FABEC Implementation Phase

Optimal use of technical resources

EC Information

Annex P

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DOCUMENT SUMMARY

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ATTACHMENTS CONTAINED IN THIS ANNEX

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P.1	FIN SC	Draft	0.7	14.03.2012	Common Procurement Capital Budgeting Process
P.2	OLDI TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for OLDI
P.3	AGDL TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for AGDL
P.4	VCS TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for VCS
P.5	SUR TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for SUR
P.6	FINE TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for FABEC IP Network
P.7	DSIM TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for DSIM
P.8	CNS TF	Draft	0.7	14.03.2012	FABEC Technical Cooperation for CNS

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1 INTRODUCTION

The recent Single European Sky (SES) legislation is intended to have a major impact on performance through de-fragmentation; in particular it will foster airspace rationalization and restructuring, consolidation of facilities, and harmonization of systems and procedures.

The six contracting FABEC States have committed to ensure the commonality of EATMN systems and the cost-effective deployment of technical infrastructure and services. The potential effects of scale offered by the size of FABEC, combined with implementation of best practice in service delivery should reduce the adverse impact of fragmentation, improve performance and develop cost effective services in the technical area.

2 MANAGEMENT OF FABEC TECHNICAL COOPERATION

During the feasibility study phase (2006-2008), a first set of technical initiatives was identified taking into account the current individual technical roadmaps, the FABEC operational requirements and the SESAR program.

The findings of the feasibility study have initiated the FABEC implementation phase activities. The initiatives list was reviewed and priority was put on short term benefits and technical support to operational initiatives. Some initiatives are still under analysis and some have been considered for the implementation phase. Some other initiatives have been put on hold due to a negative business case for the short term. These initiatives will be reconsidered in the light of SESAR outputs and the results of on-going ANSP projects.

At present the FABEC technical domain activity is organized according to the general scheme of the FABEC implementation phase project organization.

- The Technical Standing Committee (TECH SC) has the responsibility of the technical domain and monitors the technical task forces (TFs) activities.
- A Technical Working Group (TWG) is in charge of the preparation of TECH SC decisions.
- FABEC technical cooperation projects are developed by Task Forces, Working Groups and Coordination Bodies reporting to TECH SC.

TF activities are time limited. When they have delivered and TECH SC decided to implement one of the scenarios proposed by the TF, implementation activities are usually executed at local or bilateral level. But coordination is ensured at FABEC level. This is currently the case for the development of communication infrastructure and for the implementation of advanced coordination between flight data processing systems.

3 FABEC TECHNICAL STRATEGY

Whilst the initial technical cooperation activities are targeting quick wins, more ambitious goals shall be set to meet stakeholders' expectations. TECH SC has defined an overall framework for this in its strategy for the technical domain.

The technical strategy aims at increased operational efficiency by FABEC convergence of technical services, processes and systems as well as a justifiable consolidation of technical services. To this end the TECH SC focuses on common specifications, procurement, deployment and maintenance. The enhanced efficiency translates into better cost effectiveness.

The management of technical convergence is supported by a FABEC Technical Convergence Plan (FTCP). The FTCP focuses on the medium to long term. It integrates the individual ANSP roadmaps into a coherent FABEC roadmap to implement the technical strategy.

4 COMMON PROCUREMENT

The financial benefits that can be obtained from technical convergence are not limited to more efficient operations. Technical convergence is expected to enable significant common procurement

opportunities at FABEC level. This should allow to reduce the level of capital investment needed to deploy the technical infrastructure of FABEC.

In view of future common procurement opportunities, FABEC partners decided to develop and maintain a portfolio of potential common procurement projects (goods and services). This portfolio is managed in a Common Procurement Capital Budgeting Process. This process is presented in Attachment 1. It is not limited to the technical domain.

TECH SC manages the input of the technical domain into this process by means of a sub-process called FAPTI (FABEC Advisory Process for Technical Investments). FAPTI deals with shortlisting common procurement opportunities for CNS/ATM systems.

The initial FAPTI shortlist focuses on CNS systems. The associated net benefits have been taken into account in the CNS Business Case. Under that header the benefits are also included in the overall FABEC Cost Benefit Analysis (refer to Annex S of this EC Information File).

Meanwhile, FABEC common procurements already took place for:

- VCS systems (procurement by DSNA and MUAC based on FABEC VCS specifications)
- AGDL services (common approach with most of the FABEC partners)

5 RESULTS OBTAINED SO FAR

Refer to the Attachments 2 till 7 for a description of what has been achieved so far in terms of FABEC technical cooperation in various sub-domains.

FABEC Implementation Phase

Common Procurement Capital Budgeting Process

EC Information

Attachment P.1

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Common Procurement Capital Budgeting Process

Objectives

The objective of common procurement is to increase value for money in procurement and to increase the efficiency of procurement and deployment processes. The objectives of the Common Procurement Capital Budgeting Process are to

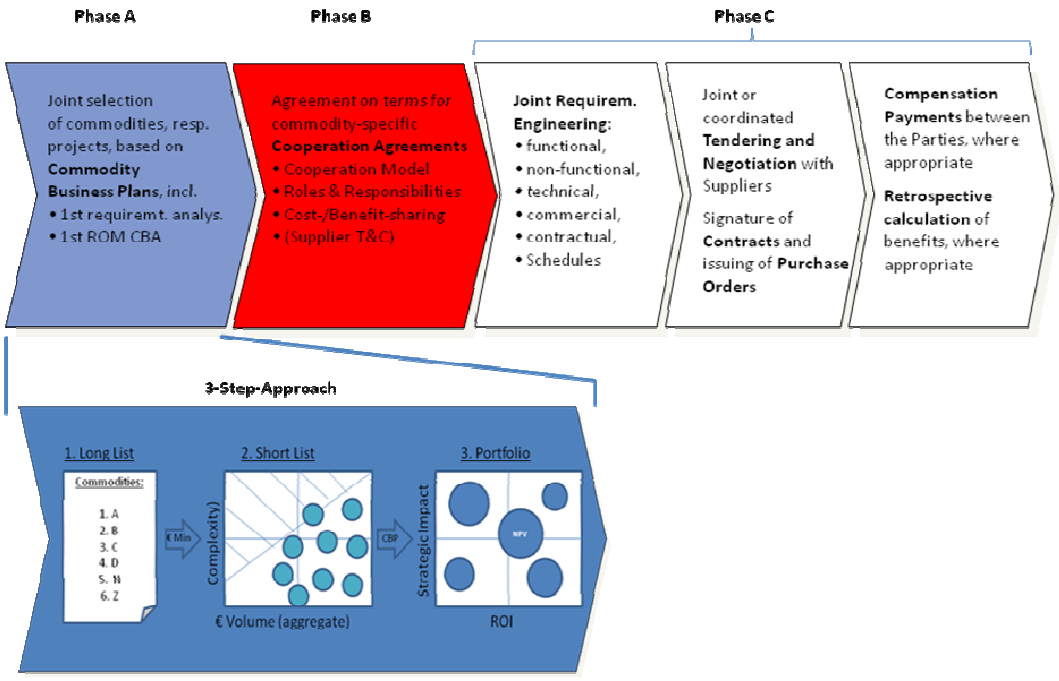
1. **jointly identify candidates** for common procurement projects with sufficient synergies and economies of scale (hereinafter called Cooperation Candidates) which can be effectively exploited by two or more alliance partners, and to

2. allow for **efficient selection** of common procurement projects from the identified Cooperation Candidates by two or more alliance partners based on business plan like Common Procurement Decision Documents, and to

3. allow for **efficient exploitation** of identified synergies and economies of scale through common or coordinated or joint procurement by two or more alliance partners based on Commodity Specific Cooperation Agreements.

Alliance partners which cooperate in a common procurement project shall eventually have about the same commercial/economical advantage from cooperation under a Commodity Specific Cooperation Agreement in terms of Return on Investment and Net Present Value of cooperation.

The Common Procurement Capital Budgeting Process:



Process Phases and Steps

The entire common procurement related capital budgeting process comprises the following three phases:

A. Joint identification of Cooperation Candidates and Portfolio development

B. Selection of Cooperation Candidates and execution of Specific Cooperation Contracts by two or more alliance partners

C. Implementation and execution of Specific Cooperation Contracts through two or more alliance partners

Phase A - Joint Identification of Cooperation Candidates

- Unless Cooperation Candidates had been set by top management or are obviously beneficial or necessary due to the environment of business, the process starts with the joint identification of Cooperation Candidates. One of the related selection processes consists of an upstream screening phase of technical investments to identify cooperation opportunities and generate possible candidate technical programs/projects for common procurement. It is called the FABEC Advisory Process for Technical Investments (FAPTI). It is complementary and provides inputs and to the FABEC Common Procurement Process. FAPTI is to be considered as the interface between the technical domain and the Common Procurement Process and it is expected to provide effective leverage on the technical convergence in FABEC, in order to improve "Performance" (in a SES context) through reducing system diversity and fragmentation costs. It will as well promote common FABEC initiatives instead of individual ANSP programs/projects for major technical investments and by doing so, ensure that technical investments are optimized at FABEC level. This phase generally comprises the following steps:

A.1. Long-Listing

The goal of this step is to get an open discussion going. The output is a Longlist. All alliance partners jointly establish a Long-List of goods and services as prospects for Cooperation Candidates in one or more brainstorming sessions. No analysis or pre-selection should be made in this step unless agreed by all.

A.2. Short-Listing

The goal of this step is to focus on, respectively to filter out, goods and services where the effort for eventually writing-up and implementing Common Procurement Business Plans (CBP) or the alike will be justified by sufficient savings to be expected from Common Procurement.

As savings from Common Procurement are related to aggregate procurement volume, only those goods and services with relevant aggregate procurement volumes will be considered for Short-Listing and further processing. Savings from Common Procurement must furthermore be commensurate with the additional effort and cost that comes with it. The main drivers for additional cost and effort stem from analysis, comparison and eventually harmonization of functional and non-functional requirements and specifications, as well as from group meetings and coordination. These efforts and cost are related to the “complexity” of the respective requirements. In the Short-Listing exercise, therefore, goods and services will be pre-selected for further processing when the “complexity” of the requirements and the aggregate procurement volume are commensurate. The respective decisions will be taken by a cross-functional management team based on expert opinions and intuition.

A.3. Joint Common Procurement Business Planning

The goal of this step is to generate proposals for Cooperation Candidates from the Shortlist of goods and services. These proposals shall be substantiated by business plan like documents for each Cooperation Candidate. The output of this step is a Portfolio of Cooperation Candidates, which shall be the input for the selection of Cooperation Candidates in the subsequent phase.

The Common Procurement Commodity Business Plans ("CBP") shall be developed by a cross-functional procurement management team based on expert advice and shall contain analysis, concepts and implementation plans for each shortlisted good or service. The analysis relates to functional and non-functional requirements, contracts, demand, supply (market), cost/benefit, finance, resources, legal and institutional environment and related risk. The analysis shall be done considering probable scenarios of participation, thus, sensitivity analysis. The concepts and implementation plans tackle joint or common or coordinated specification, procurement and deployment, cost and risk sharing, risk management and financing. Cooperation Candidates shall be organized into Portfolios considering their expected Return on Investment, Net Present Value, Break-Even-Points and Strategic Impact.

Phase B - Selection of Cooperation Candidates and Execution of Specific Cooperation Agreements

Based on the Common Procurement Commodity Business Plans and individual policies, alliance partners will bi-or multilaterally choose to participate in one or more or none of the cooperation projects organized in the Portfolio. Alliance partners which intent to cooperate in a specific common procurement project will then negotiate a commodity-specific Cooperation Agreement.

Such negotiation and, thus, the Cooperation Agreement will cover the sharing of work, cost and benefits, shared requirements, specifications, including supplier contract terms and conditions and procurement procedures and schedules. The parties to such negotiation should endeavor to share the benefits in such a way that the cooperation results in about the same Return on Investment for each party involved, thereby ensuring that the commercial benefits of cooperation are similar or equal.

Phase C - Implementation and Execution of Specific Cooperation Agreements

When individual specifications are available, the parties will continue and finish harmonizing requirements and specifications, including supplier contract terms and conditions and procurement procedures and schedules upon signature of the respective Specific Cooperation Contracts. Joint or common or coordinated procurement ("Common Procurement") will then be executed and administered. Benefits of the exercise may be retrospectively shared or balanced in accordance the agreements stipulated in the Specific Cooperation Agreements.

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FABEC Implementation Phase

FABEC Technical Cooperation for OLDI

EC Information

Attachment P.2

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FABEC Technical Cooperation for OLDI

1 DESCRIPTION OF THE INITIATIVE

Online Data Interchange (OLDI) is the name of the standard developed by EUROCONTROL which describes an exchange of flight data between control centres to coordinate flights. As the actual flight progress often deviates from the original flight plan, it is important to have timely coordination with precise flight plan data transmitted via OLDI. More than 40 OLDI messages have been developed over the years (the current version 4.2 of the OLDI specification was adopted in 2010). In practice, however, only a few have been used.

Against this background, a FABEC task force investigated how more extensive use could be made of the OLDI standard for the FABEC air navigation service providers. In the task force, 21 experts from operations and engineering from all ANSPs involved in FABEC as well as from the Dutch military and the British air navigation service provider NATS worked on the issue.

In total, three groups of OLDI messages were identified as being clearly beneficial and recommended for implementation. In addition, further investigations were carried out on the coordinated use of the OLDI mechanism across several control centres for preliminary flow control measures of arrivals.

The OLDI TF made the following recommendations/outputs:

- Coordination for FMTP implementation: integrated roadmap, coordination for tests activities in order to benefit from partners experience
- Coordination for IR/COTR messages: integrated roadmap, agreement on testing activities, agreement on operational usage of OLDI messages with adjacent FABEC partners.
- Three sets of OLDI messages with significant performance benefits have been identified (Dialogue Procedure for co-ordination process, Arrival Management process, Transfer of Communication process)
- Recommendations for future system implementation, and/or consideration of potential interoperability problems for existing system implementations before starting serious tests/trials, respectively.
- Recommendation for usage of ADEXP as format for OLDI messages, since not all messages are specified for ICAO
- Development of common test plans, test scenarios and test cases for implementation of OLDI messages.
- Definition of a “Basic Scenario” for cross border arrival management between the FABEC partners and the extended specification of the AMA message in AMAN systems and FDP systems.

In order to ensure the coordinated implementation within FABEC of the recommendation of the OLDI TF the TECH SC nominated a FABEC technical coordinator for OLDI messages implementation in order to ensure:

- proper implementation within FABEC of the SES Implementing Rule 1032/2006 on “Co-ordination and Transfer (COTR)” - until 31.12.2012
- proper implementation within FABEC of the SES Implementing Rule 30/2009 on LOF and NAN and 29/2009 on Data Link services - until 07.02.2013
- proper implementation within FABEC of the implementation of optional OLDI messages defined in Forward 1 (AMA message)
- proper implementation within FABEC of the implementation of optional OLDI messages defined in Forward 2 (SYSCO) and Forward 3 (Transfer of communications)

These implementation plans are maintained at FABEC level.

2 RATIONALE AND PURPOSE OF THE INITIATIVE

The work of the OLDI Task Force contributes to the subject Flight Data Processing Interoperability and aims at the synchronized utilization of implemented or planned to be implemented Online Data Interchange (OLDI) messages between Air Traffic Service Units (civil and military) within the FABEC area.

The task force investigated how more extensive use could be made of the OLDI standard in order to

- Improve the coordination of flights between ATS units by identifying OLDI messages which are expected to provide substantial operational benefits
- Benefit best from the underlying OLDI mechanism which is already implemented in Flight Data Processing Systems in the FABEC area
- Follow a harmonized approach among the FABEC ANSPs

3 DESCRIPTION OF THE CURRENT STATE

The OLDI Task Force has concluded its work with a set of recommendations which are currently being followed and implemented as required. The coordination of the harmonized implementation is achieved by an OLDI Implementation Coordination Body (OLDI ICB) which meets regularly to report on progress, issues and updated planning.

Currently the coordination for the implementation of the OLDI messages related to the SES Implementing Rule 1032/2006 on “Coordination and Transfer” (IR/COTR) is managed: integrated roadmap, agreement on testing activities, agreement on operational usage of OLDI messages with adjacent FABEC partners, solving of technical and operational implementation issues.

4 ONGOING DEVELOPMENT

One of the recommendations of the OLDI Task Force for implementation of an additional OLDI message for Arrival Management has been picked up by the new FABEC Project XMAN/AMAN (Cross Border Arrival Management). The project will manage the synchronized and harmonized implementation in the relevant operational context.

5 FUTURE SERVICE CONCEPT (IF APPLICABLE)

N/A

6 DESCRIPTION OF EXPECTED BENEFITS

Besides the benefits arising from an agreed and coordinated utilization and implementation of OLDI messages, i.e. reduced testing and verification activities, there are specific benefits arising from the operational use of the OLDI messages which were recommended by the OLDI Task Force:

- Arrival Management message: The expected benefits are on flight efficiency: aircraft profiles tailored to local requirements resulting in reduced fuel burn and CO_2 exhaust.
- Dialogue Procedure for Coordination (SYSCO): The expected benefits are on capacity and cost-effectiveness through a reduction in controller workload and better ratio ‘number of controllers/ number of movements’, respectively.
- Transfer of Communication: The expected benefits are on safety through a reduced risk of misunderstanding of information and increased controller situational awareness

7 IMPLEMENTATION COST FOR BENEFIT REALISATION

The technical implementation costs for OLDI Messages are relatively low, because all FDP Systems already have implemented the basic OLDI mechanism on which each new message will build. Most costs will be born in validation and testing of messages with a corresponding partner system.

The technical implementation costs have been estimated for the case of the Arrival Management Message. They were in the range of 100 k€. However the operational validation and integration efforts have not yet been included.

An initial CBA has shown, that the benefit – to – cost ratio is well above 1, so that a net benefit can be achieved by the introduction of the Arrival Management Message in a relevant operational environment.

8 HIGH LEVEL PLANNING TIMELINE

The following activities and initiatives are currently planned:

Initiative	**Timeline**
Flight Message Transfer Protocol for OLDI Messages	From 2011 (IPv4) to 12/2014 (IPv6)
SES Implementing Rule COTR (1032/2006)	From 2011 to 12/2012
SES Implementing Rule on Datalink (30/2009)	From 2012 to 02/2013
Arrival Management Message (AMA)	From 2011 to 2016
Dialogue Procedure for Coordination (SYSCO)	From 2013
Transfer of Communication (COF/MAS)	From 2014

9 IMPLEMENTATION RISKS

Implementation risks are generally small.

One source of potential incompatibilities of OLDI system implementations lies in the implementation of different versions of the OLDI Specification. The currently valid Eurocontrol Specification Vsn. 4.1 has been published in January 2008, while version 2.3, which was valid before, was published in December 2001. Many current system implementations adhere to version 2.3 or even earlier versions of the OLDI Specification.

Another source of potential incompatibilities of OLDI system implementations lies in the differing implementation of optional requirements which are listed in the specification for various OLDI messages. These optional requirements address either system behaviour of the sending or receiving unit or the use of optional data fields to be supplied. Often these optional requirements are “to be bilaterally agreed” between co-ordination partners. However, system implementations may not be so flexible that they could be adapted differently for each co-ordination partner in all aspects.

These risks are being mitigated through the coordination activity of the OLDI ICB.

10 SUMMARY OF NET BENEFITS

The current OLDI Specification will be the basis for data exchange between ATS units up to the year 2020 or even longer. The FABEC OLDI TF has set up a plan how to benefit from this specification in the most appropriate way. The expected operational benefits on Flight Efficiency (KPA Environment), Capacity and Safety can be achieved with moderate investment into the current data exchange mechanism.

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FABEC Implementation Phase

FABEC Technical Cooperation for AGDL

EC Information

Attachment P.3

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FABEC Technical Cooperation for AGDL

1 DESCRIPTION OF THE INITIATIVE

ANSP will have to provide Air-Ground datalink services as from February 2013 in accordance to an EC IR on Data Link Services. To support these services, FABEC ANSPs have to provide VDL2 communication services for ATC communication to all airlines. Some of these airlines may or may not have contracted AOC services with ARINC and SITA. For each of ARINC and SITA, the contractual framework could be:

- A teaming agreement (e.g. as currently between DFS and SITA. In this case, FABEC ANSPs are operating part of the communication infrastructure (ground stations and wide area network) for the teaming partner.
- An outsourcing agreement (as currently between MUAC and ARINC and SITA). In this case, FABEC ANSPs are buying VDL2/ATN services for ATC communication.

In the first option, FABEC ANSP could reuse existing infrastructure and share monitoring and control staff to reduce cost.

Based on a business case developed by the AGDL TF, the TECH SC selected the following scenario:

- Teaming agreement with one air communication service provider (ACSP): ARINC or SITA;
- Outsourcing with the other ACSP.

The selected scenario is implemented in phases. In a first phase FABEC partners interested to procure VDL2/ATN infrastructure organize under the umbrella of FABEC a joint call for tender to choose a partner ACSP for the common procurement of the infrastructure and for the provision to this ACSP of an AOC service;

For the first phase, the interested ANSPs sealed off their cooperation by means of a Consortium Agreement on AGDL procurement and designated DSNA to act as a leader during the process. Once the tenderer was selected, they jointly concluded a Framework Agreement with the selected tenderer, SITA. This Framework Agreement was signed in 2011. For this framework agreement, each party identified a fixed and an optional number of AGDL infrastructures. Under the umbrella of this Framework Agreement, each party agrees with the tenderer on its own Subsequent Contract which sets the principles of execution for the particular situation of the party. MUAC does not own any airports or other suitable locations to install VDL2/ATN infrastructure and therefore the approach was that MUAC will make use of the VDL2/ATN infrastructure installed by DFS, LVNL, Belgocontrol and ANA Luxemburg.

2 RATIONALE AND PURPOSE OF THE INITIATIVE

see description of the initiative in chapter1

3 DESCRIPTION OF THE CURRENT STATE

Five of the FABEC ANSPs had formed the "FABEC AGDL consortium", executed a common procurement and selected SITA as their primary partner to provide VDL M2/ATN communication.

Two out of the five FABEC AGDL consortium members (DSNA, skyguide) had placed purchase orders to acquire the necessary equipment for a VDLM2 network in their states.

The BeNeLux-ANSPs do not have any obligation for VDLM2/ATN- data link and had not yet decided if and when they will execute a VDLM2 procurement/deployment. Deployment of FABEC AGDL infrastructure in this area will not take place in the first few years and as a consequence, MUAC will maintain its contracts with ARINC and SITA in order to ensure continued AGDL operations, which started some 10 years ago.

Due to the limited involvement of FABEC ANSPs in the VDLM2/ATN, the operational Concept does not foresee a common operation in the short term. The Monitoring & Control tasks for the AGDL infrastructure will be within the responsibility of the ANSP providing the service.

A more centralized operational concept might be considered if additional FABEC partners join operation in the future.

Meanwhile, contacts have been initiated with ARINC to set up a fair deal for outsourcing.

4 ONGOING DEVELOPMENT

The VDLM2 networks installed or planned to be installed in France, Germany and Switzerland will be operated as national networks by local staff in the initial phase.

The potential benefits of a joint or common operation of a FABEC wide VDLM2 network will be investigated further if BeNeLux ANSPs are ready to deploy a VDLM2 network in their area of responsibility. Such a decision is not expected before 2015.

5 FUTURE SERVICE CONCEPT (IF APPLICABLE)

Not applicable

6 DESCRIPTION OF EXPECTED BENEFITS

It can be assumed that the common procurement process resulted in a minor discount for the involved FABEC partners. However as a common operation cannot be achieved in due time the operational benefits expected initially will not be realized in the years to come.

7 IMPLEMENTATION COST FOR BENEFIT REALISATION

Not applicable

8 HIGH LEVEL PLANNING TIMELINE

Not applicable – initiative has been finished

9 IMPLEMENTATION RISKS

Not applicable – initiative has been finished

10 SUMMARY OF NET BENEFITS

see chapter 6

FABEC Implementation Phase

FABEC Technical Cooperation for VCS

EC Information

Attachment P.4

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FABEC Technical Cooperation for VCS

1 DESCRIPTION OF THE INITIATIVE

The objectives of this initiative were the following:

- Reduce capital expenditure by a common procurement process or at least by generic requirements leading to system standardization
- Foster use of IP technology and facilitate the sharing of radio resources
- Allow implementation of FABEC operational concept, in particular dynamic sectorization
- Provide contingency solutions within FABEC

In order to achieve the benefits described above, the following prerequisites have been identified:

- common FABEC VCS specification for future VCS procurement
- Common voice chain architecture for radio and telephony

A TF was established for the development of FABEC VCS specifications. This TF has already delivered the specifications and has been closed-out.

For the development of a FABEC voice chain architecture, a voice coordination body was set-up in 2011. The objectives of this coordination are to:

- Develop a FABEC voice chain architecture from VCS systems to ground station infrastructure
- Implement operational telephony IP communication compliant with ED-137 between FABEC ANSPs
- Implement operational radio frequencies air-ground communication compliant with ED-137 and that could be shared between cross border FABEC centres
- Develop a common FABEC communication strategy
- Coordinate FABEC external relation in that domain.

The common chain architecture is under development. VCB coordinates FABEC ANSP contributions to the EUROCAE ED-137 requirements that will be validated in January 2012.

2 RATIONALE AND PURPOSE OF THE INITIATIVE

This initiative fits into the FABEC logic for cooperation in the technical domain. This logic follows the life-cycle of technical systems, starting with cooperation on technical specifications, then proceeding to common procurement, followed by operational cooperation.

3 DESCRIPTION OF THE CURRENT STATE

The VCS Task Force has delivered FABEC VCS specifications. These specifications have been used for common procurement of VCS systems by DSNA and MUAC.

4 ONGOING DEVELOPMENT

For the development of a FABEC voice chain architecture, a voice coordination body was set-up in 2011.

5 FUTURE SERVICE CONCEPT (IF APPLICABLE)

Not applicable. This is dealt with in another initiative, i.e. the CNS Services project.

6 DESCRIPTION OF EXPECTED BENEFITS

MUAC and DSNA have launched a common Call for tender using these common specifications in 2010 and selected Frequentis in 2011. MUAC is due to operate the new VCS in Feb 2014 and DSNA from 2015. Other FABEC ANSPs have committed to use the FABEC specifications according to their individual roadmap.

The overall NPV of this first common procurement has been estimated at 5,1 M Euro until. The total benefit will still grow when further ANSPs procure VCS systems using the FABEC specification.

7 IMPLEMENTATION COST FOR BENEFIT REALISATION

See section 6 above.

8 HIGH LEVEL PLANNING TIMELINE

See sections 3 and 4 above.

9 IMPLEMENTATION RISKS

Not applicable.

10 SUMMARY OF NET BENEFITS

See section 6 above.

FABEC Implementation Phase

FABEC Technical Cooperation for SUR

EC Information

Attachment P.5

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11 DESCRIPTION OF THE INITIATIVE

Surveillance Infrastructure Optimization is one of the areas of co-operation depicted on the High Level Roadmap of the FABEC Feasibility Study Report, and in particular the optimisation of sensors infrastructure which is considered as the first step to be undertaken. Further steps may include the rationalisation of surveillance equipment, and FABEC wide optimization of surveillance infrastructure (including the use of new technologies).

Most of the FABEC Surveillance sensor infrastructure was designed, optimized and implemented to satisfy the national needs and to support operations in their airspaces. Furthermore, because of differences in missions and operations, duplicated or complementary surveillance coverage exist between civil and military infrastructures.

The fragmentation (national as well as civil/military) leads to multiple coverage in some areas, with potential inefficiencies in terms of investment, operating costs and frequency congestion.

A decision was taken by ASB to launch the Surveillance sensor infrastructure optimization Task Force (SUR TF) in February 2009. The SUR TF shall study FABEC SUR coverage independent of intra-FAB national boundaries and propose optimization measures for the FABEC surveillance sensor network.

This task is coordinated with the work of the FABEC CNS Services project, in order to ensure consistency of results and complementarity of effort.

12 RATIONALE AND PURPOSE OF THE INITIATIVE

The objective of the initiative is to provide recommendations and measures for the optimisation of the current and future FABEC surveillance infrastructure, designed to cover the needs for all phases of flight and corresponding types of ATC unit (ACC, APP and TWR).

The optimization of surveillance infrastructure is a very complex issue. The solution is a compromise between operational requirements and concepts, surveillance systems architecture strategy, surveillance infrastructure development and implementation (present and emerging technologies, transition plans), local environment and cost considerations.

In order to reach this goal the SUR TF works in two phases:

- The first phase "*First benefits recommendations*" focuses on the current situation (existing surveillance operational requirements and concepts, replacement or decommissioning plans) with the aim of identifying short-term opportunities for optimization of sensors infrastructure.

  The WP1 deliverable provides recommendations for optimization measures with respect to the existing environment. This includes implementation planning, safety aspects, data sharing and maintenance arrangements, RF issues …etc.

- The second phase "*Full optimization sensor infrastructure*" will consider a longer term horizon, with a common approach to operational requirements and concepts as well as technology (i.e. use of emerging technologies such as WAM and ADS-B). This includes the study of planning criteria for gradual changes in the infrastructure (replacement, upgrading or withdrawal of existing sensors, network design and size).

  Cooperation with the relevant SESAR projects will be ensured (e.g. SESAR WP 15.4.1 Rationalisation of surveillance infrastructure).

  Involvement of military partners will be essential for getting an exhaustive overview of the optimisation possibilities.

  Two deliverables are foreseen within this phase 2:

  WP2- SUR Future Requirements and concepts**:**.

  This WP gathers all the prerequisites necessary to carry out efficiently the analysis and selection of the areas and candidates for optimisation measures. It will address and consider the following items: Identification of the relevant elements from FABEC CONOPS, Sesar

approach, international regulation and strategies; strategic plan from civil and military partners, Harmonised operational and safety requirements, methodology and optimisation criteria

WP3- Full SUR Optimization Plan**:**

Once these prerequisites established and approved, the full optimisation exercise (WP3) can be carried out with the objective to propose FABEC wide optimization measures and guidelines for implementation. The exercise will be done for a mixed surveillance environment at long term (radar, WAM, ADS B).

13 DESCRIPTION OF THE CURRENT STATE

The first phase was achieved and WP 1 approved by TECH SC in 2011.

On the basis of available data and the various studies carried out (about 15 coverage studies or analysis for PSR and SSR), the SUR TF found a consensus on a package of recommendations for measures which can be implemented at short term and which lead to a significant reduction of sensors with respect to the present surveillance infrastructure.

For some of these recommended measures, additional discussions are needed to consolidate the conditions of surveillance data sharing and minimum required service level and to guarantee the performance and the availability of information to support the defined separation standard for ATC. The transfer of information between civil and military organizations may require special consideration. Recommendations on those aspects derived from IR 1207/2011 (SPI IR) have been elaborated.

Phase 2 was started in June 2011 and currently focuses on solving all the prerequisites in view of the full optimisation exercise.

14 ONGOING DEVELOPMENT

WP2 will provide all prerequisites for the long term full SUR optimisation exercise through the following activities:

1- Analyse trends in the SUR domain (FABEC CONOPS, SESAR, international standardization).
2- Develop operational requirements to be used in the optimisation study (to be validated by SC OPS).
3- Develop surveillance architecture as baseline for the optimisation study.
4- Develop optimisation criteria for surveillance infrastructure (including new technologies).
5- Develop methodology for identification of optimisation areas and measures

Once these prerequisite established and approved, the full optimisation exercise (WP3) can be carried out with the objective to:

1- Identify the areas of optimisation and propose optimisation measures
2- Develop the FABEC-wide optimization plan (i.e. phase-out and phase-in plan, transition plan...).
3- Develop guidelines for implementation.

15 FUTURE SERVICE CONCEPT (IF APPLICABLE)

Not applicable. This is dealt with in another initiative, i.e. the CNS Services project.

16 DESCRIPTION OF EXPECTED BENEFITS

The SUR TF proposals aim at minimizing the need for surveillance sensor infrastructure, and thereby reducing investment cost and operating cost, as well as reducing frequency spectrum congestion.

The first phase of the optimisation study focused on first benefits to be implemented in the time frame 2012-2018 by optimising the infrastructure within the current institutional, operational and technical concept. Consensus on the following measures was found:

- For the civil infrastructure: 10 non replacements of sensors (5 PSR, 5 SSR) and one specific measure for improvement of sensor characteristics for FABEC user's needs.
- For the military infrastructure: 4 non replacements (2 for PSR, 2 for SSR)

For the second phase, the optimisation of the infrastructure will take into account new rules (e.g. SPI IR, MSI IR), the surveillance strategy plan for 2025-2030, the availability of emerging technologies and the harmonisation of operational requirements within FABEC. This is expected to lead to further optimisation measures, especially if more military SUR coverage can be harnessed.

17 IMPLEMENTATION COST FOR BENEFIT REALISATION

Not applicable for a reduction of infrastructure.

18 HIGH LEVEL PLANNING TIMELINE

Phase 1 – WP 1 : achieved in 2011

Phase 2 – WP 2 : mid 2011 – mid 2012

Phase 2 – WP 3 : mid 2012 – mid 2013

19 IMPLEMENTATION RISKS

Proposed measures are not theoretical but based on consultation of all involved parties. Nevertheless, these parties still have to consider several local factors at implementation time, for example: CBAs, safety cases, operational assessment, data sharing agreements, service level agreements, security assessment (including military). Such factors can easily lead to implementation delays or even prevent implementation of some measures.

20 SUMMARY OF NET BENEFITS

Benefits from WP 1: First benefits measures relate to the non-replacement of 10 civil and 4 military surveillance sensors (PSR and SSR) as well as optimization of some radar settings.

Benefits from WP2/3: A further reduction of radar sensors is expected. Coordinated introduction of new surveillance technology will also contribute to cost reduction.

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FABEC Implementation Phase

FABEC Technical Cooperation for FABEC IP Network

EC Information

Attachment P.6

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FABEC Technical Cooperation for FABEC IP network

1 DESCRIPTION OF THE INITIATIVE

During the feasibility study, the FABEC partners identified the necessity to define and then implement ground telecommunications facilities able to perform IP services to support Ground-Ground ATM operational Data and Voice communications within FABEC area and with FABEC partners (civil and military ANSPs).

During the FABEC Implementation Phase the FABEC Ip Network Task Force (FINE TF) was established to develop a solution for the FABEC IP network.

2 RATIONALE AND PURPOSE OF THE INITIATIVE

FINE TF identified the requirements for the FINE network and developed several scenarios for the implementation of a unified FABEC Internet network (UFINE) from the existing situation and based on the expected evolutions within FABEC area and around FABEC (SESAR, PENS,…). These three scenarios are:

- Scenario 1 “Continuation” meaning to continue to operate and to upgrade the three current national/regional networks (MICS, RAPNET, RENAR) and deploy interconnection infrastructure to create a FABEC like network;
- Scenario 2 “Building a FABEC network” meaning to deploy and operate a unique FABEC network for the whole FABEC area;
- Scenario 3 “A subcontracted FABEC network” meaning to procure IP services from telecom operator(s) to implement the FABEC communications from/to each FABEC site.

3 DESCRIPTION OF THE CURRENT STATE

A strategic direction is given by SES strategy defining Internet Protocol IPv6 as the technical target for Ground-Ground ATM communication. FMTP is the first Ground-Ground communication to be forced to IPv6 before end 2014 through an Implementing Rule.

Since scenario 1 was the only one to comply with the IR FMTP deadline this scenario was chosen as the first step for FINE. It is assumed today that this network will fulfill FABEC requirements until full deployment of voice over IP (about 2018) without new major investment costs.

A choice between scenario 2 and 3 will have to be taken in 2015. At that point in time it will also be possible to take full benefit of SESAR findings, PENS experience and feedback on scenario 1 operation.

4 ONGOING DEVELOPMENT

FINE TF will close-out in 2012. Appropriate arrangements are being established for the operation of the scenario 1 interconnection network.

By 2015 at the latest TECH SC will initiate work on the unified FABEC IP network (scenario 2 or 3).

5 FUTURE SERVICE CONCEPT (IF APPLICABLE)

Not applicable. This is dealt with in another initiative, i.e. the CNS Services project.

6 DESCRIPTION OF EXPECTED BENEFITS

The international IP networking is a technical necessity for the ANSPs to fulfill their duties, and as such the cooperation initiative does not target financial or other specific benefits.

7 IMPLEMENTATION COST FOR BENEFIT REALISATION

The implementation cost consists mainly of the coordination done by the Task Force and the deployment of a limited interconnection infrastructure.

8 HIGH LEVEL PLANNING TIMELINE

2012 : close-out Scenario 1 implementation

2015 : start work on scenario 2 or 3.

9 IMPLEMENTATION RISKS

None, since the chosen solution consists of a simple interconnection of already existing networks.

10 SUMMARY OF NET BENEFITS

See section 6 above.

FABEC Implementation Phase

FABEC Technical Cooperation for CNS

EC Information

Attachment P.7

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FABEC Technical Cooperation for CNS

1 DESCRIPTION OF THE INITIATIVE

Airlines have high expectations regarding enhanced ANSP efficiency. This expectation applies to all areas of ANSP activity. Accordingly, FABEC ANSPs are investigating benefits of FABEC cooperation in all areas of activity. The goal is to identify and unlock the economies of scale offered by the larger geographical scope enabled by the FAB construction.

Looking at the technical domain a broad distinction can be made between CNS services and technical services in support of ATS systems. This report deals exclusively with CNS services. The shorthand "CNS" stands for Communications, Navigation and Surveillance. These three sub-services are commonly referred to as COM, NAV and SUR. They are concerned with systems such as:

- COM : radios, data networks, voice communication switches
- NAV : navigation beacons, landing systems, satellite navigation
- SUR : radars, multilateration systems

All seven civil FABEC ANSPs are vertically integrated organisations with in-house CNS departments. It should nevertheless be noted that the SUR and NAV services of ANA Luxembourg, Belgocontrol, DFS and LVNL can also be used directly by Maastricht UAC (MUAC). As such, the CNS department of MUAC is limited to the COM domain.

In view of the clear similarities between the CNS services of the different FABEC ANSPs one can expect to find significant synergies of FABEC CNS cooperation. The FABEC Feasibility Study indeed identified "CNS Services" as a potential area for FABEC cooperation and expected to find savings in both operating and investment costs for CNS services.

On 16 December 2010 the FABEC ASB (ANSP Strategic Board) defined CNS as one of the priority areas for cooperation and confirmed its collective strong willingness to optimize CNS services at FABEC level. The Business Case phase of the CNS Services Project was initiated with a provisional target of 20% structural savings compared to the 2010 cost of CNS service.

2 RATIONALE AND PURPOSE OF THE INITIATIVE

In line with the standard project phasing for FABEC projects, the purpose of the Business Case phase is mainly to orient the decision making about cooperation. As such, the CNS Business Case document shall serve ASB to make a well-informed decision as to:

- which of the proposed cooperation initiatives they want to pursue; and
- what the level of cooperation will be

3 DESCRIPTION OF THE CURRENT STATE

The CNS Business Case will be submitted to ASB in Q2/2012.

4 ONGOING DEVELOPMENT

ASB will decide on further steps based on the Business Case, e.g. to develop an implementation plan and Cost Benefit Analysis for the chosen orientation.

5 FUTURE SERVICE CONCEPT (IF APPLICABLE)

The future CNS service concept is the subject of this study. Several options exist at the current stage.

6 DESCRIPTION OF EXPECTED BENEFITS

The CNS Business Case will be submitted to ASB in Q2/2012. At the current stage it appears already that there is a significant potential for cost reduction enabled by FABEC CNS cooperation. A provisional estimate is included in the FABEC CBA (refer to Annex S of the EC file). Realisation of cooperation benefits will be structural and is expected to become available gradually with the proposed convergence.

7 IMPLEMENTATION COST FOR BENEFIT REALISATION

It is expected that the implementation cost will largely depend on transition measures. The cost of such measures will largely depend on :

- decisions to be based on the Business Case, e.g.
    - which cooperation initiatives will be pursued
    - which organizational models will be implemented
- decisions to be taken during the subsequent implementation planning phase, e.g.
    - location of some services
    - institutional and legal solutions

8 HIGH LEVEL PLANNING TIMELINE

Mid 2012 : decision on general orientation, start of implementation planning.

Implementation planning : in view of the changes envisaged the time needed to solve all implementation issues should not be underestimated. The quality of work in this phase will determine the time needed for implementation.

9 IMPLEMENTATION RISKS

Jointly managing a significant part of ANSP activity is a new endeavor. This means that the problems to be solved may be rather fundamental. It also means that some problems may be discovered late in the process. For these reasons an active risk management scheme will be needed to avoid significant delays.

10 SUMMARY OF NET BENEFITS

See section 6 above.