SMS Cost Model Demonstrator v1.0

1. Model Structure

The model consists of two basic parts - the model input and the model output.

The model input part consists of a group of Excel sheets that require the user to p
information includes such parameters as inflation, daily rates for the different kinds of

The model output part consist of a group of Excel sheets that represent the results c
costs, for example training costs or Infrastructure costs.

1.1. Model Input

In this model demonstrator the model input is represented by three sheets: Global \
ISO-I and ISO-O.

The Global Variables requires the user to input the following general financial pa
daily rates for different types of staff, overhead rate, annual effort cost increase, infl
weighted average cost of capital. Detailed definitions of all these parameters is giv
model documentation.

To facilitate data collection and cost estimation the SMS is broken down into
procedures. For the purposes of this demonstrator only the Investigation of Safety Oc
(ISO) procedure is presented. Each procedure is further broken down into pairs: the p
implementation (in our case this is ISO-I) and procedure operation (ISO-O).

The implementation subpart of each procedure concerns costs wich an organisation s
during the initial deployment of the procedure.The implementation of each proc
considered to be a one-off work. On the other hand, the operation subpart comes
once the procedure is well established into the organisation.Generally it is considered
to be a repeatable process extending throughout the procedure lifetime.

Each of these subparts is further devided into steps and each step into actions. For
the procedure implementation is devided into: Procedure Design, Procedure Coo
Procedure Approval and Procedure Initiation. The procedure operation consist
Procedure execution, Procedure Output Approval and Procedure Completion.For ea
actions are defined. For example the Procedure coordination contains the following
Internal cooridnation and Coordination with National Supervisory Authority (NSA). Ac
usually procedure specific, and eventhough some standard actions are provided in th
user input is required to supply a full set of actions to the model.

In each procedure four major groups of cost factors have been identified: Human effor Training, Infrastructure and Equipment and Non - Effort Elements. Let's take a look at these:

Human Effort

The Human Effort table consists, on the left side, of a list of actions relevant for each procedrue step.User is required to complement or replace the standard actions provid considering the specifics of its own organization. On the right hand side the user is rec provide the human effort spent on each action, considering the relevant type of partici staff. For the internal effort mandays should be provided. For the external effort, the us the flexible choice between mandays or amount (euros), depending on what data is available.The drop-down menu on the table header should be used, to indicate what l data is provided.

Training

The Training section consists of four tables : Training courses, Training infrastructure mission costs and other Non-effort elements.

The Training courses table requires input on human effort spent on procedure training, considering the different types of staff. Courses names, coures duration anc of trainees/trainers for each course should be provided.Like in the previous section, fle provided for the external training, to have both human effort or fee as an input. The us provide the correct measure using the dropdown menu.

In Training infrastructure the name of each infrastructure element has to be prov additional required parameters are gross balance value, expected operating percentage for SMS purposes. Explanations on each is given in the model documenta

In the Mission costs table, the same list of courses as in the Training courses provided.The required input consists of the course duration, number of trainees, tra per person as well as the mission costs per day.Disctinction is made between missions and missions abroad, as the related expnses could be very different.

In the last training table additional elements not related to these mentioned above provided. Training materials are normally listed in this table. The single price, qua frequency of use are the required parameters.

Infrastructure and Equipment

The Infrastructure and Equipment tables lists all infrastructure elements or eqiupment except those needed for training purposes. The infrastructure and equipment ne training purposes is included in the Training section. Again the gross balance v expected operating life and percentage used for SMS purposes shall be provided. The which is most frequently present in this table is usually "Standard office equipment".

Non - Effort Elements

This table includes all expenses that have not been listed in the sections above. The each, quantity and frequency are the parameters on the basis of which calculations ar

1.2. Model Output

The model output consists of a number of sheets, each providing details about differ of expenses.

R - Human Effort - summary result sheet on the human effort spent.
R - Training - summary sheet on the training costs.
R - Infrastructure and Equipment - Summary sheet on the expenses re infrastructure.
R - Non-effort elements . Summary sheet on all non-effort elements.
The ***Summary*** and ***Charts*** sheets provide generalised results in numerical and form.

User is not reqired to provide any information in the model output part with the except R-Infrastructure and Equipment page, where the user must choose between two me calculation: the accounting method and the averages method. For more details methods of calculation, please consult the model documentation. The Update Data used to force model calculations, but it has been disabled for the purpose of this demo

rovide various information on a number of parameters that make the basis for mode
staff, mandays spent on particular type of activity etc.

of the model calculations. Each output sheet is designed to give a detailed insight into

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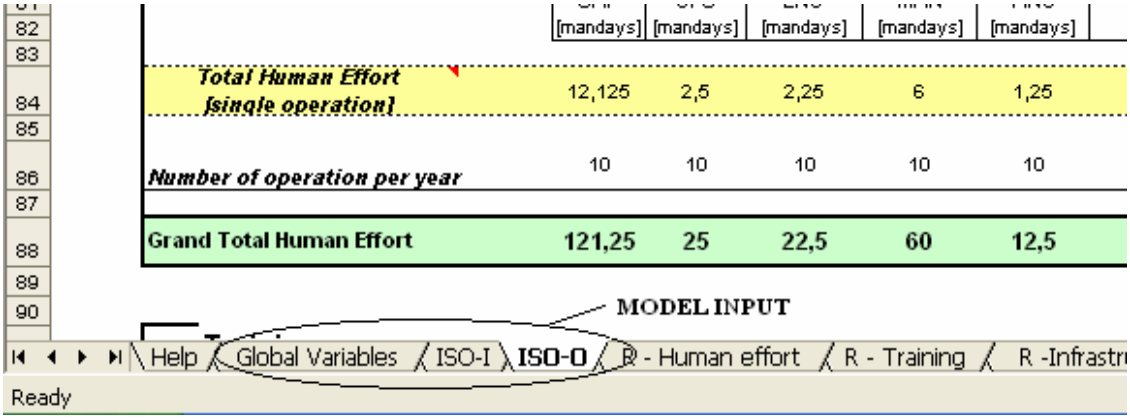

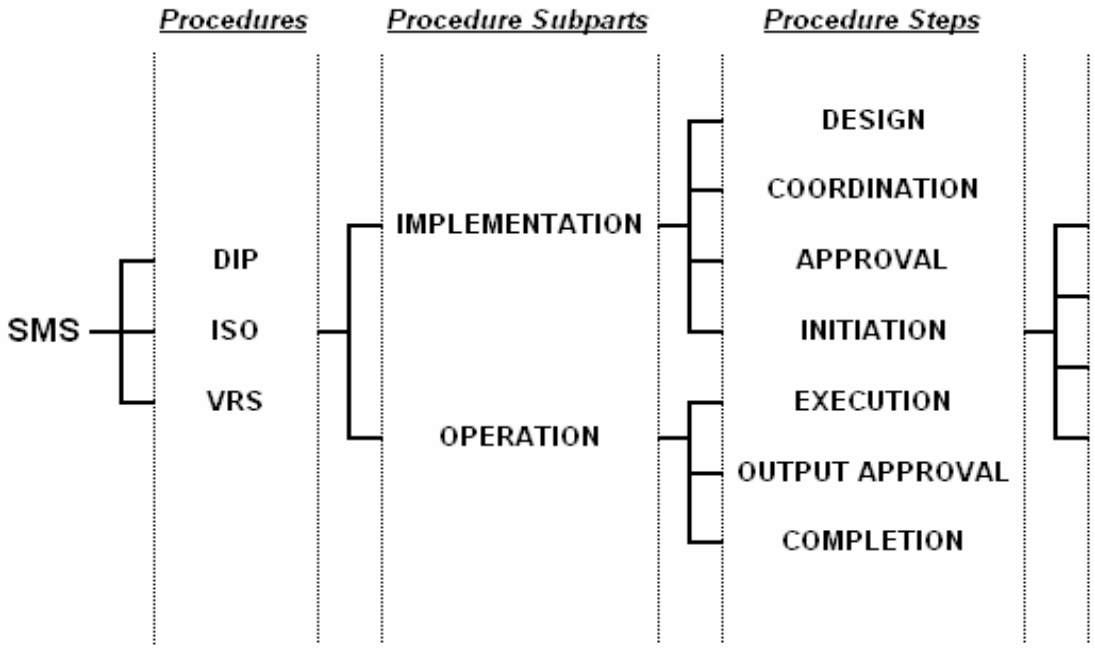

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Human Effort

		Internal					
		SAF [mandays]	OPS [mandays]	ENG [mandays]	MAN [mandays]	ANC [mandays]	AD [manc
Procedure Design							
1	Review applicable regulatory requirements	5					
2	Review guidance material and available best practices	7					
	Review existing in-house						

Training

Training courses

		course duration [days]	SAF trainees [number]	SAF total [mandays]	OPS trainees [number]	OPS total [man	tal ys]	Internal No of courses [number]	Traine [numb
1	BSARR 2 training	<number>	<number>	0	<number>			<number>	<numb
2	Occurrence Investigation course - SAF	5	12	60	<number>			<number>	<numb
3	Occurrence Investigation course - OPS/INT	0,25	<number>	0	400	10		20	2
4	Occurrence analysis methods - SAF	0,5	12	6	<number>				<numb

Training infrastructure

		Gross balance value [amount]	Expected operating life [years]	Quantity (% for SMS purposes) [%]	(
1	Standard office equipment - PC	1 378 €	15	2,78%	
2	Standard office equipment - 6 PCs, presentation multimedia	8 510 €	5	2,78%	
3	Venue	39 380 194 €	40	0,05%	4

Training cost - missions

		total course(s) duration [days]	abroad trainees [number]	abroad accum. mission duration [mandays]	abroad mission cost [per day]	abroad travel cost [person]	trair tra [n
1	BSARR 2 training			0			
2	Occurrence Investigation course - SAF	10	2	20	35	465	
3	Occurrence Investigation course - OPS/INT			0			

Infrastructure and Equipment

		Gross balance value [amount]	Expected operating life [years]	Quantity (% for SMS purposes) [%]	(
1	Standard office equipment	38 499 €	5	100,00%	4
2	Data recording and playback facilities	7 600 €	3	100,00%	
3	None		0		
4	None		0		

Non-Effort Elements

e price of
e made.

Non-Effort Elements

		Single price [€]	Quantity [#]	Frequency per implementation [#]	Total implementation costs [amount per]
1	None				
2	None				

ent types

elated to

9	*Grand Total Human Effort*	94	40	40	13,25
10	R-Average Rate [per day]	250 €	230 €	150 €	300
11	OH-Overhead [%]	20,00%	20,00%	20,00%	20,00
12	*Rate for estimations*	300,00 €	276,00 €	180,00 €	360,00
13	**Total Human Effort Costs**	**28 200 €**	**11 040 €**	**7 200 €**	**4 770**
14					
15					

MODEL OUTPUT

ISO-I / ISO-O / **R - Human effort** / R - Training / R -Infrastructure & Equipme

Ready

graphical

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onstrator.

SMS Investment Costs for Equipment and Infrastruc

Update Data

Accounting Method Average Method

Procedure	Acquisition costs - A	Expected operating life - L	Average time for SMS purposes - S_{ij}/H_d	γ_i
[List of equipment]	[amount]	[years]	[%]	
ISO-I				
Standard office equipment	38466,44136	5	100,00%	100,00%
Data recording and playback facilities	7600	3	100,00%	100,00%
None	0	0	0,00%	100,00%

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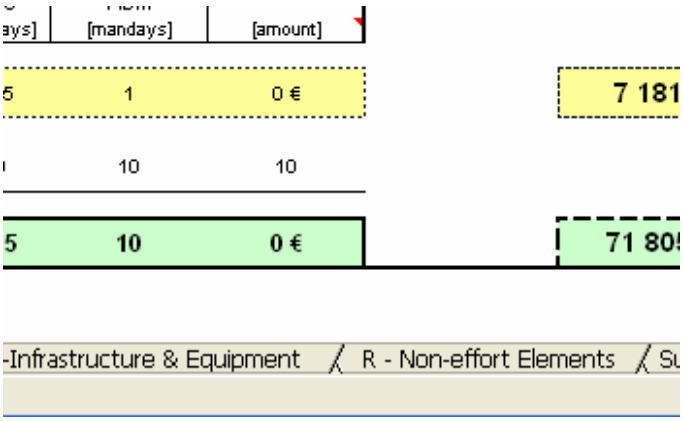
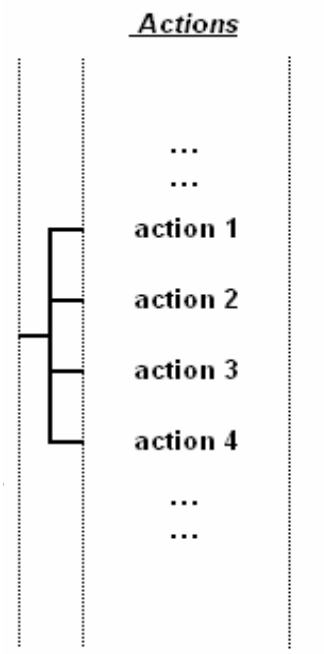
) a different type of





	External
ADM [mandays]	[mandays]
	3
	3

TRAINER					
Internal			External		
Trainers [number]	total [mandays]		No of courses [number]	Course fee [fee]	Total [amount]
<number>	0		<number>	<number>	0
<number>	0		<number>	<number>	0
2	10		<number>	<number>	0
<number>	0		<number>	<number>	0

Cost
98 €
272 €
45 881 €

domestic			
trainees or trainers [number]	accum. mission duration [mandays]	mission cost [per day]	travel cost [person]
	0		
	0		
	0		

Cost
44 236 €
8 284 €
0 €

y	Total costs per implementation [amount] p×q×f
tio	
	0 €
	0 €

13,25	10	5	
300 €	120 €	90 €	
20,00 %	20,00 %	20,00 %	
360,00 €	144,00 €	108,00 €	
4 770 €	**1 440 €**	**540 €**	**1 800 €**

Year	Year
1	2
54 990 €	

Equipment / R - Non-effort Elements / Summary / Charts

NUM

N O P Q R S

structure

Year	Year
1	2

Standard office equipment	Depreciaiton	7 693,29 €	7 693,29
	Interest	2 077,19 €	1 615,59
Data recording and playback facilities	Depreciaiton	2 533,33 €	2 533,33
	Interest	380,00 €	228,00
None	Depreciaiton	0,00 €	0,00 €
	Interest	0,00 €	0,00 €