

ES2 – WS02-10

30 June – 01 July 2010 – Bucharest

SMS COST Model Working Session

SMS COST MODEL

The need for an SMS cost model

Decomposing SMS into “tasks”

Building a mathematical model

Model input

Model output

The Need for SMS Cost Estimation

- An SMS is a mandatory and a critical component for every ANSP.
- The cost of implementing and maintaining a safety management system can be substantial.
- The expenses involved need to be planned for and budgeted.
- This is especially important in a financial crisis.

Estimating the Cost

- Analyze the SMS and decompose it into simple procedures that can be easily described and modeled.
- Build a mathematical model that calculates the cost of each procedure.
- Implement the model.

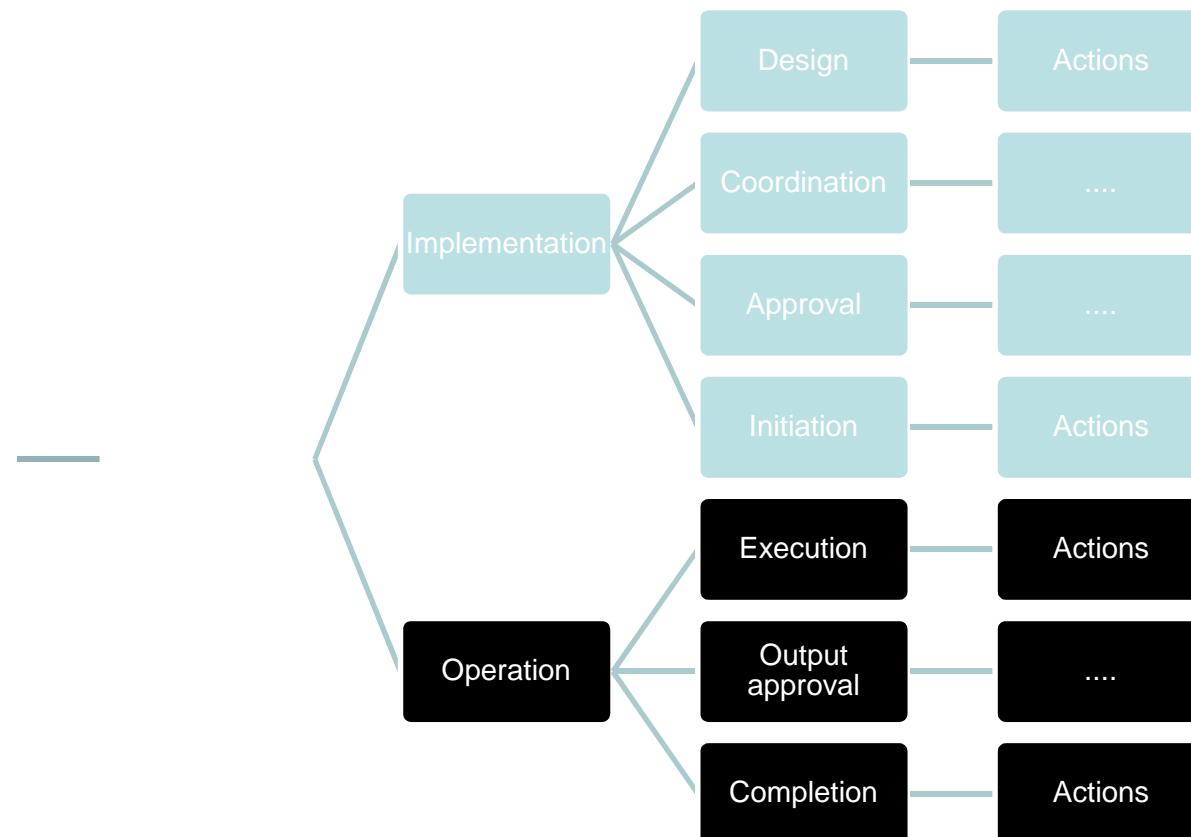
Decomposing the problem

- Analyze the SMS and break it down into separate procedures.
- Separate each procedure into steps/tasks.
- Identify the activities required to perform each step/task.

Decomposing the problem

- Two cost cards per procedure:
 - Implementation
 - Operation
- Four cost components in each task:
 - Human effort
 - Training
 - Infrastructure and equipment
 - Non-effort elements

Overview of SMS break down



The SMS cost model

- There are different cost models.
- They were compared in the context of SMS cost modelling.
- The most appropriate model was selected.
- Activity based cost accounting method
- Standard cost model

Cost model input/output

- Model Input
 - Global variables
 - Implementation cost card
 - Operation cost card
- Model Output (results)
 - Human effort
 - Training
 - Infrastructure & equipment
 - Non-effort elements

Global variables

- Global variables
 - Daily rates
 - SAF
 - OPS, ENG
 - MAN, ANC, ADM
 - INT & EXT Trainers or support
 - Inflation
 - Weighted average cost of capital
 - Annual effort cost increase

Human effort - implementation

- Procedure Design
- Procedure Coordination
- Procedure Approval
- Procedure Initiation

Human effort - operation

- Procedure Execution
- Procedure Output Approval
- Procedure Completion

Training

- Input data
 - Training courses
 - Training infrastructure and equipment
 - e.g. SOE, venue
 - Training missions
 - Training non-effort elements
 - e.g. training materials
- Output
 - Total training cost

Infrastructure and equipment

- Input data
 - Gross balance value
 - Expected operating life
 - % for SMS purposes
- Output data
 - Cost (depreciation and interest) for the whole operating life

Non-effort elements

- Input data
 - Unit price
 - Quantity
 - Frequency per year
- Output data
 - Total cost

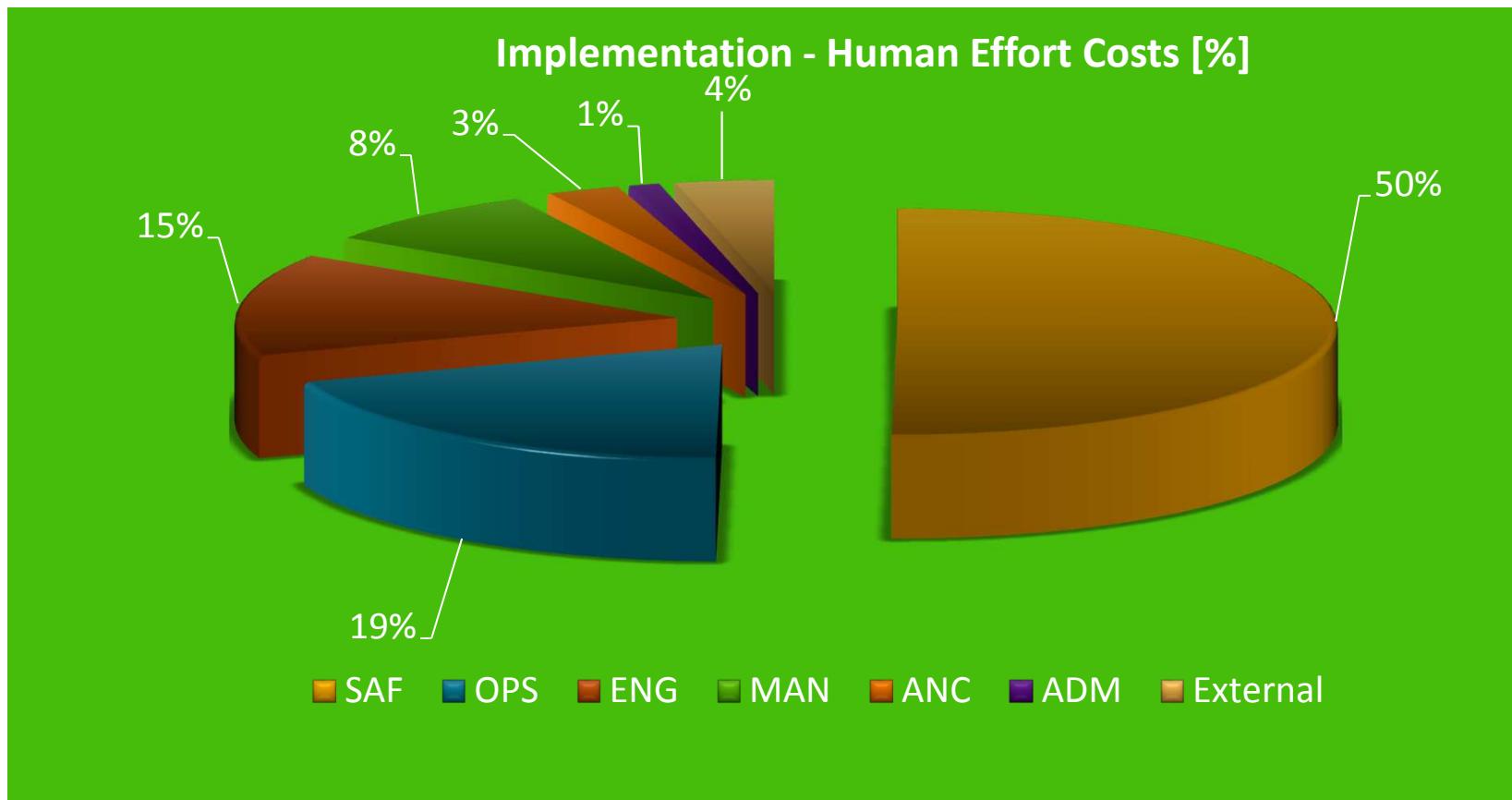
Results of SMS cost modeling

- Implementation costs
- Operation costs
- For individual procedures and overall
- Analysis of human effort distribution
- Overall cost of different SMS elements

Graphs and reports

Human Effort for Maintenance and day-to-day Operation of SMS							
Procedure Action	Internal						External
	SAF	OPS	ENG	MAN	ANC	ADM	
	[total mandays]	[total amount]					
5-Execution	10.625	0.5	0.25	3	0.25	0	
6-Output approval	0	0	0	2	0	0	
7-Completion	1.5	2	2	1	1	1	
Grand Total Human Effort	121.25	25.00	22.50	60.00	12.50	10.00	
R-Average Rate [per day]	220 €	200 €	150 €	260 €	110 €	90 €	
OH-Overhead [%]	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	
Rate for estimations	264.00 €	240.00 €	180.00 €	312.00 €	132.00 €	108.00 €	
Total Human Effort Costs	32 010 €	6 000 €	4 050 €	18 720 €	1 650 €	1 080 €	0 €

Graphs and reports



Managing expenses in a financial crisis

- Planning manpower
- Strategic planning
- Estimating cost of individual SMS activities
- Optimizing SMS procedures

Demonstration

Microsoft Excel - CM_DEMO_V1.0_DATA_2003.xls

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Human Effort for Development and Implementation of SMS

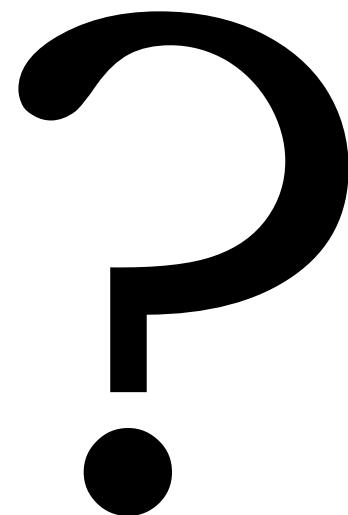
Procedure Action	Internal						External
	SAF	OPS	ENG	MAN	ANC	ADM	
	[total mandays]						
1-Design	41	0	0	0	0	0	
2-Coordination	12	20	20	0	0	0	
3-Approval	2	0	0	1.25	0	0	
4-Initiation	39	20	20	12	10	5	
Grand Total Human Effort	94	40	40	13.25	10	5	
R-Average Rate [per day]	220 €	200 €	150 €	260 €	110 €	90 €	
OH-Overhead [%]	20.00%	20.00%	20.00%	20.00%	20.00%	20.00%	
Rate for estimations	264.00 €	240.00 €	180.00 €	312.00 €	132.00 €	108.00 €	
Total Human Effort Costs	24,816 €	9,600 €	7,200 €	4,134 €	1,320 €	540 €	1,800 €

Human Effort for Maintenance and day-to-day Operation of SMS

Procedure Action	Internal						External
	SAF	OPS	ENG	MAN	ANC	ADM	
R - Human effort							



Q&A



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Bucharest 2010 July

Contact

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