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Task/Deliverable leader Name:	Jörg R. Müller
Contributors:	TUBS, Funkwerk, DLR, DB, BBR, RFI, Ansaldo, Invensys

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	Name	Company	Date	Visa
WP leader	Jörg R. Müller	TUBS		
WS Leader	Jörg R. Müller	TUBS		
Project Manager				
Steering Board				

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Glossary

Section 1 – Executive Summary

1.1 The context of workstream G

The aim of workstream G is to reduce time and money for the Safety Case in industry, i.e. operators as well as suppliers, by avoiding unnecessary or redundant procedures. To achieve this aim one can identify four phases in workstream G (see figure 1).

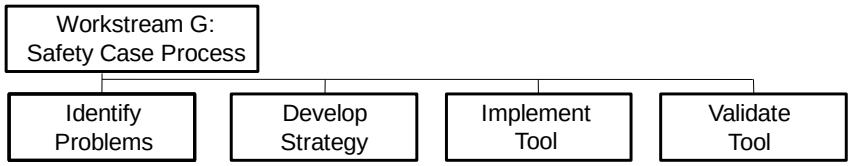

Figure 1: One can specify four phases to achieve the aim of Workstream G

The second phase "develop strategy" subsumes the following tasks:

- G.2.1 Define Long Term Goals
- G.2.2 Define Short Term Goals
- G.2.3 Estimate Economical Benefit
- G.4.1 Specification of Improved Safety Case Process

In phase 2 goals have to be defined to solve or mitigate the problems identified in phase 1 ("Identify Problems"). As not all goals can be achieved, they are divided in short term goals that have to be achieved in the project INESS (task G.2.2) and long term goals that ought to be achieved after the end of INESS (task G.2.1). The economical benefit of a future tool has to be estimated in comparison with the current processes (task G.2.3) and an improved safety case process has to be specified (task G.4.1).

1.2 The aim of task G.2.3

In work package G.2.3 the economical benefit of an improved safety case process (including the usage of a tool) has to be quantified. To achieve this, the cost of current safety case processes has to be determined and the estimated cost of the improved processes has to be compared with it.

Section 2 – Estimation of Economical Benefit

2.1 Approach and strategy

To quantify the economical benefit of an improved safety case process the following steps have to be taken:

1. Determine current cost of safety case processes
2. Estimate the cost for improved safety case process
3. Compare the costs, quantify economical benefit

The tasks G.2.1 and G.2.2 are strongly interwoven with this task. To weight the possible tool functions according to their estimated benefit, results of this task are needed. To accomplish steps 2 and 3 of this task, the results of tasks G.2.1 and G.2.2 are needed.

2.2 Determining current cost for safety case process (step 1 of strategy)

To determine the current cost of safety case processes and to identify cost drivers in these processes, a questionnaire (see attachment) was sent to the partners and evaluated.

Unfortunately, only three partners answered the questionnaire, the given figures differ by factor 10, probably at least partly due to the size of the projects. Based on this data, no reliable average value can be given.

Anyway, the results show that the major cost drivers are the creation of the safety case and the safety management in general. This information can be used for the weighting of the tool functions in tasks G.2.1 and G.2.2.

2.3 Estimation of cost of improved safety case process (step 2 of strategy)

The cost of the improved safety case cannot be estimated until tasks G.2.1, G.2.2 and G.4.1 are completed. However, the benefit of possible tool functions was estimated in the workshop on 2009-06-16.

2.4 Comparison of costs (step 3 of strategy)

The costs cannot be compared until the costs for the improved safety case process are estimated.

As the cost of the current safety case process could not be determined precisely enough, steps 2 and 3 of the strategy (sections 2.3 and 2.4) may have to be combined.

Section 3 – Conclusions

Relevant information for the work on tasks G.2.1 and G.2.2 has been found. To complete task G.2.3, tasks G.2.1, G.2.2 and G.4.1 have to be finished.

Section 4 – Bibliography

[1] EN 50126

[2] EN 50128

[3] EN 50129

Section 5 – Attachments

Attached, there is the questionnaire which has been sent to the partners to identify the fields of the safety case process that cause the most cost.

INESS Workstream G

Safety-Case-Process

Questionnaire "Costs of the Safety Case"

Technical University of Braunschweig, 2009-05-12, V0.4

General information concerning this questionnaire

The task G.2.3 is to estimate the economical benefits of an improved safety case process. As a basis, it is necessary to determine the costs for the development of a safety case based on the existing safety case processes. By comparing these costs with the estimated costs resulting from the improved safety case process, the economical benefits can be identified.

To find out the costs of the creation of a safety case with the existing processes, this questionnaire was created.

As costs depend on the size and complexity of the project, we recommend that you give the data for an average project or give average data.

Costs can be separated into *costs directly related to the safety case, costs indirectly related to the safety case* and costs not related to the safety case at all. The latter are irrelevant for this questionnaire.

Costs indirectly related to the safety case are costs that result from actions taken to be able to write a safety case but that also have a positive effect on the product and therefore cannot be charged to the safety case creation completely.

For example the costs for quality management are necessary for constant quality of the product and are therefore not directly related to the safety case.

With this questionnaire, the cost *directly related to the safety case* is to be determined. That means costs that could be saved if the safety case would not be necessary but the quality of the product and the development process would have to remain the same.

For example the *proof* of quality management is necessary for the safety case and does not improve the product at all. Therefore the costs for the proof of QM are directly related to the safety case.

Many of the mandatory tasks from the CENELEC standards will cause costs partly directly and partly indirectly related to the safety case. For this reason there is a dedicated column (3rd column) in Table 1 in which you can insert the percentage of the cost of the whole task (2nd column) that is directly related to the safety case.

You can write your answers directly into this word document.

Please note, that all your answers will be treated confidentially. We will at least anonymise your answers in a similar way we did with your answers during our interviews!

Cost table

Task	*Cost in EUR*	*Directly safety case related cost in %*
Establish safety plan		
Establish safety management		
Update system safety plan		
Implement safety plan		
Assess safety plan		
Safety management		
Control of sub-contractors and suppliers		
Create safety case		
Establish safety plan for decommissioning and disposal		
Implement safety plan for decommissioning and disposal		
Evidence of quality management		
Evidence of safety management		
Evidence of technical and functional safety		
Accumulated cost of all tasks		

Table 1: Costs of safety case related tasks

Questions

1. Please fill in
   a. the costs in EUR of each task in Table 1. If this information is not available, please indicate the accumulated costs of all tasks.
   b. the percentage of costs that are directly related to the safety case.

2. Which overall percentage of all directly safety case related tasks are included in Table 1?

3. If applicable, please add further tasks necessary for the creation of the safety case, their costs and percentages of costs directly related to the safety case to Table 1.

4. If some of the data is not available, please give reasons (e. g. data has not been collected separately, access to data is not possible due to technical reasons etc.)?

5. Which tasks indirectly related to the creation of the safety case create significant costs?

6. Is the selection of tasks in Table 1 reasonable? If not, do you have any recommendations for improvements?