ECSS (European Cooperation for Space Standardization) publishes a work programme on the development of standards for industry (http://www.ecss.nl/).

The ECSS initiative has a Steering Board which oversees the production of three types of standard:

- engineering standards;
- product assurance standards;
- management standards.

There is also a process for the transfer of ECSS standards to EN standards via CEN and CENELEC.

NOTE: No metrics are given in the work programme for this process, but it may be that good feedback on this issue could be gained from a direct discussion with a representative of the Steering Board.

The ECSS process is different in detail from the ETSI process. There is an Initiation process for ECSS which probably equates most closely with the Conception process for ETSI. It appears that, for the ECSS, there is no requirement for an Initiation phase for product assurance and management standards. The ECSS process then covers Drafting and Review prior to Steering Board Approval. By comparison, the ETSI process covers Drafting, Adoption and a Two-Step approval process.

At this stage, we do not have any further information to assist with a detailed comparison of these processes. However, it should be noted that the process of Steering Board Approval for ECSS would appear to be much simpler than the parallel process for SES.

An overall assessment of the ECSS data is provided in table 2. Note that the work programme appears to contain multiple part development of what are presumably some large-scale standards (e.g. E-30 Mechanical). Without a discussion with ECSS we do not have the data to analyse the significance of these.

Table 2

Process	Timescales
Initiation (only required for Engineering Standards)	5 months
Drafting	12 months to 15 months
Review	6 months to 9 months
Steering Board Approval	4 months
EN process via CEN and CENELEC	No data
End to end process (excluding EN step)	27 months to 33 months

It is proposed that the ECSS data can form one viewpoint on the likely timescale requirements for CS development. The ETSI process guidelines for a Two-step approval process identify a NSO Public Enquiry process with a duration of 120 days and a NSO Voting process with a duration of 60 days. If these are calendar days, then the total expected timescale for the approval procedure is 6 months, compared with 4 months for ECSS Steering Board approval.

5.1.5 Euro-Interlocking

The Euro-Interlocking project has been set up to create standards for railway interlocking and signalling systems in Europe. They publish information on the process and work programme for the development of standards on their web site (http://www.euro-interlocking.org/).

5.1.6 Void

5.1.7 EUROCAE

The document development process applies to all EUROCAE document types as follows:

- The drafts of table of contents and clauses are written by WG members. The draft documents are commented during WG meetings (iterative process). The final version is agreed by all WG members.
- Final Review and Comment (FRAC).
- Final approval by the EUROCAE Council.

5.1.8 Comparison

The ETSI process emphasizes a Get It Right First Time approach and the use of formalized languages such as SDL and MSC. The importance of these issues comes when companies and organizations apply the standards to practical implementation. At this stage, poor specification or ambiguity in the standards could be very costly.

It is noticeable that other projects like ECSS and Euro-Interlocking have placed substantial emphasis on the engineering process. The ECSS standards for example contain substantial sections for the development of product assurance standards and management processes. The Euro-Interlocking project states that they have produced approximately 30 requirements standards to support European Railways in the procurement, implementation and acceptance of new interlocking systems. On inspection, these appear to be largely concerned with process.

The Euro-Interlocking project has also mandated the use of a semi-formal requirements specification language (EIFFRA) and the use of a UML work-bench product called ARTISAN.

In order to calibrate the ECSS data it would be most helpful to gain feedback from ETSI, EUROCAE and EUROCONTROL on achieved timescales on comparable developments.

5.2 Standardization process for CSs

5.2.1 Initiation

This is the responsibility of the EC to initiate the development of a CS, once it is considered that the conditions for a CS are met e.g.:

- Added value in terms of interoperability.
- Subject should be mature.
- Need for validated technical concepts.
- Industry should be ready to provide resources.

Timescales

The initiation phase is excluded from the overall standardization process timescale.

Table 3

Initiation Process	Timescale
Concept development	Not included

5.2.2 Production

The effort required for the production of the CS will depend on the availability and the relevance of existing material in relation with the CS. 3 processes are identified :

- The "conversion" process where the existing material is mature, stable and complete enough to be turned out as a European Standard with no additional technical work. It is a matter of document presentation, format and identification.
- The "consolidation" process where the existing material require additional technical effort by experts.
- The "from scratch" process where no material is available to start with.

5.2.2.1 Conversion process

The source documents is considered technically up-to-date and complete. The Inventory document [1] has identified CSs where EUROCAE or EUROCONTROL documents are already produced and fall into this category.

The preferred approach in that case is to keep the source document untouched and add a cover page produced by the ESO to identify the European standard and referring to the source documents. This process allows to ensure the integrity of the resulting document since the source documents are not modified. It also make easier the configuration management in time since a specific version of the ESO standard is associated without ambiguity to a specific version of the source document.

However, if this approach (cover page) would be pursued the ESOs would have to accept that perhaps not all of their standard production rules might be followed. This conversion process consists in modifying the structure and the style of the source documents to meet the publication rules of the ESO.

Structure

The structure of the document is defined by the standardization body secretariat. This may be completely different from that of the source documents. Conversion to the EN structure will have to be carried out, which may require deletion of unnecessary sections and creation of new sections.

Style

The style of the document is again defined in detail by the standardization secretariat, and is likely to differ from the style of the source documents. An document template has to be used and adhered to without exception.

Timescales

Even if the contents is not intended to be modified, changes can be introduced maliciously during the conversion process. A validation phase by technical experts is therefore required to ensure that the conversion has been transparently performed.

In case the "cover page" approach is followed, the timescales only include steps related to the acceptance of the material. In case a conversion process is required, 2 months are added.

Table 4

Conversion Process	Timescale
Drafting	Not included
Editorial Processing by ETSI ("ECTL document transposition" and "cover page")	Not included
Editorial Processing by ETSI ("conversion")	4 months

5.2.2.2 Consolidation process

A consolidation activity is required when the source document cannot be used as such for an EN. Modifications to the technical contents are therefore required.

Technical information

Sets of requirements may or may not be available, or may be available but not in the required format. In production of an EN, all the relevant requirements have to be extracted and put in the EN, while leaving out all the requirements that are not applicable. In the case of an air-ground system, for example, the source documentation may contain general requirements applicable to both the ground and airborne system as a whole.

Test cases may or may not be available. Where these are available, the relevant test cases have to extracted, while leaving out all any test cases that are not appropriate to the EN.

The technical content required in the EN may or may not reflect the same functionality as described in the source documentation. Some differences may arise as follows:

- Errors or unclear functionality in the source documentation may require correction in the EN.
- Additional requirements not defined in the source documentation, may be required in the EN.
- On some aspects of technical functionality the drafting group may decide on different requirements for functionality compared to the source documentation, with the aim of improving system operation.

Timescales

In clause 5.1.1, a description of the process of developing an ETSI EN was given, with particular emphasis on production in the case of there being existing relevant technical standards. An example of the timescales involved in such a process was given below.

The timescales for that example can be summarized as follows.

Table 5

Consolidation Process	Timescale
Drafting	10 months
Editorial Processing by ETSI	2 months

5.2.2.3 "From Scratch" process

This process apply for new technical items that are considered as essential contributors to the Interoperability and require a urgent standardization work to allow systems implementation and deployment, but for which no material is available yet. The ESO will be tasked to set up a team of experts to produce "from scratch" the new standard. (In cases where article 4 (1) a of the Interoperability Regulation applies, the CS may be performed by Eurocontrol in co-operation with Eurocae.)

It is possible, depending on the respective views of ETSI and EUROCAE, that an alternative development process may be applied to the production of some CSs in EN format as required by ETSI. This may involve the development of appropriate documents by other bodies, followed by conversion and update to ETSI format. If this is the case, it is assumed that ETSI will have little control over the timescale for the production of the original document by third parties.

No detailed data can be provided on this process as it will be very dependent on the nature and scope of the relevant standard, together with the availability of relevant experts and an appropriate work plan.

We could consider 3 level of complexity for the development of a new standard.

Table 6

"From Scratch" Process	Timescale
Drafting (Simple)	12 months
Drafting (Medium)	24 months
Drafting (Difficult)	36 months
Editorial Processing by ETSI	2 months

5.3 Void

5.3.1 Void

5.3.2 Void

5.3.3 Consultation

The consultation process is based on the ETSI procedure.

For documents transposed directly from EUROCONTROL document, there is no need for such a process.

Table 7

Public Enquiry	
Other documents	4 months

5.3.4 Approval

The approval process is based on the ETSI procedure.

For documents transposed directly from EUROCONTROL document, there is no need for such a process.

Table 8

Technical Body approval	2 months
Processing by ESO	2 months
Voting	2 months

5.3.5 Publication

The approval process is based on the ETSI procedure.

Table 9

Publication	0,5 month
Delivery to EC	2,5 months
Citation in OJ	3 months

5.3.6 Scope of the standardization work

By comparison, there has not yet been much attention given to methods and techniques for the development of the Single European Sky Community Specifications.

This raises a key risk in the programme that:

- The drafters of CS requirements will find it difficult to produce clear and unambiguous specifications (i.e. how do they get it right first time?).
- The CS documents themselves will be difficult to use.
- The SES programme will be subject to delays and cost overruns.

Issues that should be considered include:

- management methods;
- specification methods;
- specification language;
- interaction with IR specifications;
- system architecture (already covered in one of the candidate CS proposals);
- toolset support.

5.4 Timescale estimates

On the basis of the above examples, the complete EN process from the start of drafting to first publication would be of the order provided in table 10.

Table 10

Process	Transposition of ECTLR doc (4.1b path)	"Cover Page"	Conversion	Consolidation	From Scratch		
	Not relevant for ENs				S	M	D
Concept development	-	-	-	-	-	-	-
Drafting	-	-	-	10 months	12 months	24 months	36 months
Editorial Processing	-	-	4 months	2 months	2 months	2 months	2 months
Public Enquiry	-	4 months	4 months	4 months	4 months	4 months	4 months
Technical Body Approval	-	2 months	2 months	2 months	2 months	2 months	2 months
Processing by ESO	-	2 months	2 months	2 months	2 months	2 months	2 months
Voting	-	2 months	2 months	2 months	2 months	2 months	2 months
Publication	0,5 month	0,5 month	0,5 month	0,5 month	0,5 month	0,5 month	0,5 month
Delivery to EC	2,5 months	2,5 months	2,5 months	2,5 months	2,5 months	2,5 months	2,5 months
Citation in OJ	3 months	3 months	3 months	3 months	3 months	3 months	3 months
Total	6 months	16 months	20 months	28 months	30 months	42 months	54 months

It would be helpful if this data could be compared with similar ECSS data on EN development.

6.0 The proposed realization of the work programme

6.1 Introduction

6.1.1 CS grouping

The candidate Community Specifications (CSs) have been categorized to be dealt with in the following sequence:

- CSs to be developed from March 2006 onwards (clause 5) (see note 1).
- CSs to be developed from 2007 onwards (clause 6).
- CSs whose development should start 2008 and later (especially taking into account the outcome of the SESAME definition phase) (clause 7).
- CSs which could be needed from a systematic viewpoint, related to a group of systems for which there usually exists a broad current experience to install and operate such systems based on international standards and national regulatory approval AND where are serious doubts that a development of CSs is economically reasonable e.g. seeing the very limited numbers of new installations expected (sometimes even phase out strategies are under consideration) (clause 8).

NOTE 1: Advice given in the open meeting on 7/8 September 05 at ETSI HQ has been taken into account.

NOTE 2: The numbering scheme used in clauses 5 to 8 is defined as follows:1st digit: clause number to indicate Group/timeframe of Community Specification as given above.

6.1.2 Maturity assessment

Maturity of a CS is in the true sense of the term only achieved once the work item has been finally agreed by the stakeholders.

In the context of the present document maturity means that there exists an obvious requirement to achieve a realistic benefit and the objective and technical scope of a future CS have been sufficiently defined. Research has been performed or initial deployment of operational systems was made and the expertise needed is apparent so that a process of standardization can be **initiated** by setting up a work plan and an expert group.

The maturity is set to "High" in the following when it was found that:

- requirement, objective, and scope of the work item are clearly defined;
- either standards or specifications already exist (e.g. issued by ICAO, EUROCAE, EUROCONTROL) which would need to be adopted to match the ETSI requirements, (as some standards e.g. do not include adequate test procedures and criteria); or
- sufficient work has been done by other approved organizations which will significantly reduce the work effort needed to complete the ETSI standardization process.

The maturity is set to "Medium" in the following when it was found that:

- requirements, objective, and scope of the work item are clearly defined;
- elementary work has been done on this work item but the results are neither complete nor corresponding to the ETSI requirements.

The maturity was set tow "Low" if:

- requirements are stated but objective and scope of the work item need additional co-ordination to arrive at agreed definitions;
- only basic work had been done, in some cases at various places, but sufficient results were found which would enable an expert group to converge the results and to continue the process.

6.1.3 Expertise assessment

When a CS is requested by one or more stakeholders of the aviation community one may assume that some initial research has been done in this area to define the need for and the objective of the new candidate CS. In some cases expert groups may have spent considerable work on the subject. As a result in most cases it is very clear what kind of expertise and special know-how is needed to perform the related work.

6.1.4 Priority assessment

An example of prioritization is given by ETSI in their guidance material under "market assessment". The ETSI process identifies the following success factors for a standard:

- **A market demand**, e.g. a defined need to specify an interface being of assistance to the implementation of the SES Programme.
- Consensus among manufacturers, operators and users.
- Sufficient technical quality to initiate standardization work and to achieve its final objectives.

What does the market want? First of all there are various expectations for IR development within SES.

In many areas conceptual development will be required before the industry is ready to finalize proposals for IRs and CSs. This is particularly true, of the requirements for data processing and integration across different control centres in Europe.

In the context of the present document a high priority of a work item essentially means that is to be started as soon as possible. So the priorities assigned by the SES managing body will determine the sequence of launching the related standardization efforts.

The priority assigned to a C-CS thus depends entirely on the "user community", i.e. in the case at hand on the aviation industry or the management of national or multinational system developments. As an example the managers tasked to perform the SESAME definition phase may voice their need to apply a certain standard at a given point in time. A CS being ready in time (or at least nearing completion) offers the obvious advantage, to avoid a lengthy discussions with industry (or between industrial partners involved) during the design and system specification efforts.

6.1.5 Effort assessment

The assessment of the efforts involved in drafting a C-CS and steering it through the approval processes is based on experiences gained at ETSI, EUROCAE and EUROCONTROL in similar work. Also the amount of previously spent efforts and available documentation were considered wherever possible.

6.1.6 Timescale assessment

To assess a time scale was most difficult. Once the effort and expertise have been defined, the timescale depend mainly on the availability of the relevant experts.

In the following tables and graphs it is assumed that a pool of experts will be created in order to distribute the work load on as many shoulders a s possible.
Thus the associated tables show figures which might be described as "equivalents of experts working primarily on the standard" which in reality are made available by applying the concept of an expert pool.

These numbers, on which all estimates delineated in the present document are based, represent the **theoretical** delivered efforts of skilled experts available for the given task, i.e. **as a maximum** 200 work days per year, 8 hours each day.

This does not mean that all listed experts are assumed to be continuously fully engaged in the particular work packages. Most of the time the majority of the experts are only employed during fractions of their normal schedules.

After discussions mainly with Eurocae experts the examples of the execution of the work programme shown in the present document were revised, now showing a much more realistic pattern, based on the recorded experiences of similar work in the related Eurocae working groups.

Ample details on the actual work loads can be obtained by making use of the planning tool MS Project with which these parameter charts were produced.

6.2 Group I community specifications

The following table shows the candidate Community Specifications, CS, which are considered mature or of instant need and are to be processed starting immediately. They were entered into Group I by the stakeholders and are listed as shown in clause 8.2.

The reasoning leading to this selection was first of all that all these work items are essential to advance the progress of the implementation of SES programme. On most of these CSs much work had been already spent so that the required standardization may be achieved fairly soon.

No unanimous support was achieved related to the grouping of the candidate CS on how to build, verify and validate an overall Concept of Operations. Although such a CS was considered to be of fundamental importance for the success of SES the majority of the stakeholders proposed to move the starting point of the work on this CS to Group III. This means it will be started after essential operational, organizational and technical design decisions in the SESAME project will have been made.

In the view e.g. of the airspace users, the airport operators, and several other stakeholders this CS has a generic nature and thus will not pre-empt the necessary design decisions. Thus the argued that this CS needs to be completed as soon as possible because with this CS the stakeholder community will have a benchmark at hand with which the conformance to the Essential Requirements of the SESAME Master Plan can be measured. Also the joint work on this CSs will help to create the needed common understanding of how SES will step by step revolutionize the paradigms of the stakeholders' working environments.

This mutual mindset of the stakeholders will be indispensable when mandatory decisions associated with the systems engineering activities are at stake. These CSs will facilitate requirements analysis to bring about a compliant and accepted system design. This, in turn, will ease and enhance systems development and implementation.

6.2.1 Maturity

A CS is mature to be made an EN when the responsible Technical Body is convinced that the documentation is complete, has reached sufficient precision, and is intelligible for the user community. Thus the achieved maturity of a work item at the initiation of the standardization process may significantly influence the drafting effort.

Table 11 depicts the maturity of the first category work items, showing the status of maturity which the individual candidate CSs have achieved through previous work of experts, (mainly EUROCAE and EUROCONTROL) and which were documented in TR 102 395-1 [2].

Table 11

Community Specifications (work starts by March 2006)	
General (see note)	**Maturity**
Software assurance levels (SWAL)	H
Related Activities: EUROCAE High Transposition of ED109 proposed	H
Airport Collaborative Decision Making (A-CDM)	H
Related Activities (see Inventory Report)	
Airspace Management	
Flexible use of Airspace	H
Related Activities (see Inventory Report)	
Airspace Design	H
Related Activities (see Inventory Report)	
Air Traffic Flow Management	
Updated IFPS Users manual	H
Related Activities (see Inventory Report)	
Data Exchange Formats	H
Related Activities: EUROCAE and Eurocontrol material for conversion	H
Air Traffic Services (ATS)	
On-Line Data Interchange (OLDI)	H
Related Activities (see Inventory Report)	
CS on Interoperability of Flight Data Processing (ATC - ATC)	H
Rel. Act.: EUROCAE WG 59 (after completion a transposition is proposed)	H
Advanced SMGCS (Level 1 & 2)	H
Related Activities: EUROCAE material on multilateration available	H
Communication	
Navigation	
Surveillance	
Aeronautical Information Services (AIS)	
Use of Meteorological Information	
NOTE: C-CS potentially to be produced by Eurocontrol are shown in Italics.	

6.2.2 Expertise required

Table 12 gives an overview of the specialized expertise required to perform the standardization processes. The abbreviations are explained in table 13.

The individual efforts (percentages of contributions) can be found (and changed) by making use of the planning tool MS Project.

For more information on the resources management see also clause 7.

Table 12

Community Specifications (work to start in early 2006)	Expertise required	
General (see note)	**Leading**	**Supporting**
Software assurance levels (SWAL)	**SE;CG;SA;OAM;NA;**	**AIS;OAL;OAP;CA**
Airport Collaborative Decision Making	**OAP;OAL;OAT;OAD**	**PAL;PGA;OTF**
Airspace Management		
Flexible use of Airspace	***OTF;OAS;OAM;OAL;OM***	***PAL;PGA;CA***
Airspace Design	***OTF;OAS;OAM;;OAL;OM***	***SE; OAD***
Air Traffic Flow Management		
Updated IFPS Users manual	***OTF;AIS;OAL;***	***OAT;OAP***
Data Exchange Formats	***SE;SA;AIS;OTF;OAM;OM***	***OAL;OAP***
Air Traffic Services (ATS)		
On-Line Data Interchange (OLDI)	***OAM;OAD;OAT***	
Interop. of Flight Data Process. (ATC-ATC)	**OAM; OTF;CA**	**SE;OAD**
Advanced SMGCS (Level 1 & 2)	**OAP;OAL;SA;NG;NA;CA**	**SE;**
Surveillance		
Surveillance services using ADS-B	**SA;SE;CG;CA**	**OAM**
Communication		
Navigation		
Surveillance		
Aeronautical Information Services (AIS)		
Use of Meteorological Information		
NOTE: C-CS potentially to be produced by Eurocontrol are shown in Italics.		

6.2.2.1 Specialist expertise

Table 13

		Maximum (relative) numbers required		
Expert Categories	**Abbrev.**	**Group I**	**Group II**	**Group III**
Systems Engineers	**SE**	**8**	**10**	**10**
Comms Experts G/Ground	**CG**	**5**	**6**	**4**
Comms Experts Ground/Air	**CA**	**3**	**5**	**4**
Navigation Experts Ground	**NG**	**4**	**1**	**3**
Navigation Experts Air	**NA**	**1**	**1**	**2**
Surveillance Experts ADS-B	**SA**	**1**	**2**	**2**
Surveillance Experts Radar	**SR**	**1**	**2**	**1**
Surveillance Experts Mode S	**SSR**	**2**	**2**	**2**
AIS Experts	**AIS**	**3**	**2**	**2**
Ops Experts ATFM	**OTF**	**2**	**3**	**3**
Ops Experts ASM	**OAS**	**2**	**3**	**3**
Ops Experts ATM	**OAM**	**5**	**7**	**6**
Ops Experts ATS Twr	**OAT**	**1**	**2**	**1**
Ops Experts ATS App/Dep	**OAD**	**3**	**3**	**3**
Ops Experts Airline Ops	**OAL**	**3**	**4**	**3**
Ops Experts Airport Ops	**OAP**	**3**	**3**	**2**
Ops Experts Military	**OM**	**1**	**2**	**2**
Pilots AL	**PAL**	**1**	**2**	**2**
Pilots GA	**PGA**	**1**	**1**	**1**
Met Experts	**MET**	**1**	**1**	**1**

6.2.3 Priorities

With the planning tool MS Project, each work item is give a priority. As these priorities have a direct influence on the Work Programme they can be used to fine tune the plan. The priority values assigned as they determine, together with the availability of the required experts, the starting sequence of the standardization processes and thus the delivery dates of the results.

In the MS Project Gantt charts some C-CS start in parallel owing to the fact that a just sufficient number of resources (experts) are assumed to be available. If these numbers are reduced the standardization processes need to be recalculated and reorganized. With the help of MS Project a "sensitivity study" can be demonstrated on-line showing the effects of a lack of experts very drastically. (See also clause 7.4.)

6.2.4 Efforts required

Table 14 provides an overview of the estimated efforts in man days and man months (20 man days in a man month, 200 man days in one man year). Note that the efforts calculated by MS Project display a misleading level of precision as all values are based on rough estimates. They were not rounded though, to keep the figures in line with the data shown by the management tool.

Table 14

Community Specifications (work starts by March 2006)	**Efforts required Man Days**
General (see note)	**1 656**
Software Assurance Levels (SWAL)	**256**
Airport Collaborative Decision Making	**1 400**
Airspace Management	**4 704**
Flexible Use of Airspace	**2 100**
Airspace Design	**2604**
Air Traffic Flow Management	**1 036**
Updated IFPS Users manual	**496**
Data Exchange Formats	**540**
Air Traffic Services (ATS)	**3 140**
On-Line Data Interchange (OLDI)	**512**
Interop. of Flight Data Processing (ATC-ATC)	**1 260**
Advanced SMGCS (Level 1 & 2)	**1 368**
Communication	
Navigation	
Surveillance	
Aeronautical Information Services (AIS)	
Use of Meteorological Information	
Total Group I	**10 536 t**
NOTE: C-CS potentially to be produced by Eurocontrol are shown in Italics.	

6.2.5 Timescales

Table 15 shows the possible start and delivery dates.

The individual processes may vary in the drafting periods due to previous results achieved. The durations of the approval processes are fairly rigid.

Table 15

Community Specifications (work to start in early 2006)	**Time schedule**	
General (see note)	**Start**	**End**
Software assurance levels (SWAL)	07.03.06	25.05.09
Airport Collaborative Decision Making	27.06.06	18.08.08
Airspace Management	01.06.06	21.08.09
Flexible use of Airspace	*05.06.06*	*21.08.09*
Airspace Design	*01.06.06*	*19.08.09*
Air Traffic Flow Management	27.02.06	28.08.07
Updated IFPS Users manual	*27.02.06*	*18.05.07*
Data Exchange Formats	*27.09.06*	*28.08.07*
Air Traffic Services (ATS)	07.03.06	13.01.09
On-Line Data Interchange (OLDI)	*27.12.06*	*18.03.08*
Interop. of Flight Data Process. (ATC-ATC)	27.09.06	13.01.09
Advanced SMGCS (Level 1 & 2)	07.03.06	07.01.08
Communication		
Navigation		
Surveillance		
Aeronautical Information Services (AIS)		
Use of Meteorological Information		
NOTE: C-CS potentially to be produced by Eurocontrol are shown in Italics.		

6.3 Group II candidate community specifications

The maturity of the second group work items are shown in the next table.

6.3.1 Maturity

Table 16 depicts the status of maturity which the individual candidate CSs have achieved through previous work (mainly by EUROCAE and EUROCONTROL).

Table 16

Community Specifications (work to start in 2007)	Maturity achieved
General ATM	
Cross Domain Information Sharing	**M**
UAV Systems Operation	**M**
Airspace Management	
Air Trafic Flow Management	
Air Traffic Services (ATS)	
Link 1 DL over ATN/VDLM2 in Continental Airspace	**H**
DL Services over FANS-1/A in ATN Continental Airspace	**H**
DL Services over ACARS in continental airspace	**H**
Open ATC system architecture model	**M**
Advanced SMGC Systems (Levels 3 and higher)	**L**
Arrival management	**M**
Departure management	**L**
Surveillance Performance	**M**
Communication	
ATS Message Handling System	**L**
VoIP (ground-ground) for use in EATMN	**M**
Telephone used for ATC purposes in the EATMN	**H**
Navigation	
Space Based Augmentation Systems	**H**
Galileo, GNSS	**H**
Surveillance	
Ground-based primary radar equipment	**H**
Multilateration Equipment	**M**
Surveillance Data Exchange	**H**
Surveillance Services using ADS-B	**H**
Aeronautical Information Services (AIS)	
AIS - Generic data processing & principles	**H**
Integrity of Aeronautical Information - Data Origination	**H**
Integrity of Aeronautical Information - Data Publication	**H**
Use of Meteorological Information	
Systems and Procedures for Meteorological Information	**M**

6.3.2 Expertise required

Table 17 gives an overview of the specialized expertise required to perform the standardization processes. The abbreviations are explained in table 18.

Table 17

Community Specifications (work to start in 2007)	Expertise required	
	Leading	**Support**
General ATM		
Cross Domain Information Sharing	SE; OTF;OAM;OAL;	CG;CA;AIS;OAP; OAS
UAV Systems Operation	SE; OAS;OAM; OM	OTF; OAP
Airspace Management		
Air Trafic Flow Management		
Air Traffic Services (ATS)		
Link Baseline 1 DL Services over ATN/VDLM2	CG;CA;OAL;	PAL;SE
DL over FANS-1/A in ATN Continental Airspace	CG;CA;OAL;	PAL;SE;OAT
DL over ACARS in continental airspace	CG;CA;	OAL;PAL;SE
Open ATC system architecture model	SE;OAM;CG;SA;AIS;OTF; ;CA	OAS;OAD;PAL;PGA
Advanced SMGC Systems (Levels 3 and higher)	OAP;OAL;OAT;	PAL;PGA
Arrival management	OAD;OAL;OAP;OAM;OAT;	SE
Departure management	OAD;OAL;OAP;OAM;OAT;	SE
Surveillance Performance	SA;CG;CA;SR;SSR	
Communication		
ATS Message Handling System	SE;CG;CA	
VoIP (ground-ground) for use in EATMN	SE;CG;CA	
Telephone used for ATC purposes in the EATMN	CG	
Navigation		
Space Based Augmentation Systems	SE;NG;NA	
Galileo, GNSS	SE;NA;NG	
Surveillance		
Ground-based primary radar equipment	SR	
Multilateration Equipment	CG;CA;OAM;SSR	SE;
Surveillance Data Exchange	SA;SR;SSR;SE;	CG;CA;OAM;OM
Surveillance Services using ADS-B	SA;SE;CG;CA	OAM
Aeronautical Information Services (AIS)		
AIS - Generic data processing & principles	AIS	
Integrity of AIS - Data Origination	AIS	
Integrity of AIS - Data Publication	AIS	
Use of Meteorological Information		
Systems and Procedures for Meteorological Information	MET;PGA; OAL;OAP	OTF;PAL

6.3.2.1 Specialist expertise

Table 18

		Maximum (relative) numbers required		
Expert Categories	**Abbrev.**	**Group I**	**Group II**	**Group III**
Systems Engineers	**SE**	**8**	**10**	**10**
Comms Experts G/Ground	**CG**	**5**	**6**	**4**
Comms Experts Ground/Air	**CA**	**3**	**5**	**4**
Navigation Experts Ground	**NG**	**4**	**1**	**3**
Navigation Experts Air	**NA**	**1**	**1**	**2**
Surveillance Experts ADS-B	**SA**	**1**	**2**	**2**
Surveillance Experts Radar	**SR**	**1**	**2**	**1**
Surveillance Experts Mode S	**SSR**	**2**	**2**	**2**
AIS Experts	**AIS**	**3**	**2**	**2**
Ops Experts ATFM	**OTF**	**2**	**3**	**3**
Ops Experts ASM	**OAS**	**2**	**3**	**3**
Ops Experts ATM	**OAM**	**5**	**7**	**6**
Ops Experts ATS Twr	**OAT**	**1**	**2**	**1**
Ops Experts ATS App/Dep	**OAD**	**3**	**3**	**3**
Ops Experts Airline Ops	**OAL**	**3**	**4**	**3**
Ops Experts Airport Ops	**OAP**	**3**	**3**	**2**
Ops Experts Military	**OM**	**1**	**2**	**2**
Pilots AL	**PAL**	**1**	**2**	**2**
Pilots GA	**PGA**	**1**	**1**	**1**
Met Experts	**MET**	**1**	**1**	**1**

6.3.3 Void

6.3.4 Efforts required

Table 19 provides an overview of the estimated efforts in man days and man months (20 man days in a man month, 200 man days in one man year). More detail is available by making use of the tool MS Project.

Table 19

Community Specifications (work to start in 2007)	Efforts MD
General ATM	**1 980 t**
Cross Domain Information Sharing	1 980 t
Airspace Management	**0t**
Air Trafic Flow Management	**0t**
Air Traffic Services (ATS)	**9 461,6**
Link 1 DL over ATN/VDLM2 in Continental Airspace	630,4
DL over FANS-1/A in ATN Continental Airspace	790,4
DL over ACARS in continental airspace	636,8
Open ATC system architecture model	1 770
Advanced SMGC Systems (Levels 3 and higher)	1 260
Arrival management	1 380
Departure management	1 974
Surveillance Performance	1 020
Communication	**1 720**
ATS Message Handling System	640
VoIP (ground-ground) for use in EATMN	600
Telephone used for ATC purposes in the EATMN	480
Navigation	**1 440**
Space Based Augmentation Systems	840
Galileo, GNSS	600
Surveillance	**3 066,8**
Ground-based primary radar equipment	320
Multilateration Equipment	1 545,6
Surveillance Data Exchange	547,2
Surveillance Services using ADS-B	654
Aeronautical Information Services (AIS)	**780**
AIS - Generic data processing & principles	260
Integrity of Aeronautical Information - Data Origination	260
Integrity of Aeronautical Information - Data Publication	260
Use of Meteorological Information	**756**
Systems and Procedures for Meteorological Information	756
Total Group II	**19 204,4 t**

6.3.5 Timescale

Table 20 shows the possible start dates of Group II with the resulting delivery dates. The individual processes may be shorter in the drafting periods if previous work will continue between now and the starting dates. The availability of experts remains the largest risk in these estimates. (More under clause 4.4.)

Table 20

Candidate CS	Scheduling	
	Start	**End**
General ATM	15.01.07	25.06.10
Cross Domain Information Sharing	15.01.07	25.06.10
UAV Systems Operation	15.01.07	28.05.10
Airspace Management		
Air Trafic Flow Management		
Air Traffic Services (ATS)	15.01.07	10.11.11
Link 1 DL over ATN/VDLM2 in continental airspace	15.01.07	04.04.08
FANS-1/A in ATN continental airspace	03.12.07	20.02.09
DL over ACARS in continental airspace	15.01.07	04.04.08
Open ATC system architecture model	19.12.07	06.04.10
Advanced SMGC Systems (Levels 3 and higher)	31.12.07	18.03.11
Arrival management	01.06.07	17.09.09
Departure management	22.08.08	10.11.11
Surveillance Performance	01.03.07	17.06.09
Communication	15.01.07	19.03.10
ATS Message Handling System	15.01.07	04.04.08
VoIP (ground-ground)	03.12.07	19.03.10
Telephone used for ATC purposes in the EATMN	15.01.07	04.04.08
Navigation	15.01.07	05.01.12
Space Based Augmentation Systems	15.01.07	02.04.10
Galileo, GNSS	18.09.09	05.01.12
Surveillance	15.01.07	02.06.10
Ground-based primary radar equipment	15.12.07	06.03.09
Multilateration Equipment	15.03.07	02.06.10
Surveillance Performance	07.04.08	26.06.09
Surveillance Services using ADS-B	15.01.07	01.05.09
Aeronautical Information Services (AIS)	03.03.07	26.02.10
AIS - Generic data processing & principles	03.03.07	29.02.08
Integrity of Aeronautical Information - Data Origination	03.03.08	27.02.09
Integrity of Aeronautical Information - Data Publication	02.03.09	26.02.10
Use of Meteorological Information	05.03.07	19.06.09
Systems and Procedures for Meteorological Information	05.03.07	19.06.09

6.4 Group III candidate community specifications

These C-CSs relate to work items which either have not yet achieved significant maturity or are future issues for which there is no urgent need in the medium time frame.

6.4.1 Maturity

Table 21 depicts the maturity of the Group III. Although not mature today table 21 depicts the status of maturity which the individual candidate CSs may have achieved through previous standardization work and the SESAME system design.

Table 21

Community Specifications (work to start 2008 or later)	Maturity achieved
General ATM	
Reference Concept of Operation	**L**
UAV Systems Operation	**M**
Airspace Management	
Air Traffic Flow Management	
Advanced Data Exchange Formats	**L**
European Air Traffic Flow Management (CFMU/IFPS (TACT and CADF, ETFMS))	**L**
Air Traffic Services (ATS)	
Interfaces between Controller Working Positions and Data Processing	**M**
Interface with Flight Data Operator Positions	**M**
Interfaces with local centre sub-systems	**M**
Flight Plan Information subscriber systems	**L**
ATS Middleware (inter and intra centre interoperability)	**L**
Interoperability of Flight Data Processing (Middleware)	**L**
Communication	
Directory Service in support of AMHS	**M**
VoIP (including air-ground VoIP)	**L**
Navigation	
Distance measuring ground equipment (DME)	**H**
ILS ground equipment	**H**
Microwave Landing System MLS	**M**
CS on Ground Based Augmentation Systems (CAT II/III)	**H**
Surveillance	
Aeronautical Information Services (AIS)	
CS on Aeronautical Information Exchange (AIXM)	**L**
Use of meteorological information	

6.4.2 Expertise required

Table 22 gives an overview of the specialized expertise required to perform the standardization processes.

Table 22

Community Specifications (work to start 2008 or later)	Expertise required	
	Lead	Support
General ATM		
Reference Concept of Operation	OTF;OAS;OAM;PAL;OAL;OAP	SE,OM
UAV Systems Operation	OTF;OAS;OAM;OAP	SE,OM
Airspace Management		
Air Traffic Flow Management		
Advanced Data Exchange Formats	CG;CA	SE
European ATFM, CFMU/IFPS (TACT CADF, ETFMS)	OAL;OAT;OAD;PAL;OTF	PGA;OAM
Air Traffic Services (ATS)		
Interfaces between CWPs and Data Processing	SE;OAM	OAD;OAT
Interface with Flight Data Operator Positions	SE;OAM	OAT
Interfaces with local centre sub-systems	SE;OAM	OAD
Flight Plan Information subscriber systems	OAM;OAL;OAP	SE;OM
ATS Middleware (inter and intra centre interoperability)	SE;OAM	CG;AIS
Interop of Flight Data Processing (Middleware)		
Communication		
Directory Service in support of AMHS	SE;CG;OAM	
VoIP (including air-ground VoIP)	SE;CG	OAM;CA
Navigation		
Distance measuring ground equipment (DME)	NG	
ILS ground equipment	NG;NA	
Microwave Landing System MLS	NG;NA	
CS on Ground Based Augmentation Systems (CAT II/III)	SE;NG;NA	
Surveillance		
Aeronautical Information Services (AIS)		
CS on Aeronautical Information Exchange (AIXM)	AIS;CG;CA;OTF;OAM;OAL	OAP;OM
Use of meteorological information		

6.4.2.1 Specialist expertise

Table 23

		Maximum (relative) numbers required		
Expert Categories	**Abbrev.**	Group I	Group II	**Group III**
Systems Engineers	**SE**	8	10	**10**
Comms Experts G/Ground	**CG**	5	6	**4**
Comms Experts Air/Ground	**CA**	3	5	**4**
Navigation Experts Ground	**NG**	4	1	**3**
Navigation Experts Air	**NA**	1	1	**2**
Surveillance Experts ADS-B	**SA**	1	2	**2**
Surveillance Experts Radar	**SR**	1	2	**1**
Surveillance Experts Mode S	**SSR**	2	2	**2**
AIS Experts	**AIS**	3	2	**2**
Ops Experts ATFM	**OTF**	2	3	**3**
Ops Experts ASM	**OAS**	2	3	**3**
Ops Experts ATM	**OAM**	5	7	**6**
Ops Experts ATS Twr	**OAT**	1	2	**1**
Ops Experts ATS App/Dep	**OAD**	3	3	**3**
Ops Experts Airline Ops	**OAL**	3	4	**3**
Ops Experts Airport Ops	**OAP**	3	3	**2**
Ops Experts Military	**OM**	1	2	**2**
Pilots AL	**PAL**	1	2	**2**
Pilots GA	**PGA**	1	1	**1**
Met Experts	**MET**	1	1	**1**

6.4.3 Efforts required

Table 24 provides an overview of the estimated efforts in man days and man months (20 man days in a man month, 200 man days in one man year). More detail is available by making use of the tool MS Project.

Table 24

Community Specifications (work to start 2008 or later)	**Efforts required**
	MD
General ATM	5 561,6 t
Reference Concept of Operation	3 280 t
UAV Systems Operation	1 953,6
Airspace Management	0t
Air Traffic Flow Management	1 381,5 t
Advanced Data Exchange Formats	562,5t
European Air Traffic Flow Management (CFMU/IFPS (TACT and CADF, ETFMS))	819t
Air Traffic Services (ATS)	4 906 t
Interfaces between Controller Working Positions and Data Processing	780 t
Interface with Flight Data Operator Positions	384 t
Interfaces with local centre sub-systems	384 t
Flight Plan Information subscriber systems	448 t
ATS Middleware (inter and intra centre interoperability)	1 350 t
Interoperability of Flight Data Processing (Middleware)	1 560 t
Communication	877,5 t
Directory Service in support of AMHS	382,5 t
VoIP (including air-ground VoIP)	495 t
Navigation	1 470 t
Distance measuring ground equipment (DME)	280 t
ILS ground equipment	350 t
Microwave Landing System MLS	560 t
CS on Ground Based Augmentation Systems (CAT II/III)	280 t
Surveillance	0 t
Aeronautical Information Services (AIS)	1 089 t
CS on Aeronautical Information Exchange (AIXM)	1 089 t
Use of meteorological information	0 t
Total Group III	15 285,6 t

6.4.4 Timescale

Table 25 shows the start of the third Group and the resulting delivery dates.

Most of the work items may be processed in parallel as the number of required experts is generally lower. The individual processes may be shorter in the drafting periods as it can be assumed that previous work was done in the mean time (SESAME design results). Note also, that the availability of experts continues to be the largest source of uncertainty in these estimates. (More under clause 4.4.)

Table 25

Community Specifications (work to start 2008 or later)	Efforts required	
	MD	
General ATM	**15.01.08**	**30.05.11**
Reference Concept of Operation	15.01.08	30.05.11
UAV Systems Operation	15.01.08	30.05.11
Airspace Management		
Air Traffic Flow Management	**01.03.08**	**19.02.10**
Advanced Data Exchange Formats	01.03.08	20.11.09
European Air Traffic Flow Management (CFMU/IFPS (TACT and CADF, ETFMS))	01.06.08	19.02.10
Air Traffic Services (ATS)	**15.01.08**	**06.02.12**
Interfaces between CWPs and Data Processing	15.01.08	03.05.10
Interface with Flight Data Operator Positions	28.07.09	18.10.10
Interfaces with local centre sub-systems	04.05.10	25.07.11
Flight Plan Information subscriber systems	16.11.10	06.02.12
ATS Middleware (inter and intra centre interoperability)	22.06.09	07.10.11
Interoperability of Flight Data Processing (ATM-ATM)	22.06.09	07.10.11
Communication	**22.06.09**	**09.06.11**
Directory Service in support of AMHS	18.09.09	09.06.11
VoIP (including air-ground VoIP)	22.06.09	11.03.11
Navigation	**01.09.09**	**30.07.12**
Distance measuring ground equipment (DME)	01.09.09	27.09.10
ILS ground equipment	13.04.10	09.05.11
Microwave Landing System MLS	23.11.10	19.12.11
CS on Ground Based Augmentation Systems (CAT II/III)	05.07.11	30.07.12
Surveillance		
Aeronautical Information Services (AIS)	**01.03.10**	**18.11.11**
CS on Aeronautical Information Exchange (AIXM)	01.03.10	18.11.11
Use of meteorological information		

6.5 Group IV, existing systems and procedures needing standardization

Table 26 shows the existing systems and procedures already in operation needing standardization in the view of the ANSP. They do not fall under the Mandate M/354 but were included into the Inventory Report to present a comprehensive picture of potential standardization needs in the European ATM environment.

The start dates will be determined by the stakeholder community, once a need for the standards is agreed and sufficient personnel can be made available. Note that it takes only four ETSI members to initiate a Special Task Force (STF) and assign the work.

Table 26

	Duration	Priority	Effort
			Man Days
Community Specifications (work is to be started on demand)			3 010
Air Traffic Services (ATS)	280		518
Surveillance Data Processing (ARTAS functions)	280	560	518
Communication	280		1 372
Ground and mobile stations in the aeronautical mobile service	280	400	504
HF radio equipment	280	410	490
UHF use by civil ATC	280	500	378
Navigation	280		840
Non-directional beacon (NDB)	280	200	280
Omni-directional radio range ground equipment	280	240	280
VHF Marker Beacon ground equipment	280	220	280
Surveillance	280		280
Ground-based secondary radar systems	280	240	280

7.0 Managing the resources

7.1 Work force required

Table 27 outlines the maximum number of experts needed in the specific areas during the three phases described earlier. These numbers, on which all estimates are based delineated in the present document, represent the **theoretical** delivered efforts of skilled experts available for the given task, i.e. **as a maximum** 200 work days per year, 8 hours each day. Based on the experiences at Eurocae with very similar work the durations have been reworked to reflect the actual processes more realistically.

Table 27

		Maximum (relative) numbers required		
Expert Categories	**Abbreviation**	**Group I**	**Group II**	**Group III**
Systems Engineers	**SE**	**8**	**10**	**10**
Comms Experts G/Ground	**CG**	**5**	**6**	**4**
Comms Experts Ground/Air	**CA**	**3**	**5**	**4**
Navigation Experts Ground	**NG**	**4**	**1**	**3**
Navigation Experts Air	**NA**	**1**	**1**	**2**
Surveillance Experts ADS-B	**SA**	**1**	**2**	**2**
Surveillance Experts Radar	**SR**	**1**	**2**	**1**
Surveillance Experts Mode S	**SSR**	**2**	**2**	**2**
AIS Experts	**AIS**	**3**	**2**	**2**
Ops Experts ATFM	**OTF**	**2**	**3**	**3**
Ops Experts ASM	**OAS**	**2**	**3**	**3**
Ops Experts ATM	**OAM**	**5**	**7**	**6**
Ops Experts ATS Twr	**OAT**	**1**	**2**	**1**
Ops Experts ATS App/Dep	**OAD**	**3**	**3**	**3**
Ops Experts Airline Ops	**OAL**	**3**	**4**	**3**
Ops Experts Airport Ops	**OAP**	**3**	**3**	**2**
Ops Experts Military	**OM**	**1**	**2**	**2**
Pilots Airline	**PAL**	**1**	**2**	**2**
Pilots GA	**PGA**	**1**	**1**	**1**
Met Experts	**MET**	**1**	**1**	**1**

The figures in the above table do not necessarily mean that all listed experts are assumed to be continuously fully engaged in the particular work packages. Most of the time the majority of the experts are only employed during fractions of their normal work calendars. Ample details on the actual work loads and their distribution can be obtained by making use of the planning tool MS Project with which these parameter charts were produced.

7.2 Resource allocation

When planning the "real life" efforts for future STFs and scheduling the allocation of personnel, the planners are advised to carefully adhere to the principle pursued by ETSI i.e. attempting to **having the experts' work load shared by as many parent organizations as possible**.

For example: The equivalent working power of the 5 ATM (strategy) experts required in the first phase may actually be provided by perhaps 15 individuals sharing the work of the related work packages. To achieve such a burden sharing it is proposed to create an "expert pool". By this method it can be assured that these scarce and much wanted professionals will individually spend only an acceptable percentage of their work time on the standardization efforts.

The proposed expert pool will also facilitate the necessary continuity of the standardization processes and safeguard the achieved know how.

7.3 A proposed solution to expedite urgently needed standardization processes

7.3.1 Normal drafting and approval processes

Two approaches exist to the creation of the needed Community Specifications. For work items dealing with operational needs of the ANSPs Eurocontrol may be tasked with the work process. The Eurocontrol approval process has proven to be much shorter than following the ESOs' fairly stringent rules.

Usually STFs and Eurocae working groups meet only occasionally, generally about once o month. Also the individual experts only spent but a small fraction of their work times on the standardization process. This is the main reason why the drafting process takes normally a rather long time, sometimes several years, to complete.

Assuming there is a serious need to expedite the process, a parallel supporting project might be initiated. The project team composed of "standardization professionals" would form the permanently working kernel helping the STF experts to gather the know-how and document it in the ETSI format.

7.3.2 Creating a project

To this end ETSI would launch a formal "Request for Proposal" inviting industry to bid on it. The winning project team would be obliged by contract to adhere to the ETSI standardization process and rules. The relation between the associated STF and the professional project team would be similar to the set-up used in AI projects when the AI experts interview the "domain experts" when creating the rules for a rule based system.

Management

The STF leader would have the responsibility to manage the supporting project in addition to the STF and the administrative work. An STF Steering group would be overseeing the total effort.

Funds

The project would need allocated funds to be able to start the RfP. It stands to reason that in case that such a parallel project would be deemed necessary the beneficiary of the standard would have to provide for the effort. In case of SESAME requiring a standard to be available before the actual system fine specifications and development would be started, the money would have to be made available from the SESAME development funds.

As the Eurocae specifications are normally sold to the interested industry a solution should be found to refund Eurocae for contributions for the ETSI standardization process. Inputs related to the SES interoperability regulation could perhaps be procured by granting a general license fee compensating the production cost.

Available experience

Eurocae has experiences with projects of this kind and is using them successfully. To this end Eurocae has founded "Eurocae Communications" which is legally functioning as a commercial company and offers management services like steering these supportive projects. Due to their insight into the ATM operational and technical expert scene they are able to bring together the matching skills for particular specification and standardization work.

Working Groups collaborating with such a full-time project team succeeded to accumulate and document the ideas and expertise of the numerous specialists much faster. The paying industry acknowledged not only a noticeable synergy effect but also the cost effectiveness of this approach.

7.4 General resource management

The success of the SES standardization effort depends in the first place on the availability of motivated and expert human resources. The STF proposes, therefore, that a supervisory group should manage the valuable resources over the total period of the SES related standardization process. This is deemed necessary as one may well expect that without an "umpire" a struggle for key experts could take place because the numerous parallel activities may exert a pull on the leading professional.

Such a supervizing group would without a doubt be of advantage ensuring that the work is carried out in the most efficient manner. The STF proposes that this responsibility might be added to the TOR of the "ATM Co-ordination Group" which was recently inaugurated.

8.0 Proposed work plan

The proposed work plan is based on the assumed preliminary priorities, resources and delivery times which have been outlined in the above tables. Many parameters had to be based on best estimates which is normal in any project plan. Also a number of assumptions needed to be made which have been listed above. So it is necessary to understand, that the plan displays just one possible approach based on the findings of STF 293 which were discussed with and supported by many experts with experience in standardization.

8.1 Planning tool

By using the planning tool MS Project, we are not only able to present the results in an almost self explanatory way but we can demonstrate that it is very easy to change the assumed parameters and see the resulting changes on work load, delivery times and so forth.

So the proposed approach can be flexibly adapted to the current demand and available resources. Once it has been agreed by the stakeholders it can be used to manage the process and resources. It allows to interactively align the plan with new emerging needs and new inputs from the ongoing development and implementation activities of SES.

The more concrete the plan becomes, the more effective and consistent the management of the scarce resources will become. Also standardization cost will turn out to be entirely transparent. Thus, we recommend to use this asset in future planning.

8.2 Planning overviews

The first depicted plan gives an overview over the three groups of C-CSs.

The second display shows the work packages of Group I.

8.2.1 Overview of all four groups

Overview of all four groups:

Nr.	Vorgangsname	Dauer	Anfang
1	**Community Specifications (work starts by March 2006)**	**910 t**	**27.02.06**
2	**General**	**840 t**	**07.03.06**
5	**Airspace Management**	**842 t**	**01.06.06**
8	**Air Traffic Flow Management**	**392 t**	**27.02.06**
11	**Air Traffic Services (ATS)**	**746 t**	**07.03.06**
15	**Communication**	0 t	27.02.06
16	**Navigation**	0 t	27.02.06
17	**Surveillance**	**600 t**	**07.03.06**
19	**Aeronautical Information Services (AIS)**	0 t	27.02.06
20	**Use of Meteorological Information**	0 t	27.02.06
21			
22	**Community Specifications (work to start in 2007)**	**1259 t**	**15.01.07**
23	**General ATM**	**900 t**	**15.01.07**
26	**Airspace Management**	0 t	15.01.07
27	**Air Trafic Flow Management**	0 t	15.01.07
28	**Air Traffic Services (ATS)**	**1259 t**	**15.01.07**
37	**Communication**	**830 t**	**15.01.07**
41	**Navigation**	**1140 t**	**15.01.07**
44	**Surveillance**	**883 t**	**15.01.07**
48	**Aeronautical Information Services (AIS)**	**780 t**	**03.03.07**
52	**Use of Meteorological Information**	**600 t**	**05.03.07**
54	**Community Specifications (work to start 2008 or later)**	**1185 t**	**15.01.08**
55	**General ATM**	**800 t**	**15.01.08**
57	**Airspace Management**	**0 t**	**19.06.09**
58	**Air Traffic Flow Management**	**515 t**	**01.03.08**
61	**Air Traffic Services (ATS)**	**1098 t**	**15.01.08**
68	**Communication**	**450 t**	**22.06.09**
71	**Navigation**	**760 t**	**01.09.09**
76	**Surveillance**	0 t	19.06.09
77	**Aeronautical Information Services (AIS)**	**450 t**	**01.03.10**
79	**Use of meteorological information**	**0 t**	**19.06.09**
80	**Community Specifications (work is to be started on de**	**280 t**	**16.01.06**
81	**Air Traffic Services (ATS)**	**280 t**	**16.01.06**
83	**Communication**	**280 t**	**16.01.06**
87	**Navigation**	**280 t**	**16.01.06**
91	**Surveillance**	**280 t**	**16.01.06**

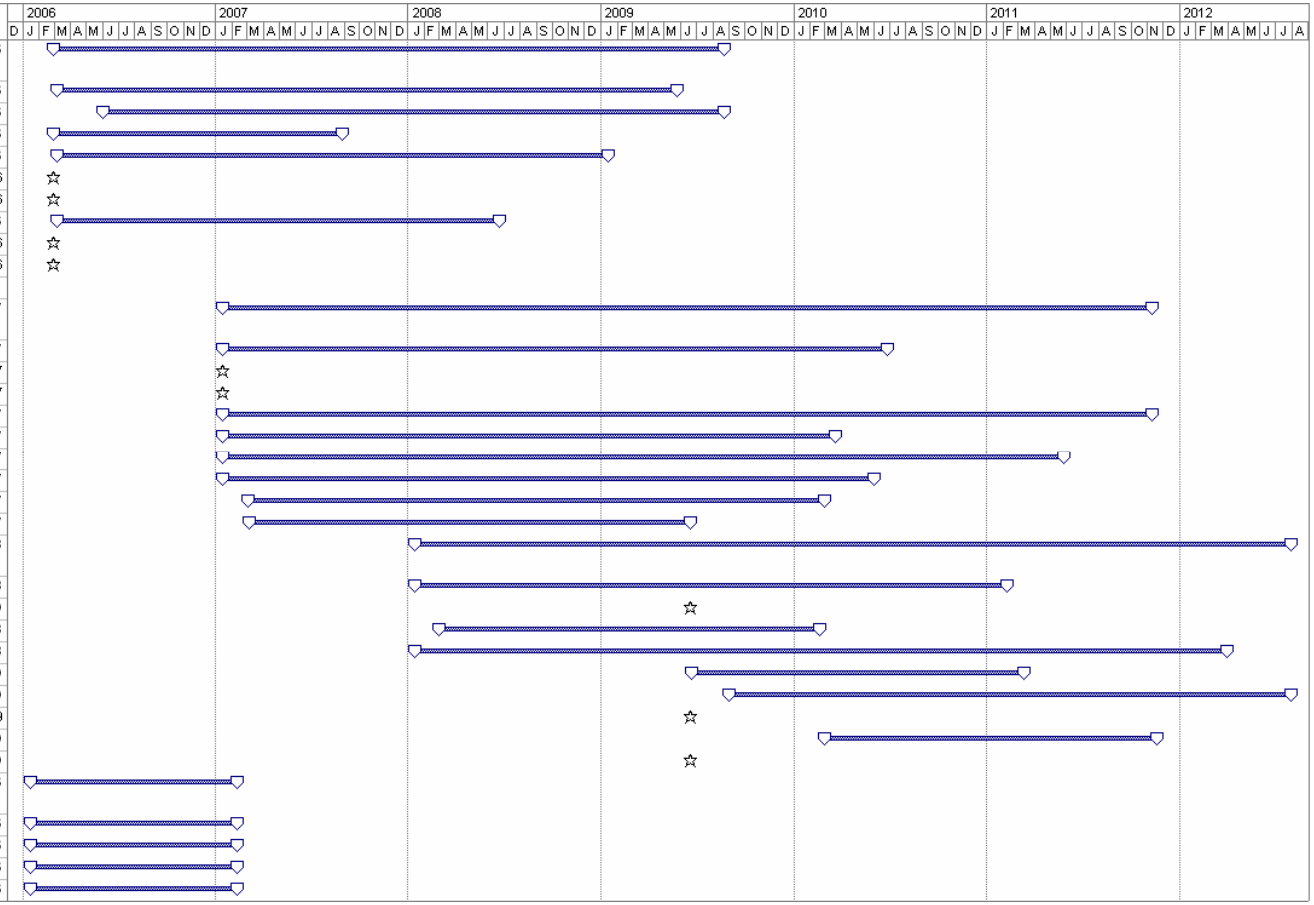

Figure 1

8.2.2 Candidate CSs of Group I

The number of paid experts working for the ESOs might be reduced if Eurocontrol will manage some of these work items (legal conformity provided) using their own experts or tasking competent contractors. (Potential Eurocontrol work items are shown in red).

The associated priorities to the work items are identical in all following MS Project examples:

Nr.	Vorgangsname	Dauer	Anfang
1	**Community Specifications (work starts by March 2006)**	**910 t**	**27.02.06**
2	**General**	**840 t**	**27.02.06**
3	Software assurance levels (SWAL)	840 t	27.02.06
4	Airport Collaborative Decision Making (A-	560 t	27.06.06
5	**Airspace Management**	**842 t**	**01.06.06**
6	Flexible use of Airspace	840 t	05.06.06
7	Airspace Design	840 t	01.06.06
8	**Air Traffic Flow Management**	**392 t**	**27.02.06**
9	Updated IFPS Users manual	320 t	27.02.06
10	Data Exchange Formats	240 t	27.09.06
11	**Air Traffic Services (ATS)**	**752 t**	**27.02.06**
12	On-Line Data Interchange (OLDI)	320 t	27.12.06
13	CS on Interoperability of Flight Data Proc	600 t	27.09.06
14	Advanced SMGCS (Level 1 & 2)	480 t	27.02.06
15	**Communication**	0 t	27.02.06
16	**Navigation**	0 t	27.02.06
17	**Surveillance**	0 t	27.02.06
18	**Aeronautical Information Services (AIS)**	0 t	27.02.06
19	**Use of Meteorological Information**	0 t	27.02.06
20			
21	**Community Specifications (work to start in 2007)**	**1299 t**	**15.01.07**
53	**Community Specifications (work to start 2008 or later)**	**1185 t**	**15.01.08**
80	**Community Specifications (work is to be started on demand)**	**280 t**	**16.01.06**

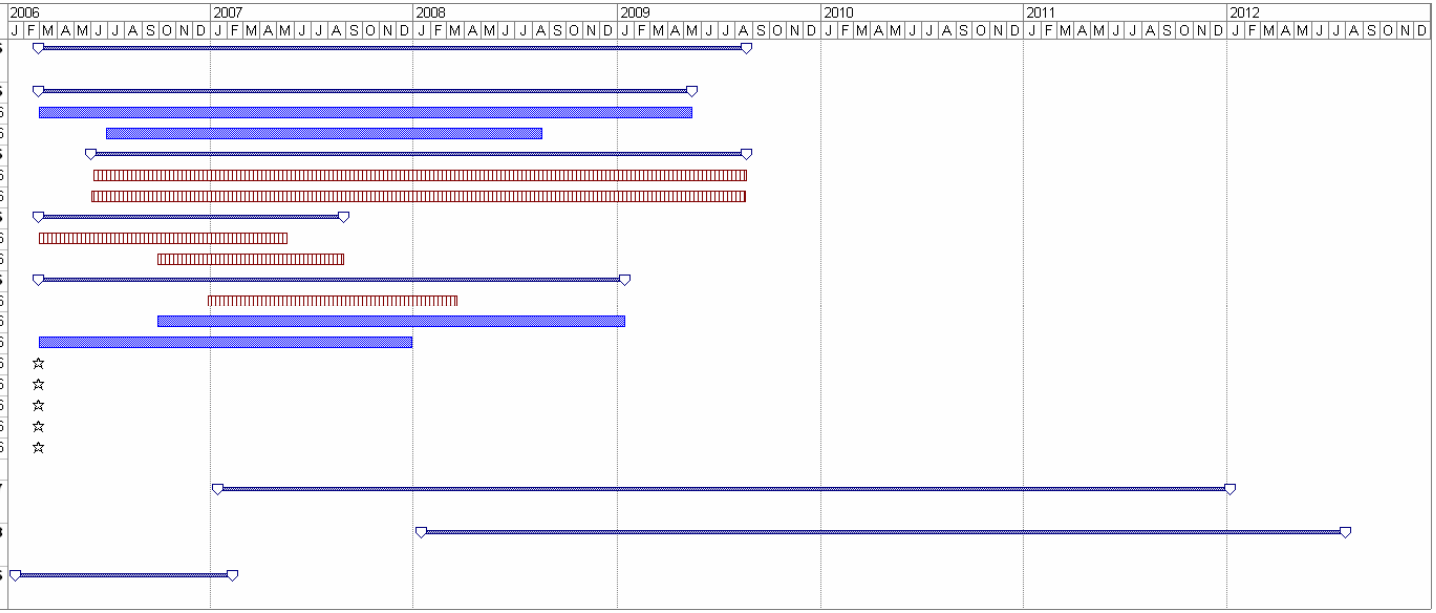

Figure 2

8.2.3 Candidate CSs of Group II

With the listed resources also available for Group II most items could be processed in parallel, provided the expert pool of the first Group will be maintained adapted to the then current need.

Estimates and predictions are necessarily less exact than for Group I as less information as to the current status of progress is available. The durations will be depending on previous working results achieved and on the availability of the necessary experts.

Nr.	Vorgangsname	Dauer	Anfang
1	**Community Specifications (work starts by March 2006)**	**910 t**	**27.02.06**
20			
21	**Community Specifications (work to start in 2007)**	**1259 t**	**15.01.07**
22	**General ATM**	**900 t**	**15.01.07**
23	Cross Domain Information Sharing	900 t	15.01.07
24	**Airspace Management**	0 t	15.01.07
25	**Air Trafic Flow Management**	0 t	15.01.07
26	**Air Traffic Services (ATS)**	**1259 t**	**15.01.07**
27	Link Baseline 1 DL Services over ATN/VL	320 t	15.01.07
28	DL Services over FANS-1/A in ATN Conti	320 t	10.03.08
29	DL Services over ACARS in continental a	320 t	26.01.09
30	Open ATC system architecture model	600 t	19.12.07
31	Advanced SMGC Systems (Levels 3 and	840 t	31.12.07
32	Arrival management	600 t	01.06.07
33	Departure management	840 t	22.08.08
34	Surveillance Performance	600 t	01.03.07
35	**Communication**	**830 t**	**15.01.07**
36	ATS Message Handling System	320 t	15.01.07
37	VoIP (ground-ground) for use in EATMN	600 t	03.12.07
38	Telephone used for ATC purposes in the I	320 t	15.01.07
39	**Navigation**	**1140 t**	**15.01.07**
40	Space Based Augmentation Systems	840 t	15.01.07
41	Galileo, GNSS	600 t	09.02.09
42	**Surveillance**	**883 t**	**15.01.07**
43	Ground-based primary radar equipment	320 t	15.12.07
44	Multilateration Equipment	840 t	15.03.07
45	Surveillance Data Exchange	320 t	07.04.08
46	Surveillance services using ADS-B	600 t	15.01.07
47	**Aeronautical Information Services (AIS)**	**780 t**	**03.03.07**
48	AIS - Generic data processing & principle	260 t	03.03.07
49	Integrity of Aeronautical Information - Dat	260 t	03.03.08
50	Integrity of Aeronautical Information - Dat	260 t	02.03.09
51	**Use of Meteorological Information**	**600 t**	**05.03.07**
52	Systems and Procedures for the Use of M	600 t	05.03.07

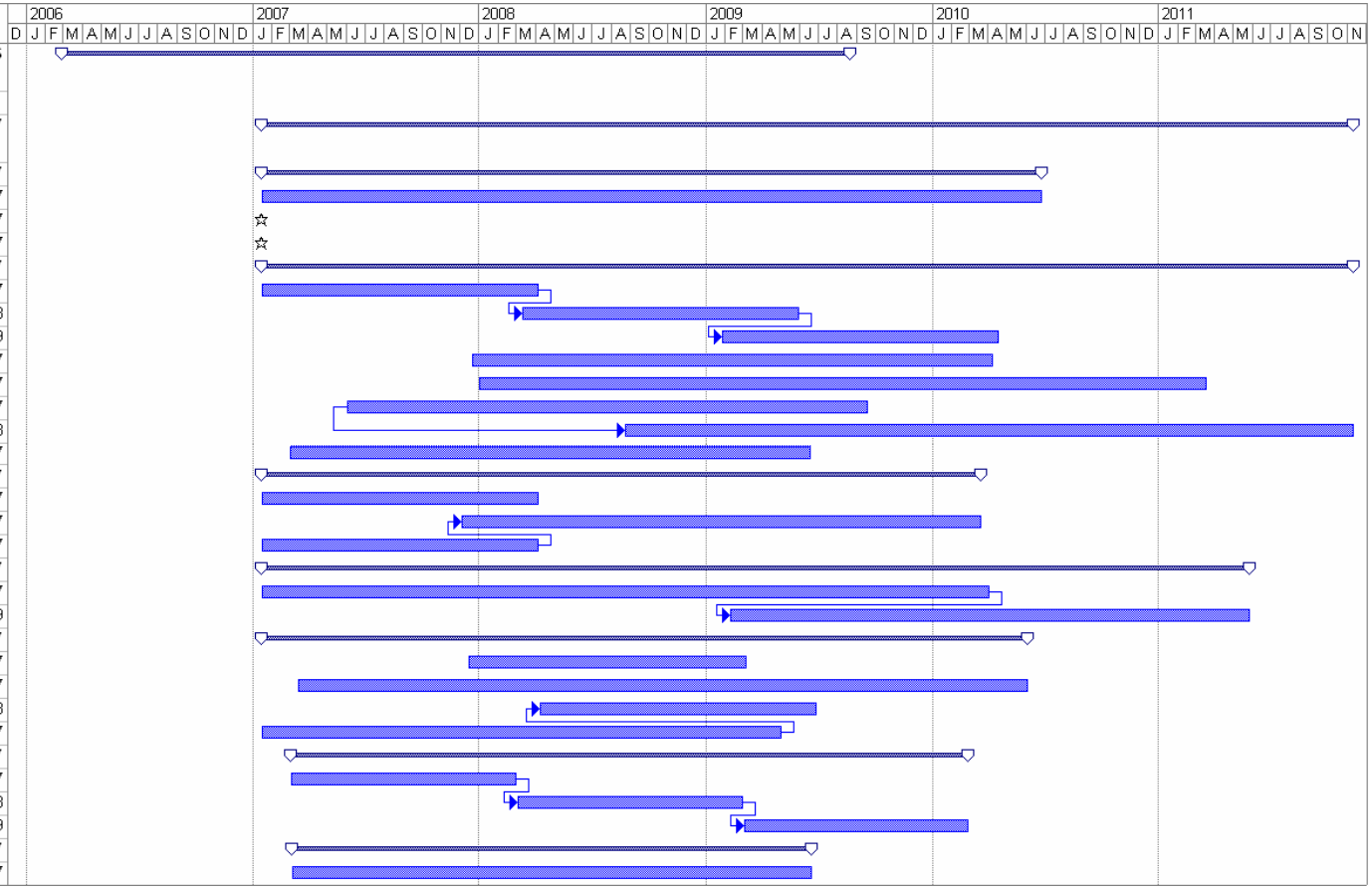

Figure 3

Same information as above sorted according to start dates:

Nr.	Vorgangsname	Dauer	Anfang
1	**Community Specifications (work starts by March 2006)**	**910 t**	**27.02.06**
20			
21	**Community Specifications (work to start in 2007)**	**1259 t**	**15.01.07**
22	**General ATM**	**900 t**	**15.01.07**
23	Cross Domain Information Sharing	900 t	15.01.07
24	**Airspace Management**	0 t	15.01.07
25	**Air Trafic Flow Management**	0 t	15.01.07
26	**Air Traffic Services (ATS)**	**1259 t**	**15.01.07**
27	Link Baseline 1 DL Services over ATN/VD	320 t	15.01.07
34	Surveillance Performance	600 t	01.03.07
32	Arrival management	600 t	01.06.07
30	Open ATC system architecture model	600 t	19.12.07
31	Advanced SMGC Systems (Levels 3 and	840 t	31.12.07
28	DL Services over FANS-1/A in ATN Conti	320 t	10.03.08
33	Departure management	840 t	22.08.08
29	DL Services over ACARS in continental a	320 t	26.01.09
35	**Communication**	**830 t**	**15.01.07**
36	ATS Message Handling System	320 t	15.01.07
38	Telephone used for ATC purposes in the I	320 t	15.01.07
37	VoIP (ground-ground) for use in EATMN	600 t	03.12.07
39	**Navigation**	**1140 t**	**15.01.07**
40	Space Based Augmentation Systems	840 t	15.01.07
41	Galileo, GNSS	600 t	09.02.09
42	**Surveillance**	**883 t**	**15.01.07**
46	Surveillance services using ADS-B	600 t	15.01.07
44	Multilateration Equipment	840 t	15.03.07
43	Ground-based primary radar equipment	320 t	15.12.07
45	Surveillance Data Exchange	320 t	07.04.08
47	**Aeronautical Information Services (AIS)**	**780 t**	**03.03.07**
48	AIS - Generic data processing & principle	260 t	03.03.07
49	Integrity of Aeronautical Information - Dat	260 t	03.03.08
50	Integrity of Aeronautical Information - Dat	260 t	02.03.09
51	**Use of Meteorological Information**	**600 t**	**05.03.07**
52	Systems and Procedures for the Use of M	600 t	05.03.07

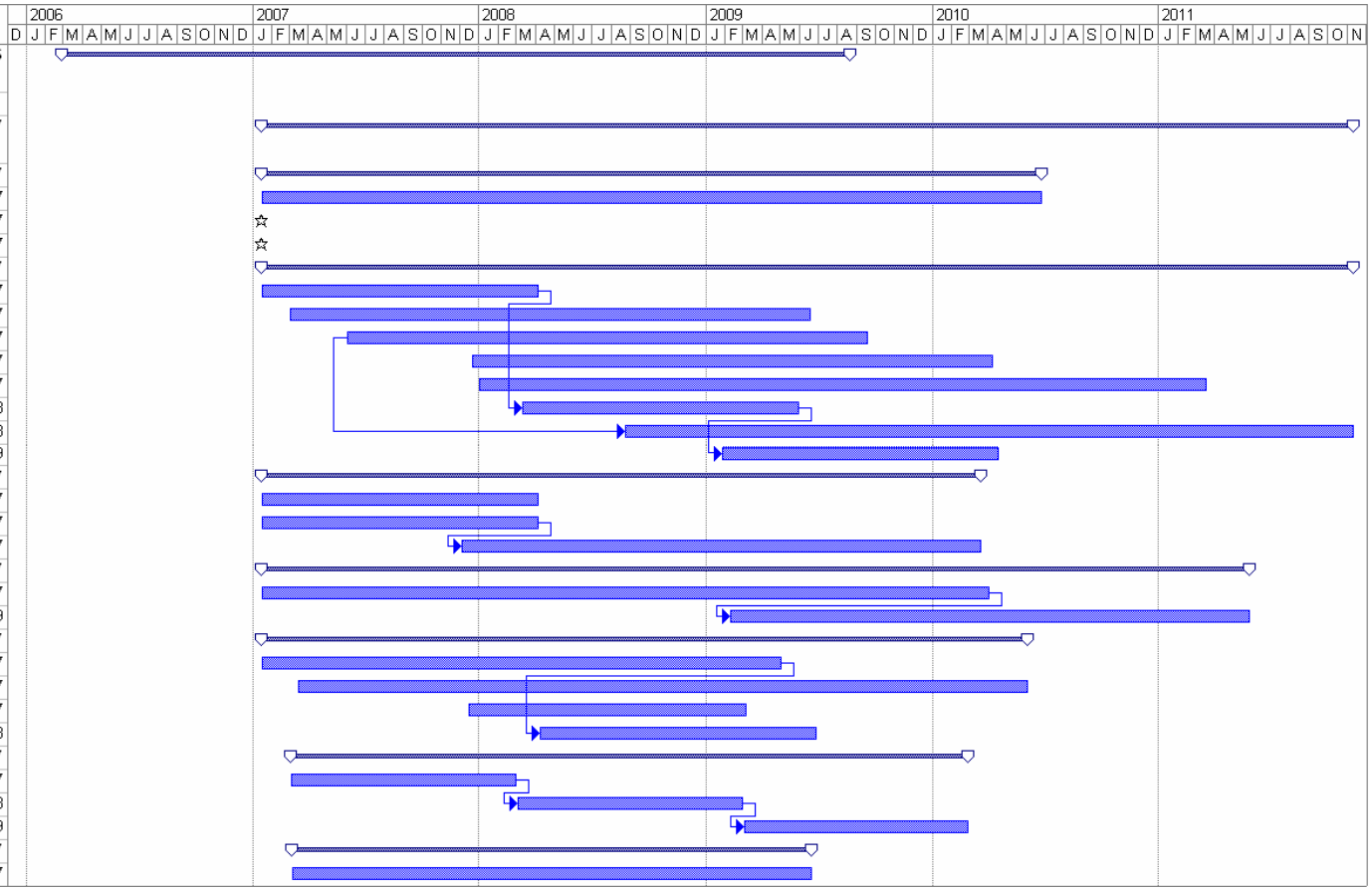

Figure 4

8.2.4 CSs of Group III

Also most of the Group III C-CSs may be processed in parallel enabled by the expert pool.

Estimates and predictions are necessarily less exact than for Group I and Group II but as many will more or less start from scratch. All durations will depend mostly on the availability of the necessary experts.

Nr.	Vorgangsname	Dauer	Anfang
53	**Community Specifications (work to start 2008 or later)**	**1185 t**	**15.01.08**
54	**General ATM**	**880 t**	**15.01.08**
55	Reference Concept of Operation	880 t	15.01.08
56	UAV Systems Operation	880 t	15.01.08
57	**Airspace Management**	0 t	19.06.09
58	**Air Traffic Flow Management**	**515 t**	**01.03.08**
59	Advanced Data Exchange Formats	450 t	01.03.08
60	European Air Traffic Flow Management (C	450 t	01.06.08
61	**Air Traffic Services (ATS)**	**1060 t**	**15.01.08**
62	Interfaces between Controller Working Pc	600 t	15.01.08
63	Interface with Flight Data Operator Positic	320 t	28.07.09
64	Interfaces with local centre sub-systems	320 t	04.05.10
65	Flight Plan Information subscriber systerr	320 t	16.11.10
66	ATS Middleware (inter and intra centre int	600 t	22.06.09
67	Interoperability of Flight Data Processing	600 t	22.06.09
68	**Communication**	**450 t**	**22.06.09**
69	Directory Service in support of AMHS	450 t	22.06.09
70	VoIP (including air-ground VoIP)	450 t	22.06.09
71	**Navigation**	**760 t**	**01.09.09**
72	Distance measuring ground equipment (D	280 t	01.09.09
73	ILS ground equipment	280 t	13.04.10
74	Microwave Landing System MLS	280 t	23.11.10
75	CS on Ground Based Augmentation Syst	280 t	05.07.11
76	**Surveillance**	0 t	19.06.09
77	**Aeronautical Information Services (AIS)**	**450 t**	**01.03.10**
78	CS on Aeronautical Information Exchange	450 t	01.03.10
79	**Use of meteorological information**	**0 t**	**19.06.09**

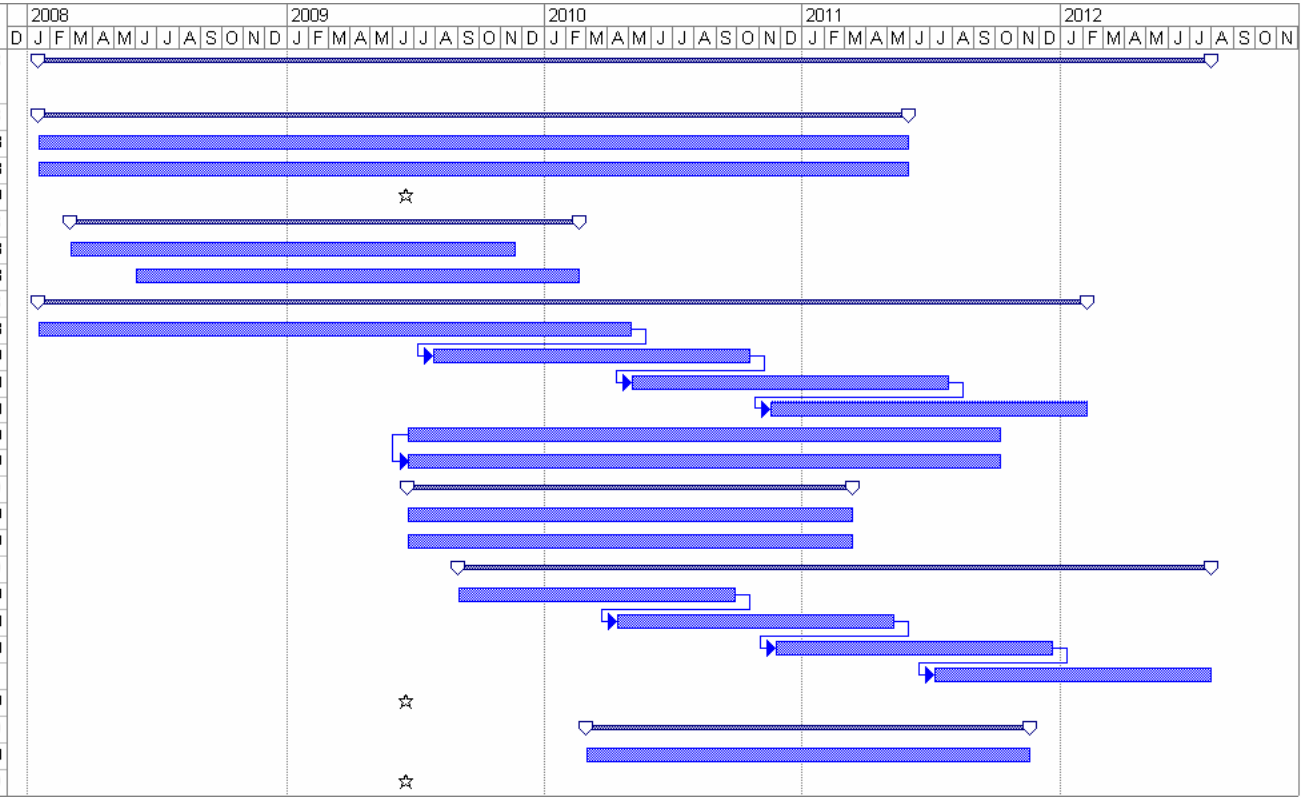

Figure 5

8.2.5 CSs of Group IV

These are systems and procedures in operation which until now have been run and maintained based on industry specifications, nationally accepted local or regional standards, etc. With the new legislation a need for a "clean-up effort", has been expressed by some national CAAs and ANSP-organizations. As these systems, procedures, interfaces and the like will continue to serve in ATM for several years to come they should be standardized under European law. Therefore, they were included in the inventory report for sake of completeness.

The Group IV C-CSs may be started as soon as there are a sufficient number of organizations demanding this (four) which are ready and able to provide the required experts. Thus the start date will depend on the stakeholders decision. Note that also Group II and Group III work items may be entered into this group if a high demand should exist and sufficient support is made available.

Nr.	Vorgangsname	Dauer	Anfang
1	**Community Specifications (work starts by March 2006)**	**910 t**	**27.02.06**
21			
22	**Community Specifications (work to start in 2007)**	**1259 t**	**15.01.07**
54	**Community Specifications (work to start 2008 or later)**	**1185 t**	**15.01.08**
80	**Community Specifications (work is to be started on de**	**280 t**	**16.01.06**
81	**Air Traffic Services (ATS)**	**280 t**	**16.01.06**
82	Surveillance Data Processing (ARTAS functions)	280 t	16.01.06
83	**Communication**	**280 t**	**16.01.06**
84	Ground and mobile stations in the aeronautical mobile service	280 t	16.01.06
85	HF radio equipment	280 t	16.01.06
86	UHF use by civil ATC	280 t	16.01.06
87	**Navigation**	**280 t**	**16.01.06**
88	Non-directional beacon (NDB)	280 t	16.01.06
89	Omni-directional radio range ground equipment	280 t	16.01.06
90	VHF Marker Beacon ground equipment	280 t	16.01.06
91	**Surveillance**	**280 t**	**16.01.06**
92	Ground-based secondary radar systems	280 t	16.01.06

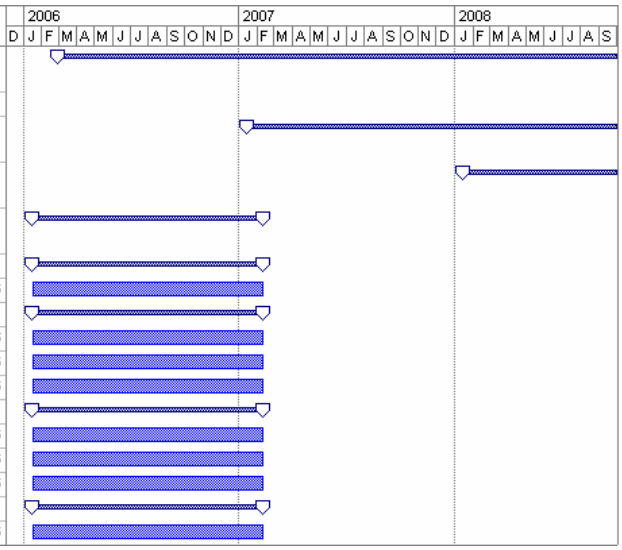

Figure 6

As these work items do not fall under the systems and constituents which need standardization to prepare for the SES implementation, ETSI TG 25 decided that they should no longer occupy STF 293. ETSI will propose that the most urgently needed work items should be taken care of by a number of STFs in the near future.

Annex A:
The ETSI Standardization process

A.1 The Standards Making Process (SMP)

The Standards Making Process (SMP) is the process applied for the production of ETSI standards and deliverables.

The general conditions for the SMP are defined by the ETSI Directives, in particular the Technical Working Procedures.

A.1.1 Process overview

NOTE: Process: a structured, measured set of activities designed to produce a specified output.

The objective of the ETSI Standards Making Process (SMP) is to convert market needs for standardization into ETSI deliverables (specifications, standards, norms, guides, reports) used in the market place.

The SMP consists of five main elements, sub-processes, with their own distinct objectives, inputs and outputs. The whole ETSI organization is in one way or the other involved in either operation of the SMP or in direct or indirect support of it. The main technical activities are performed in the Technical Bodies of the Technical Organization. The main direct support to those activities are provided by the Standards Making Support (SMS) department of the ETSI Secretariat.

Schematic overview over the one-step and two-step approval procedures. The durations of the first four steps are just arbitrarily chosen examples.

Nr.	Vorgangsname	Dauer	Anfang	Ende
1	**ETSI Standardisation Process (schematic)**	**675 t**	**01.01.06**	**01.08.08**
2	Inception	30 t	01.01.06	10.02.06
3	Conception	70 t	13.02.06	19.05.06
4	Drafting	220 t	22.05.06	23.03.07
5	Adoption	80 t	26.03.07	13.07.07
6	**EN Approval Procedure**	**100 t**	**16.07.07**	**30.11.07**
7	**One-step Approval Procedure (OAP)**	**100 t**	**16.07.07**	**30.11.07**
8	NSO Approval (120 Calendar days)	100 t	16.07.07	30.11.07
9	**Promotion**	**85 t**	**03.12.07**	**28.03.08**
10	Editing	45 t	03.12.07	01.02.08
11	Publication	40 t	04.02.08	28.03.08
12	New EN	0 t	28.03.08	28.03.08
13				
14				
15	**ETSI Standardisation Process (schematic)**	**675 t**	**01.01.06**	**01.08.08**
16	Inception	30 t	01.01.06	10.02.06
17	Conception	70 t	13.02.06	19.05.06
18	Drafting	220 t	22.05.06	23.03.07
19	Adoption	80 t	26.03.07	13.07.07
20	**Two-step Approval Procedure (TAP)**	**190 t**	**16.07.07**	**04.04.08**
21	NSO Public Enquiry	100 t	16.07.07	30.11.07
22	TB Resolution	40 t	03.12.07	25.01.08
23	NSO Voting (60 calenar days)	50 t	28.01.08	04.04.08
24	**Promotion**	**85 t**	**07.04.08**	**01.08.08**
25	Editing	45 t	07.04.08	06.06.08
26	Publication	40 t	09.06.08	01.08.08
27	New EN	0 t	01.08.08	01.08.08

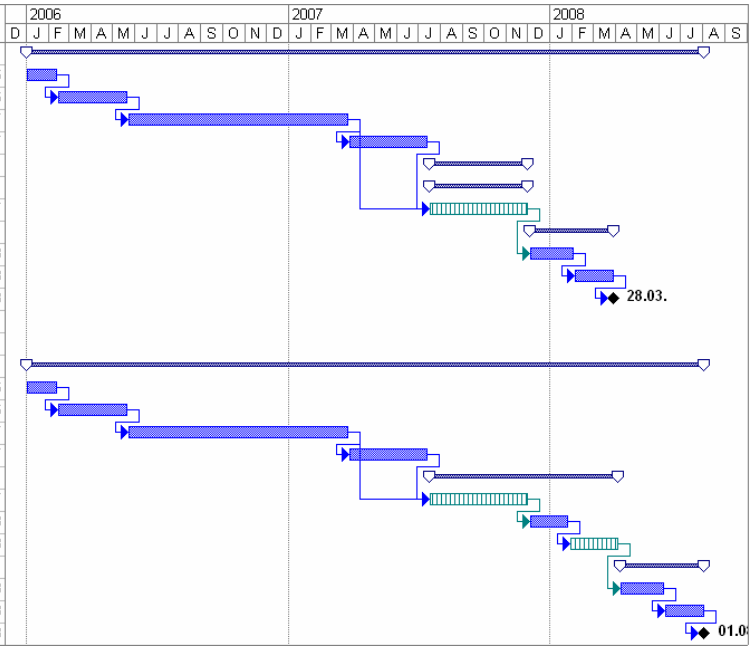

Figure A.1

A.1.2 Inception

NOTE: Inception: an act, process, or instance of beginning (as of an institution, organization, or concept).

Initiatives to standardization particularly in the field of telecommunications often precede or goes hand in hand with the design and development processes.

The inputs to this sub-process in the particular case of the SES programme under Mandate/354 will be defined by STF 293 in two Technical Reports, the inventory report and the Work Programme.

When ETSI will be tasked with the standardization of a CS in the field of ATM the output of the first sub-process "inception" is a new standardization area, given to a Technical Body. The formal output is the Terms of Reference (ToR) and/or a Project Requirements Definition (PRD) document, generally approved by the ETSI Board.

The process itself consists, in broad terms, of:

- identifying needs for standardization in the subject areas defined by the ETSI Statutes and Rules of Procedure;
- defining the suitable organization for such standardization within ETSI.

There are various actors in this process:

- experts in the Technical Bodies and the Special Committees;
- ETSI Members;
- SMS Technical Officers.

A.1.3 Conception

NOTE: Conception: the capacity, function, or process of forming ideas or abstractions or of grasping the meaning of symbols representing such ideas or abstractions; an idea or general notion; the originating of something (as an idea or plan) in the mind.

The identification, definition, approval and adoption of work items are the main elements of the conception phase.

The input is an identified standardization need in this area. These work items may either be entirely new, leading to new deliverables, or a new version of an existing deliverable ("maintenance work item").

The output is a work item, adopted by the ETSI Membership.

A.1.4 Drafting

NOTE: Drafting: pres part of draft - to make a preliminary or tentative version, sketch, or outline (as of a literary composition or other document).

A work item in the ETSI Work Programme is intended to lead to one (or more) ETSI deliverable(s).

A Technical Body is free to organize its work in any way it wishes, within the rules of the Technical Working Procedures, including create Working Groups to which the tasks of drafting parts of the Technical Body's work programme are given.

The drafting usually takes place in a small team (Rapporteur Group) lead by a Rapporteur. When the draft is considered ready, the draft deliverable is handed over to the Working Group for approval. The formal approval for further processing can only be done by the Technical Body.

Some drafting activities for a Technical Body are performed by Specialist Task Forces (STF) located at the ETSI Secretariat.

The adaptation of specifications from external bodies (Publicly Available Specifications (PAS)) to the ETSI deliverable structure follows the same rules, but will normally be performed by the PAS provider, as defined in the Guidelines for adoption of Publicly Available Specifications.

A.1.5 Adoption

NOTE: Adoption: the taking of an outsider into a family, clan or tribal group.

While the drafting process is, in principle, the same for all ETSI deliverables, the process elements of the adoption process depend on the type of deliverable being processed.

For European Standard - EN (telecommunications series) the following is relevant:

European Standards produced by ETSI, ETSI EN (telecommunications series), are after the Technical Body approval entered into one of the two approval procedures stipulated by the ETSI Rules of Procedure:

- One-step Approval Procedure (OAP);
- Two-step Approval Procedure (TAP).

A.1.5.1 EN - One-step Approval Procedure (OAP)

This procedure is used when the draft is by the Technical Body considered mature, or is a new version of an ETSI EN. After editing, the draft is made available to the ETSI National Standards Organizations (NSOs) for a process where each NSO establishes the national position for the vote, i.e. performs national consultation in the territory of the NSO concerned (the exact implementation may vary from one NSO to another).

The period for "NSO voting" is 120 days. The deliverables are made available to the NSOs via file transfer via Internet. The NSO sends the national position for the vote to ETSI via a web based electronic voting application.

The deliverable will be adopted if at least 71 % of the weighted national votes cast are in favour of the draft.

A.1.5.2 EN - Two-step Approval Procedure (TAP)

This procedure, which is normally obligatory for so-called Harmonized Standards, involves the NSOs at two stages with, as necessary, resolution actions taken by the Technical Body responsible for the draft.

While the first NSO involvement, "NSO Public Enquiry", has a duration of 120 days, the second, "NSO Voting" period is 60 days.

The comments, if any, received from the Public Enquiry are used by the Technical Body to decide on whether changes should be made to the draft before it is sent to the NSOs for their consultation and establishment of national position for the vote.

A.1.6 Combined processes

In order to make the results of the work of the Technical Body available to the market at an early stage, some of the above processes may be combined in such a way that two deliverables with identical content are processed/published in parallel.

For example, if the intention is to publish the draft as an ETSI EN (telecommunications series), but only after application of the Two-step Approval Procedure, the editing of the ETSI EN (sub-process Editing prior to Public Enquiry) also covers the Publication of an ETSI TS with identical contents.

Detailed rules for the approval procedures described above may be found in the Technical Working Procedures (TWP).

History

Document history		
V1.1.1	December 2005	Publication