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EUROCONTROL Guidance Material for Area Proximity Warning
Appendix C: Cost Framework for the Standardisation of APW

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Abstract

This document provides guidelines for users of the APW Cost Framework. The Cost Framework assesses the cost for implementation for individual ANSPs of Area Proximity Warning Level 2.

Keywords

Safety Nets
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DOCUMENT APPROVAL

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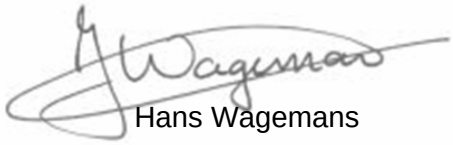
Technical Manager	 Hans Wagemans	19-5-2009
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CONTENTS

EXECUTIVE SUMMARY

This document provides guidelines for users of the Cost Framework. The Cost Framework calculates the potential financial implications for an Air Navigation Service Provider (ANSP) that is planning to implement APW, in accordance with The European Convergence and Implementation Plan objective ATC02.5 (Implement ground based safety nets – Area Proximity Warning Level 2).

1. INTRODUCTION

This document provides guidelines for users of the APW Cost Framework. The Cost Framework calculates the potential financial implications for an Air Navigation Service Provider (ANSP) that is planning to implement APW, in accordance with The European Convergence and Implementation Plan objective ATC02.5 (Implement ground based safety nets – Area Proximity Warning Level 2).

This document provides:

- Background information.
- Instructions for using the spreadsheet model.
- Interpretation of the results of the calculations.

The Cost Framework uses Microsoft Excel.

2. OBJECTIVE OF THE COST FRAMEWORK

The objective of the Cost Framework is to identify the potential costs that an ANSP may incur when implementing APW. It also puts a value on both the capital expenditure of implementation (such as purchasing new software and systems) and also the cost in terms of the man-days that are required to implement APW.

A further objective of the Cost Framework is to estimate potential savings that an ANSP could achieve when implementing APW by making the best use of the SPIN guidance material, as well as the knowledge that has been gained through active participation in SPIN related activities.

3. STRUCTURE OF THE COST FRAMEWORK

The Cost Framework has been developed to be consistent with the guidance material produced by EUROCONTROL[1] for the implementation of APW. The implementation and operation of APW has been broken down into four life-cycle steps:

- Requirements definition.
- Implementation or change.
- Tuning and validation.

[1] EUROCONTROL Guidance Material for Area Proximity Warning.

- Operation and monitoring.

The costs estimated for each of the elements within these steps is based on the validated figures of the STCA Economic Assessment[2], which was carried out in 2006 and the MSAW economic assessment[3], which was carried out in 2008. A detailed list of costs and assumptions are included in the Economic Assessment of APW standardisation[4].

The Cost Framework is structured into two worksheets within one Excel workbook. The worksheets are titled:

- **Basic data** – This defines the basic input parameters and the central value of the costs that have been estimated.

- **Ranges and sensitivity** – This provides a range for each of the input values and has the option to calculate a saving due to joint procurement of APW by a group of ANSPs.

4. OUTPUT

The range of costs for each element is represented by the following categories:

- **Low,** which represents an uncomplicated implementation of APW. This can either be due to the functional requirements of the APW, or an APW already being present in the ATM system.

- **Base,** which represents a moderately complex implementation of APW, where there may be added complexity due to the implementation of APW into the existing ATM system or additional complexity due to the functional requirements of the system.

- **High,** which represents a more complex implementation, where the complexities of the current ATM system and requirements of the APW system combine to make implementation of APW a more complex task.

The output on the 'Ranges and Sensitivity' worksheet presents the overall cost of the APW implementation, and compares the figures for an ANSP implementing APW independently (case A) and for one implementing APW utilising the knowledge and experience of the SPIN Sub Group, and the associated guidance material that has been developed (case B).

[2] An economic assessment of standardised STCA, Helios Technology Limited, October 2006.
[3] Economic assessment of MSAW standardisation, Helios, July 2008.
[4] Economic assessment of APW standardisation, Helios, August 2008.

5. HOW TO USE THE COST FRAMEWORK

5.1 Input values

The Cost Framework has been developed so that it is simple to use. There are only three input parameters that are required, and these cells are coloured yellow. A screenshot of the input parameters section is displayed in Figure 1, in which the value in the yellow cell can be replaced with a figure that is relevant for the user.

1	How many ATCOs require training in total?	250
2	Select a reduction in procurement costs due to collaboration	0%
3	Select a reduction in maintenance costs due to collaboration	0%

Figure 1: Example of input cell

The input parameters are located on the 'Basic Data' worksheet and the inputs required are:

- The number of ATCOs that require training.
- The percentage reduction in purchase costs achieved through joint procurement.
- The percentage reduction in maintenance costs achieved through joint procurement.

5.2 Results

Once the input values have been entered the results are immediately available, without any further calculations being required.

The 'Basic Data' sheet provides a central value of the cost of implementation, which does not account for any discounts that may be achieved through joint procurement. It also provides a percentage of the cost saved through using the knowledge of the SPIN Sub Group and the related guidance material compared with an ANSP implementing APW independently. An example screenshot of the basic results is presented in Figure 2.

	Independent	Knowledge sharing
	Base	Base
	days/€	days/€
Cost per man day	600	600
Number of Man Days	539	437
Total costs		
Manpower	€ 323,000	€ 262,000
External costs	€ 285,000	€ 285,000
Total	**€ 608,000**	**€ 547,000**
SAVINGS		10%

Figure 2: Basic cost estimates

More detailed results are presented in the 'Ranges and Sensitivities' worksheet. This worksheet provides the ranges that have been placed on values and the resulting overall costs, including discounts achieved through joint procurement.

An example screenshot of the more detailed results is presented in Figure 3.

	Case B		
	Knowledge sharing implementation		
	Low	Base	High
Cost per man day	550	600	650
Number of Man Days	407	437	467
Total costs			
Manpower	€ 224,000	€ 262,000	€ 304,000
External costs	€ 118,000	€ 285,000	€ 445,000
Total	**€ 342,000**	**€ 547,000**	**€ 749,000**
Saving in Case B	12%	10%	9%

Figure 3: Ranges and sensitivities

6. SUMMARY

The tables presented in the previous section provide an estimate of the cost that an ANSP will incur when implementing APW to meet the EUROCONTROL specification.

The Cost Framework has been developed to be extremely simple and easy to use and informative, whilst allowing the flexibility for ANSPs to adapt it to fit the scale of the operational unit into which APW will be implemented.

7. REFERENCES

1. EUROCONTROL Guidance Material for Area Proximity Warning

2. An economic assessment of standardised STCA, Helios Technology Limited, October 2006

3. Economic assessment of MSAW standardisation, Helios, July 2008.

4. Economic assessment of APW standardisation, Helios, September 2008.

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