NUAC Programme

Definition Phase Final Report

The feasibility of a joint enterprise for the carrying out of Air Navigation Services in Danish and Swedish airspace

Overall Executive Summary

JUNE 2007

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1 Introduction

In the light of the Single European Sky legislation, the national strategies in Denmark and Sweden, and the general pressure for change in European air traffic management industry, the NUAC Programme was established with the purpose of investigating the possibilities for a higher degree of cost-effectiveness for air navigation services in Denmark and Sweden in different strategic scenarios - whilst maintaining at least today's high level of flight safety.

As the first firm result from the NUAC Programme, the "NUAC Programme - Definition Phase Final Report" was submitted in February 2007. The report sums up the results from the work conducted in the programme and provides a high level picture of the aspects in a possible Case for Change regarding Danish and Swedish air navigation services.

In June 2007 the "NUAC Programme – Definition Phase, Supplementary Report" was submitted. This report shows the results from the supplementary analyses conducted during the spring 2007.

Consequently, The NUAC Programme has completed the Definition Phase and these reports, together with the underlying Socio-economic Analysis, should be seen as the platform for decision-making regarding the future development of the NUAC Programme.

This overall executive summary presents the high-level conclusions of the extensive work conducted in the Definition Phase and will provide guidance to the reader on the large number of reports and appendices. The summary consists of three sections:

- **Section 2: Overview of the report structure** – describing the structure and content of the Definition Phase Final Report, Definition Phase Supplementary Report and Appendices
- **Section 3: Strategic framework** – presenting the political drivers (SES, political visions etc.) and the vision, mission and strategic rationales for the future formal cooperation of LFV/ANS and Naviair
- **Section 4: Conclusion** – unfolding the primary conclusions of the Definition Phase Final Report and Definition Phase Supplementary Report.

1.1 Scope for the NUAC Definition Phase

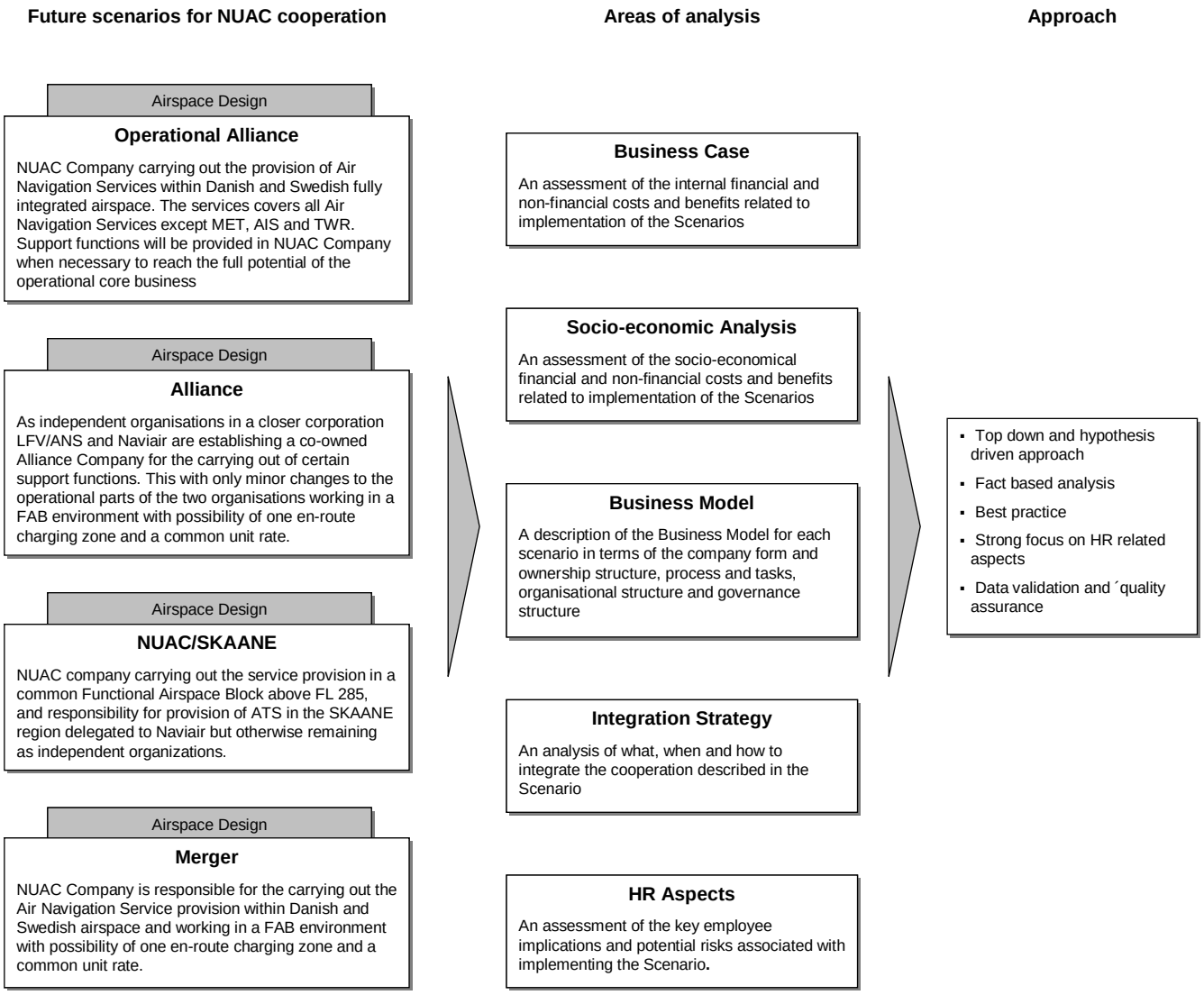
In the Definition Phase of the NUAC Programme, four strategic scenarios for a closer and more formal cooperation between LFV/ANS and Naviair have been evaluated based on the analytical framework outlined in Figure 1.

The scenarios (Merger, Operational Alliance, NUAC/SKAANE and Alliance) have been defined by the management of Naviair and LFV/ANS and NUAC Programme in collaboration with trade unions and. The scenarios differentiate on *how* the organisations should cooperate, on *which* functional areas and business processes should be included in the cooperation, and finally on *how* the airspace is designed. The four scenarios represent a differentiated set of possible solutions.

The analytical framework contains five different key areas (Business Case, Business Model, Integration Strategy, Socio-economic analysis, and HR Aspects and social dialogue). The

five areas of analysis together establish a balanced, fact-based evaluation and understanding of the scenarios.

Figure 1 Analytical framework for the Definition Phase

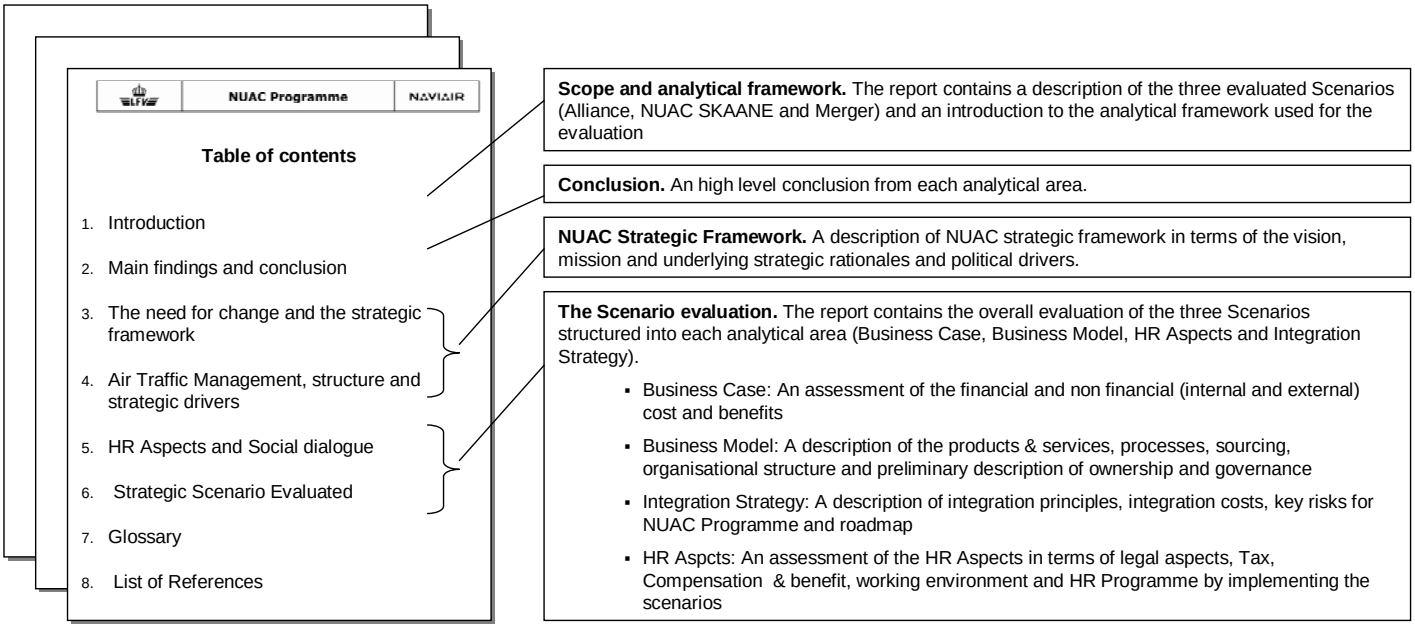


2 Overview of report structure

The Definition Phase has generated a large amount of findings and analysis results that are forming a robust decision platform.

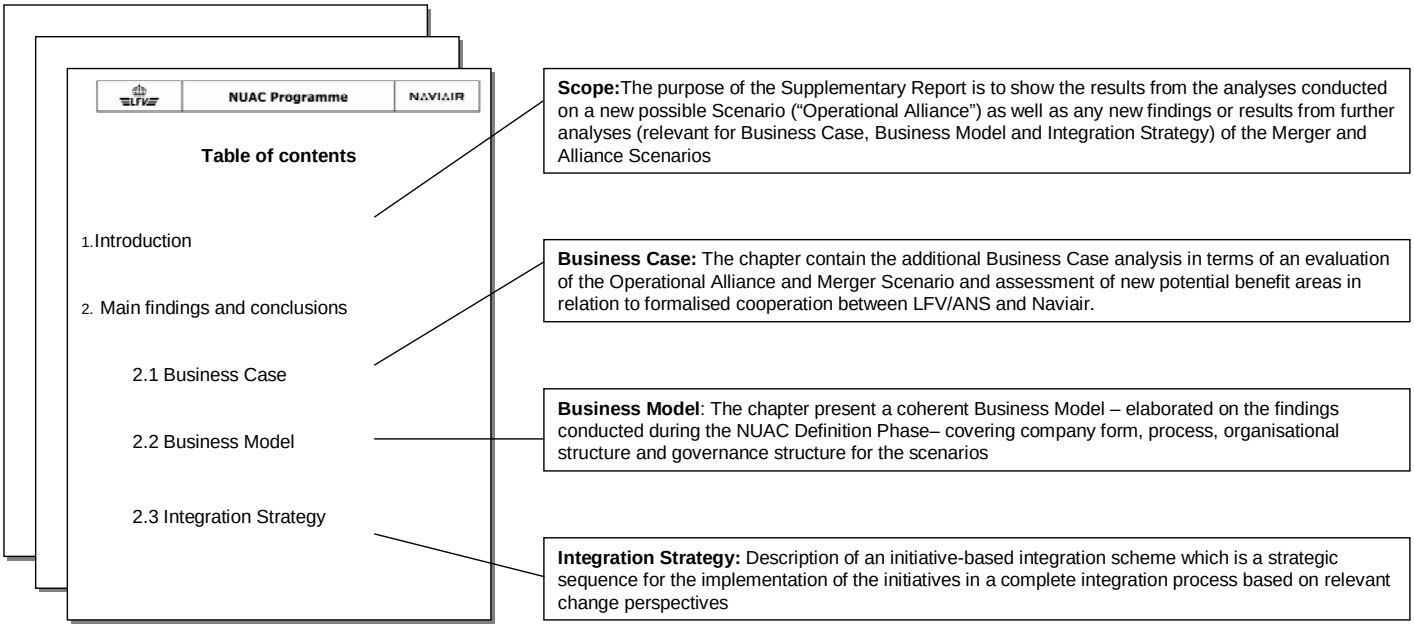
The main report, the ”NUAC Programme Definition Phase – Final Report”, contains a coherent evaluation of each scenario (Merger, NUAC/SKAANE and Alliance) in terms of Business Case, Business Model, HR Aspects and Integration Strategy. In addition, the report contains a detailed description of the background of the NUAC Programme and the strategic framework for the NUAC Programme. Finally, an executive summary has been conducted to provide a high-level description of the results from the report.

Figure 2 Table of contents of the Definition Phase Final Report



The “NUAC Programme Definition Phase – Supplementary Report” includes additional analysis of a new fourth scenario, Operational Alliance, as well as additional analysis of the Merger and Alliance scenarios regarding Business Case, Business Model, and Integration Strategy. In addition, an executive summary has been conducted to provide a high-level description of the results from the report.

Figure 3 Table of contents of the Definition Phase Supplementary Report



The figures provide an overview and description of the 18 appendices. The appendices are grouped in three main categories, as summarised in Figure 4, 5 and 6:

- **Appendix 1-9**: relates to the NUAC Definition Phase Final Report containing analysis results, methodology and documentation for the Business Case, Business Model, Integration Strategy, Airspace design and HR Aspects
- **Appendix 10-14**: containing information regarding the programme, i.e. Terms of Reference, risk management plan and stakeholder management and communication plans
- **Appendix 15-18**: relates to the NUAC Definition Phase Supplementary Report containing additional analysis, methodology and documentation for the Business Case, Business Model, Integration Strategy and the Socio-economic analysis which though could be seen as more of a stand-alone document.

Figure 4 Appendixes related to the NUAC Definition Phase Final Report

Area	Name	Description
Business Case	Appendix 1 Business case	A detailed description of the Business Case and applied methodology
	Appendix 2: Business case - Initiatives	The detailed description of the initiatives in the Business Case
	Appendix 3: Business case – Documentation	Detailed documentation supporting the Business Case
Business Model	Appendix 4: Business Model	Work Stream Report regarding Business Models and conclusions of the work
	Appendix 5: Consideration regarding Company Forms and Valude Added Tax	Report containing consideration regarding company forms and valuated taxes for the scenarios
Integra-tion Strategy	Appendix 6: Integration Strategy	Work Stream Report containing Workdown Break structure for implementation of the scenarios
Air Space	Appendix 7: Airspace Design	Project Report with high level descriptions of possible future airspace design for the three Scenarios – for the use of the Business Case
	Appendix 8: Fast time simulation and Analyses	Report describing and concluding on the findings done in the conducted RAMS Fast Time Simulation – for the use of the initial Socio- Economics calculations
HR Aspects	Appendix 9: HR Aspects	Hovedrapport med fokus på formål, afgrænsning og analyse af HR Aspects på de tre scenarier Bilag 1: Personalejuridiske forhold, Danmark Bilag 2: Personalejuridiske forhold, Sverige Bilag 3: Skat og social sikring i Danmark og Sverige Bilag 4: Compensation and Benefit Bilag 5: Arbejdsmiljø Bilag 6: HR programmer

Figure 5 General appendixes

Area	Name	Description
General	Appendix 10: Terms of references	Report describing the terms of reference of the NUAC Programme i.e.the objectives, the general timeline, the project portfolio and programme organisation
	Appendix 11: Stakeholder Care Programme and Communication Plan	Report describing the NUAC Programme Stakeholder Strategy including analysis of the relevant stakeholders, meeting strucure, communication plans etc.
	Appendix 12: Risk Management Plan	Report describing the NUAC Programme Risk Management Strategy including process for risk identification, analysis and documentation
	Appendix 13: Strategic Framework	The document containing the mission, vision and strategic drivers including a detailed description of the strategic rationales. In addition the document contains an initial description of selected neighboring Air Navigation Service Providers
	Appendix 14:Stakeholder response	The document contains all responses from stakeholder regarding Final Report, comments to each response from NUAC NPMT and finally a short description of the stakeholder response process

Figure 6 Appendixes related to the NUAC Definition Phase Supplementary Report

Area	Name	Description
Addit-ional analysis	Appendix 15: Business Case	Report describing the additional business case analysis in terms of an updated assessment of the financial implications by implementing the Merger and Operational Alliance Scenario and an assessment of potential new benefit areas
	Appendix 16: Business Model	Report describing the additional business model analysis in terms of the contour to a complete coherent business model covering company forms, process, organisational structure and governance model
	Appendix 17: Integration Strategy	Report containing the additional analysis regarding Integration Strategy. Firstly the report contain an initiative based integration scheme; secondly it contains some strategic integration principles in relation to ensure that the NUAC is implemented as efficiently as possible
	Appendix 18:Socio Economics	The report contains an assessment of the socio-economical aspects of a future cooperation between Naviair and LFV/ANS in Merger Scenario, Operational Alliance Scenario and Alliance Scenario

3 Strategic framework for NUAC Programme

The NUAC Programme is a LFV/ANS and Naviair initiative motivated by the Single European Sky (SES) legislation, political visions for air transport in Denmark and Sweden, and the general challenges facing the European Air Navigation Service Providers in terms of a need for more capacity, improved flight efficiency and increased environmental concerns combined with a mounting pressure for reduced charges through increased cost-efficiency and industry consolidation.

The SES vision is to establish a Single European Sky by restructuring the airspace as a function of air traffic flow rather than national borders and by increasing safety and overall efficiency of air transport to ensure that Europe has a competitive air transport industry that enables Europe to compete effectively in an increasingly globalised world.

The Danish and Swedish governments are not only committed to the SES legislation they also recognise the necessity of international cooperation between ANS providers in the Nordic region[1], and between the Nordic regions and the rest of Europe to secure a high standard in national air traffic in terms of a broad selection of air routes and destinations, affordable prices, attractive airports, an innovative air transport industry creating new employment opportunities and reliable services with a minimum of delays.

The Definition Phase of the NUAC Programme started with the articulation of a mission and vision for the future formal cooperation between LFV/ANS and Naviair. The strategic framework was developed on the basis of an assessment of the most important strategic drivers and legislations as well as a dialogue with all key stakeholders.

The mission, vision and strategic actions to achieve the vision for the future cooperation between LFV/ANS and Naviair in NUAC are outlined in Figure 8.

[1] As stated in government publications “Dansk Luftfart 2015 – muligheder og udfordringer” and “Moderna transporter - Transportpolitisk proposition 2006”.

Figure 7 Mission and vision for NUAC

Mission:

In close dialogue with our customers and through dedicated and competent employees, "NUAC" delivers and develops safe, cost-efficient and flexible Air Navigation Services

Vision:

By 2015, the best service provider based on our commitment to serving our customers' needs

We will achieve our vision by:

- Being recognised by our customers for our dedication to safety, quality, cost-efficiency and a true sense of pride for our business and services
- Being established as the most attractive partner to service providers in the European airspace
- Being an attractive workplace with a constant focus on developing our employees, their skills and competences
- Continuously strengthening our competitiveness by a constant focus on improvement and by developing our performance through harmonisation and standardisation

Based on the mission and vision, a set of internal and external key strategic rationales and objectives for the NUAC Programme has been established. The strategic rationales are the primary arguments for establishing a closer cooperation between LFV/ANS and Naviair. The strategic rationales in Figure 8 represent the key areas where the NUAC Programme must provide additional value compared to the current situation.

The strategic rationales demonstrate the requirement for accommodating many – and to some extent conflicting - objectives to ensure a viable NUAC company, and that external factors are of major importance and closely linked with the successful fulfilment of the internal objectives.

Figure 8 Strategic rationales for NUAC

Strategic Rationale		Description
INTERNAL	**Cost effectiveness**	Cost efficiency refers to the balance of effectively delivering high quality Air Navigation Services at the lowest possible costs without compromising flight safety.
	Operational flexibility	Operational flexibility entails the ability of the Air Navigation Service provider to respond to changes in the strategic environment of the service provider. This includes the ability to be able to leverage and share resources in the most optimum way across business processes and respond to changes in services and demand in the most efficient manner.
	Alignment of business model	Alignment of Business Model is the ability to achieve a strong link between the actual Business Model and the Strategy chosen to respond to the changes in the ATM industry as such. Currently, the majority of Air Navigation Service providers rely on a Business Model that is centered on air traffic control. However, in order to effectively meet the strategic challenges outlined, the Business Model needs to reflect these as well as serve as a sustainable path to implementing the chosen strategy.
	Strategic readiness	Strategic readiness entails the ability of an organisation to adapt and respond to changes in the overall value chain on which revenue is made or derived. It entails being able to act swiftly and adapt the overall strategy correspondingly.
	Attraction and bargaining power	Attractiveness and bargaining power imply how attractive the established entity or cooperation will be towards new partners as well as towards customers and to what extent this will lead to increased bargaining power.
	Financial	The European service providers has experienced an increasing pressure for cost effectiveness. A Danish and Swedish cooperation might improve the financial situations in terms of lower capital costs and reduced investments costs and a possibility of optimising working capital
EXTERNAL	**Flight safety**	Flight safety is the overarching measure within Air Traffic Control and aviation in general. It is paramount as a strategic rationale for the NUAC Programme that flight safety must not be compromised, and that the aim for any cooperation efforts should be to maintain or increase today's high level of flight safety by closer cooperation even with higher numbers of operations.
	Flight Efficiency	Flight efficiency has significant impact for both airline carriers as well as broader socio-economic and environmental effects. Closer cooperation in airspace design as well as in route planning has the potential of reducing the cost for fuel and the en-route charges for carriers as well as reducing emissions and thus environmental impact.
	Customer orientation	The majority of a service provider's revenue depends on the ability to deliver Air Navigation Services and interacting effectively with the key customers. As customers become increasingly focused on the service vs. cost equation, the ability to focus services, customer-facing business processes and systems towards the customers is becoming increasingly important.
	Political and social effects	Changes in airspace design and route planning along with closer cooperation on administrative functions within the Air Navigation Service providers may potentially have a significant impact on the overall societal benefits as such. This includes: Macro-economic benefits, environmental-economic benefits and political and infrastructure/transportation related benefits.
	Environment	Reducing emissions from aviation through better route planning and direct flights as well as optimising take-off and landing profiles. This rationale is in line with the trend from the international organisations – like IATA, EU and IPOC (Intergovernmental Panel on Climate Change) - which all addresses the need and possibilities for improvements of the environmental performance in the aviation industry i.e. by route planning
	Capacity improvement	Lack of capacity is not yet an issue in the Nordic region however a common Danish and Swedish airspace will improve the capacity in the Nordic region by optimizing the use of airspace structures including a consistent and optimized route network and by improving the operational cooperation

4 Conclusions

The main conclusion is that the NUAC Programme initiative has the potential to realise the strategic rationales and fulfil the air transport visions of the Swedish and Danish governments.

All scenarios – except for the original NUAC/SKAANE Scenario – show a **significant financial benefit potential**. The Merger Scenario realises the highest financial benefit of the four scenarios, but also entails significant higher risks compared to the other scenarios.

The level of financial benefit increases proportionally with the level of integration of functional areas. All functional areas represent a synergy potential of which the integration of administrative functions and operational support functions is the largest. The identified synergies are mainly driven by a reduction in required resources and to a lesser extent by optimising the use of technology. Almost all reductions in resources needed are expected to be accommodated through natural attrition and normal staff turnover.

The **operational and coherent Business Model** developed for each scenario balances the need for cross-border airspace integration and joint cross-border Air Navigation Services provision, with the requirement of national ownership and the exercise of national sovereignty.

The business model keeps management and administration at a lean and effective level and suggests outsourcing of support processes when beneficial to maximise cost-efficiency. The business models also improve flexibility and the effective use of resources by enabling a common pool of scarce and highly skilled resources as well as the integration and harmonisation of costly technical and physical infrastructures. Further improved customer services are expected through the introduction of a single-point of contact for all three organisations: LFV/ANS, Naviair and NUAC Company,.

A comprehensive knowledge of **all relevant human resource aspects** in LFV/ANS and Naviair is established, which will be used in the development of a human resource strategy. The human resource strategy must support a successful management of all human resource aspects in the transition phase and must also support the realisation of the NUAC vision: “Being an attractive workplace with constant focus on developing the employees, their skills and competences.”

Establishing a common Functional Airspace Block (FAB) covering Danish and Swedish airspace is expected to yield significant **socio-economic benefits** through the reduction of flight time, cost of flights and reduction in the emission of carbon dioxide.

Improvement for aviation in general. Flight safety will be improved through harmonisation and standardisation of operational rules and procedures as well as common airspace management. Flight efficiency is improved through a larger cross border airspace that enables a more flexible use of the airspace and flight routes that will reduce distance and time and thereby improve the flight route profiles. Flight efficiency is also improved by more efficient and economic profiles for entering and leaving airspace due to the coordinated and systematic approach to adjacent areas.

A **flexible Integration Strategy** has been developed, balancing an early harvesting of financial and socio-economic benefits with effective management of risks and complexity to ensure sustainability and safety. The risk analysis has not identified any substantial

integration risks that cannot be mitigated, nor any absolute barriers to the implementation of NUAC Programme findings in terms of legal, institutional, technical or industrial relations or other barriers.

The following sub-sections contain findings and conclusions in each analytical area.

4.1 Business Case

The Business Case shows significant financial benefit for all scenarios except the NUAC/SKAANE Scenario, giving annual savings of €29.5 million in the Merger Scenario, €13.0 million in the Operational Alliance Scenario and €12.0 million in the Alliance Scenario.

Calculated as net present value (NPV) in the fiscal years 2006 through 2020[2], the Merger Scenario shows an NPV of €172.4 million, the Operational Alliance Scenario a NPV of €72.6 million, and finally the Alliance Scenario a NPV of €68.8 million.

The benefit potentials are mainly generated through reductions in the need for resources. Analyses so far indicate that the reductions can be accommodated through natural attrition, retirement and general staff turnover.

The administration and technology have the highest benefit potential by comparison. The Merger Scenario realises the highest reduction in the need for resources, since it is the most comprehensive scenario. Savings related to reduction in resources are primarily realised through standardisation of current processes and elimination of duplicate functions.

Figure 9 Financial implications of implementing the scenarios

		Merger	NUAC/SKAANE	Alliance	Operationel Alliance
Business Case	Annual Savings	€ 29,5 mill	-	€ 12,0 mill.	€ 13,0 mill
	NPV (2006-2020)	€ 172,4 mill	-	€ 68,8 mill	€ 72,6 mill
	FTE Reduction	233 FTE	+19 FTE	104 FTE	129 FTE
	Integration Costs	€ 30,1 mill	€ 14,5 mill	€ 17,3 mill	€ 22,9 mill
Socio-economi-cal Analysis	Annual Savings	€ 38,1 mill		€ 30,1 mill	€ 38,1 mill
	NPV (2006-2020)	€ 436,6 mill		€ 343,0 mill	€ 436,6 mill

☐ Due to decision made by the steering committee no socio-economical analysis have been accomplished for the NUAC/SKAANE Scenario

[2] The NUAC Programme has generated costs from 2006 and the Business Case calculations ends by 2020.

4.2 Socio-economic

The socio-economic analysis shows significant financial benefits by implementing the scenarios. The annual savings are – as seen in Figure 9 – €38.1 million for the Merger Scenario and the Operational Alliance and €30.1 million for the Alliance Scenarios.

The expected savings stems from by reduced flying time as a consequence of an optimised airspace in accordance with scenario definitions. The reduced flying time yields three types of financial savings:

- **Reduced cost of flying** – savings related to the reduced need for fuel, maintenance, flight administration etc. The annual savings in the Merger Scenario is € 23.6 million
- **Reduced emission** – the estimated value of the reduced emissions based on national standards. The annual savings in the Merger Scenario is € 4.8 million
- **Reduced time** – the estimated value of the time savings for the passengers based on national standards. The annual savings in the Merger Scenario is € 9.7 million.

The socio-economic analysis also indicates that implementation of the scenarios will contribute positively to the development of the region (Denmark and Sweden). The utilisation of the airport capacity in the region can be improved, which could reduce the need for investment in airport facilities. In addition, a common Danish and Swedish Air Navigation Service Provider is expected to contribute positively to the technological research and development sector in the region.

4.3 Business Model

A unique Business Model has been developed for each scenario. The business models reflect the strategic framework for NUAC and support an optimal handling of the specific management as well as organisational opportunities and challenges in each scenario. The business models contain four elements:

- **Company form and ownership structure** outlines the most important bounds for the design of the NUAC Company. The main conclusions are that the future NUAC should be a company with limited liability i.e. a Danish Aktieselskab, a Swedish Aktiebolag or a European SE Company, and that the NUAC Company should be owned mutually (50% - 50%) by the retained organisations who will be responsible for managing the ownership
- **Process and tasks** outlines the core and support processes for the NUAC Company in each scenario and thus provides the core business set-up for the NUAC Company. The scenarios differentiate on the number of processes that are included in the NUAC Company. The Merger Scenario represents the most comprehensive business set-up, since it integrates all processes in the NUAC Company. The foundation for the Operational Alliance is the operational processes, while the Alliance Scenarios are built around the technology support processes
- **Organisational structure** outlines the organisational set-up for handling the specific processes and tasks to realise the vision of NUAC in the best possible way. The organisational structures for all scenarios are designed to maximise safety, efficiency and improve cost-efficiency

- **Governance structure** outlines the internal and external governance structure for the NUAC Company. A single line management structure is proposed, with a clear management hierarchy to enable a robust decision-making. The hierarchy contains three well-defined roles with clear responsibilities: General Assembly, Board and CEO. The external governance structure will enable the three organisations (NUAC, Naviair and LFV/ANS) to govern according to their specific objectives and support the joint objective of delivering efficient and safe Air Navigation Services. This will be achieved through coordination at different management levels and supported by an escalation principle. Finally, the relation architecture for NUAC is outlined and consists of a formalised structure of the roles and tasks for NUAC's relations to major stakeholders.

4.4 HR Aspects and social dialogue

A comprehensive platform of knowledge regarding the relevant HR Aspects in the current organisations and by implementing the scenarios is established. The knowledge – which is conducted in cooperation with trade unions and employee representatives – will be used in the development of the HR Strategy for the NUAC Programme. The most important conclusions in each focus area are:

- **Employee legal aspects** – analysis of legal aspects by implementation of the scenarios**.** The employees are not obliged to accept essential changes in their working conditions. The interpretation of whether a change is essential or not depends on the specific change in each specific case. It is, however, stated that moving workplace to another country is considered an essential change
- **Tax and social protection** – analysis of the implications concerning tax and social protection by implementing the scenarios. The principal rule is that employees must pay tax (and receive social benefits) in the country where they work, irrespective of whether NUAC becomes a Swedish aktiebolaget, a Danish Aktieselskab or a European SE company
- **Compensation and benefits** – analysis of the present benefit in the two organisations. The analysis shows that the two organisations offer almost the same employee benefits, and that none of the organisations use employee benefits as a part of the individual payment
- **Working environment** – analysis of the potential risks related to the working environment when implementing one of the scenarios. The overall conclusion is that the most comprehensive scenario (the Merger Scenario) also has the highest risks in relation to the working environment during the transition phase. The HR Strategy must address these risks (stress, disagreement and uncertainty) throughout the transformation process
- **HR Programme** – analysis of the present HR Programmes in the two organisations. There are some differences between the organisations in terms of their recruitment process, competence development and performance management that must be taken into consideration in the development of the HR Strategy for the NUAC Programme.

4.5 Integration Strategy

The Integration Strategy is based on the business case initiatives supplemented by activities necessary to achieve a complete transition to the NUAC Company.

Two approaches have been considered in relation to the implementation of the initiatives: a scenario approach covering four scenarios representing different levels of integration and a purely initiative-based approach to allow new combinations of initiative implementations and more flexibility in the overall implementation approach.

The level of flexibility has been assessed based on an analysis of the interdependencies between the initiatives to define the constraints that they impose on the implementation approaches.

The implementation of the initiatives has been assessed based on four perspectives: Benefit, Risk/complexity, Sustainability, and Speed. The assessment has led to a primary focus on Benefit and Risk/complexity since they support the strategic rationales for the NUAC Programme, i.e. cost-efficiency and flight safety. Sustainability issues will be covered by taking all risk and complexity issues into account in the Risk/complexity perspective. Speed has been given less consideration due to the safety imperative.

A comparison of the four perspectives shows that there are no major differences in the sequencing of the initiatives. The most important differentiator is the expected timescales of each scheme due to the difference in the number of phases and the number of parallel initiative implementations and hence the level of “compression” of the timescales.

It is assumed that the initiatives can be implemented with the same overall timeframe as the three scenarios, i.e. implementation in 2008 to 2011 and full operation from 2011 and onwards.

5 NUAC Programme going forward

The NUAC Programme has established a robust platform for the decision making process regarding a future cooperation between Denmark and Sweden about the formation of joint airspace and Air Navigation Service Provision.

The comprehensive and fact-based analysis covering all relevant aspects of a future cooperation and the definition of the most plausible scenarios provides a solid platform for designing a future cooperation between Naviair and LFV/ANS in the next NUAC programme phase and thereby moving towards the realization of the Single European Sky legislation and the political visions for air transport in Denmark and Sweden.