



55th CEEES Meeting

Minutes of R and ESS TAB

Meeting location : DENAYER Product Certification Centre at Mechelen

Date : 17^h February 2011

Attendees : see list hereafter



1 ADOPTION OF THE 54th TAB R&ESS MEETING MINUTES

The minutes were adopted.

2 APOLOGIES FOR ABSENCES

Henri Grzeskowiak and Colin Weetch have sent apologies for their absence.

Present were 4 members:

Werner Wittberger, Helge Palmen, Boudewijn Jacobs and Harry Roossien (chaired and minutes).

3 INTRODUCTION OF (NEW) MEMBERS

There were no new members in this TAB's meeting. The attendance was very different from previous meeting. It was suggested to make an overview of core members and virtual members, where it was referred to the set-up some years ago. Below a proposal in order of structural participation and first attending year.

Core Members	Virtual Members
Henri Grzeskowiak (ASTE)	Michel Holy
Colin Weetch (SEE)	Sami Millyniemi
Helge Palmen (KOTEL)	Antii Turtola (VTT/KOTEL)
Harry Roossien (PLOT)	Klaus Kangas (KOTEL)
Boudewijn Jacobs (PLOT)	Roman Betschen (SSEE)
Werner Wittberger (SSEE)	Hubert Dollenmeier (SSEE)

Contact data of core members

Name	1 st name	Company/Society	Phone	email
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4 REPORT

The agenda of the meeting constitutes 4 documents as RP (Review Proposal) to review. The TAB Climate (Thomas Reichert) invited the TAB R&ESS to join 2 presentations, which was done for 1 hour.

4.1 Review of CEEES Publication no 9.

This publication was already reviewed in the 54th meeting in Interlaken and today's TAB has focused how to implement the recommendations. Further notes on the recommendations are added in-line and an action list is added to these minutes. The original text is in cursive.

New pictures suggested (from Henri, in Helge's notes) were studied, but no decisions were made. The proposer of those pictures must be present to fully understand the message of those pictures. Some terms were incorrect. Those should be checked and used consistently during improvement of the publication.

The proposer of pictures was not present (Henri), so this point is forwarded to next meeting.



The picture "Actions leading to reliability growth during development" shows that shift to production will lower reliability level. The reason to this should be explained in the publication. The development phases should also be indicated in the picture. The picture includes only tests, but should other issues also be explained? This might require another graph or a table showing for example the use of FMEA, RCA, design rules (and use of derating), DfR (design for reliability) methods etc.

Emphasis was on the word 'might'. The TAB agreed that an explanation need to be given and made an action point for that. Helge is most aware of the Interlaken inputs and the expert background and took the action to come up with a proposal for explanation. (AR 1)

Too simple assumptions about failure rate behaviour in time (infant mortality - constant failure rate or exponential distribution – wear-out period and mechanisms) may be risky in estimating guarantee issues, lifetime etc. Reliable results require quite a large number of test samples as well as long test times. The failure modes and mechanisms found in accelerated testing should be the same as in the field data.

Input from Werner was that often exponential models are used, but that other models are of interest too. The TAB discussed about the different reliability models (as well because of inputs in other documents). The PLOT Reliability workgroup had different presentation on reliability models under chair of Boudewijn. He focused on statistical analysis as key issue too. Therefore Boudewijn is asked to make an explanation on the models.

(AR 2)

About MTBF calculations based on HALT results: Klaus Kangas recommends to see for example "A method of estimating product field failure rate from results of HALT data", http://www.ewh.ieee.org/soc/cpmt/tc7/ast2008/Bio_Harry_McLean.pdf. Some case examples exist, but does the nature of the HALT approach really allow this?

There are doubts within the TAB about the validity of MTBF calculations, especially on the new test techniques like HALT. Werner and his staff members use MIL 217F MTBF calculations, and pinpointed towards full system level. Relationships towards field information are for older systems possible, but often overhauled by new technology. Werner is asked by the TAB to bring the MTBF calculations into perspective and do a proposal to add in the publication. For example: 'although the relationships between MTBF and field data are sparse, if you like to do calculations you can refer to.

(AR 3)

As references is the pdf from Harry McLean found to be insufficient. A better reference is the book by K.K. Bothe, World Class Reliability. Another good reference from practical site is from Isabelle Vervenne, who gave some presentations on HALT and MTBF this year within PLOT. Therefore Boudewijn will ask her. (AR 4)

This info will be added to the references list by Werner. (AR 5)

The meeting also thought that something should be mentioned about the reliability of software. The test methods covered in the publication do not include testing or evaluation of software, which should be mentioned. Also it could be added that methods to evaluate maturity of software exist, but the actual reliability of software is difficult to estimate. About terms in general: check for correct English terms and search for example in Wikipedia, <http://www.weibull.com/hotwire/issue21/hottopics21.htm>, etc.

The importance of software is increasing rapidly, not only the application software, but as well test software. This software as such can constitute a fail mode. With increasing monitoring for new test techniques, as in HALT and HA-ESS, this topic is missing in the document. Therefore the TAB decided to honor this argument and come with a proposal chapter for 'software'. Perhaps on page 10 'Validaton of function'. Harry is asked to come up with a proposal where and what to address. (AR 6)

More notes by Klaus Kangas:

Failure rate estimates based on MIL-HDBK-217 F Notice 2, could be made, based on the guidance in ANSI/VITA 51.1 (2008). This is not a revision of the handbook, but a standardization of the inputs to the MIL-HDBK-217F Notice 2 calculations to give more consistent results. There exists also updates on prediction models, for example IEC technical report IEC TR 62380: 2004 on the subject and an



updated model / handbook by the RIAC, "The RIAC Handbook of 217Plus Reliability Prediction Models" (2006).

Since MTBF is mentioned in different perspectives and was discussed in broad sense in this TAB again. There are different ways to calculate the MTBF (MIL, Milstress, Relpred, Telcordia, Vidas), it might be of interest to add a separate chapter 'MTBF' or 'Product Life Time Calculation'. This point cannot be addressed without the chairman and is postponed till next meeting.

And about when is a product mature? =>This is challenging – not necessarily clear even at end-of-life... Problems may rise due to problems in hw – sw joint operation. Suppliers or subcontractors may make changes without announcement and infant mortality issues may be repeated.

This is more part of product quality assurance/control. Integration of HALT in production lines (HASS), requalifications or market reviews, but as well incoming inspections can reduce the risk of infant mortalities. Harry will propose some text to add this perspective. (AR 7)

Given the impact and amount of changes on the 2009 version of this document it is proposed to make a 2012 version of the publication. This will be discussed in next meeting when the chairman is present.

4.2 ASTE document on HA-ESS

SSEE is working on an updated version of their ESS book. Within this book HA-ESS might be addressed as well. This information can be aligned with the ASTE document, but therefore the consequences should be reviewed. It could be two separate documents, but then the information could be inconsequent and not of benefit for the readers and TAB.

Next to technical, the commercial interests are part of this document, a strategic discussion between SSEE and CEEES need to take place. Due to absence of Henri, Werner is best to take this action point and start with sending out the contents list of the current SSEE ESS book. (AR 8)

Henri/Werner will organize a strategic meeting with Henri Grzeskowiak, Werner Wittberger, Marco Huber and Thomas Reichert. (AR 9)

4.3 & 4.4 Environmental Engineering documents

There was no input and review is postponed till next meeting. There is an action for all core-members to look through the documents and present next time what they think need to be done.

5 TOUR OF TABLE

Werner received only the first 10 pages of the EE documents. Since he is core member and need to review before next meeting, he should have the full document. Henri to decide on this and evt. sent out. (AR 10)

Given the number of actions to implement the proposals in this and previous meeting, it was requested to have an intermediate 'milestone' to check the progress. This could be by phone, mail or different. Henri/Harry will follow up. (AR 11)



ACTION LIST

Ref.	Resp.	Action
AR 1	Helge	Make proposal for explanation of other issues in the graphs 'reliability growth'
AR 2	Boudewijn	Put 'too simple assumptions' into perspective and make short explanation on the models
AR 3	Werner	Make proposal to add text to the publication which brings MTBF into the right perspective
AR 4	Boudewijn	Ask Isabelle Vervenne for latest information/references and give that info to Werner
AR 5	Werner	Add the references for MTBF (K.K. Bothe and Isabelle Vervenne/input Boudewijn)
AR 6	Harry	Come up with proposal for software reliability, where and what to add in the publication
AR 7	Harry	Add text to 'assure' product maturity in production and field
AR 8	Werner	Sent out contents current ESS book
AR 9	Werner/Henri	Have discussion between SSEE and CEEES about ASTE document
AR 10	Henri	Decide/sent EE documents to Werner
AR 11	Harry/Henri	Intermediate follow up the actions and bottlenecks