



DI3.11: Second peer review of the PROMISE applications – Summary

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ABSTRACT	<p>This report presents the results from the 2nd Peer-review of the PROMISE applications. All applications have been reviewed by two peer-reviewers assessing general, business, technical, innovations, and risk-aspects. The 2nd peer-reviews were carried out based on the status of Month 35/36 of the 42 month long PROMISE project. I.e this report therefore does not reflect the final quality of the PROMISE applications.</p> <p>Please note; only the main results are presented in this report.</p>

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Abbreviations

Abbreviations used in this document:

BOL	Beginning of life
DfX	Design for X (X=manufacturing, design etc)
DSS	Decision Support Systems
EOL	End of life
LCC	Life cycle cost
MOL	Middle of life
PDKM	Product Data Knowledge Management
RAM	Reliability Availability Maintainability
RFID	Radio Frequency Identification



1 Executive summary

The peer-review of the PROMISE application is actually just one of three parts assessing the quality of the applications. It's important to note the difference between the three parts:

- **Peer-reviews:** Persons not involved in the application reviewed a comprehensive document describing the respective application in detail based on the status of Month 35/36 of the 42 month long PROMISE project.
- **Self-assessments:** The applications themselves assessed their own status on many aspects using the PROMISE self-assessment tool.
- **Business effect evaluations:** Moderators implemented the Business Effect Evaluation Methodology (BEEM) at brainstorming/work-sessions together with the application owners identifying e.g. application targets, business effects and risks. This formed the basis for cost-benefit and sensitivity analyses for each application. BEEM was carried out after the peer-reviews.

This report is a public summary of the peer-reviews of the PROMISE applications. The self-assessments and Business effect evaluations are both confidential and not available to the public. As such, this report will not give the complete picture of the PROMISE applications. E.g. in this report, some applications receive low scores on its business aspects. However, the business effect evaluations have drastically improved the business aspects of all applications.

1.1 Executive summary of the 2nd peer-review results

Each PROMISE application A1 to A11 has been reviewed by two peer-reviewers assessing: general, business, technical, innovativeness, risk and summary aspects. Twelve aspects were graded and commented using the following scale with respective score: Excellent=4, Good=3, Average=2, Poor=1. In addition, the peer-reviewers were asked specifically to name any additional risks, and where the peer-reviewer saw the scope/use of the innovation beyond the existing application. The peer-reviews were carried out based on the status of month 35/36 of the PROMISE project. Of the twelve aspects graded, the main summary overall rating of the application was assessed as Good/Excellent for all applications, except for A9 and A10 where two reviewers assessed them as Average (see Figure 1). I.e. there seems to be consensus among the reviewers regarding the overall quality of the PROMISE applications.

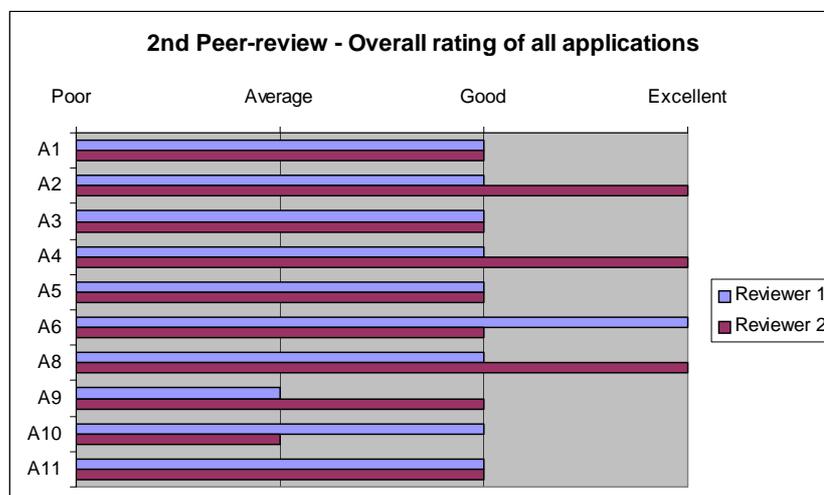


Figure 1: Peer-reviewers overall rating of the applications A1 to A11

In Figure 2 all twelve aspects for each application covered in the peer-review have been summarized and an adjusted %-score has been calculated for each application. Maximum score per application per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers due to e.g. need for more information in the application description. The adjusted %-score is based on the adjusted maximum score where unassessed aspects don't count towards the total.

Please note: the overall score in Figure 2 does not necessarily reflect the quality of the applications as the following factors influence the score:

- Harsher assessments from some reviewers on specific aspects. E.g. business aspects can receive a low assessment and comments are given. In another application, the assessment can be high by both peer-reviewers, but the comments given states the same overall problem identified in an application with low score.
- A low assessment given to one aspect results in lower score on the following aspects related to the first.

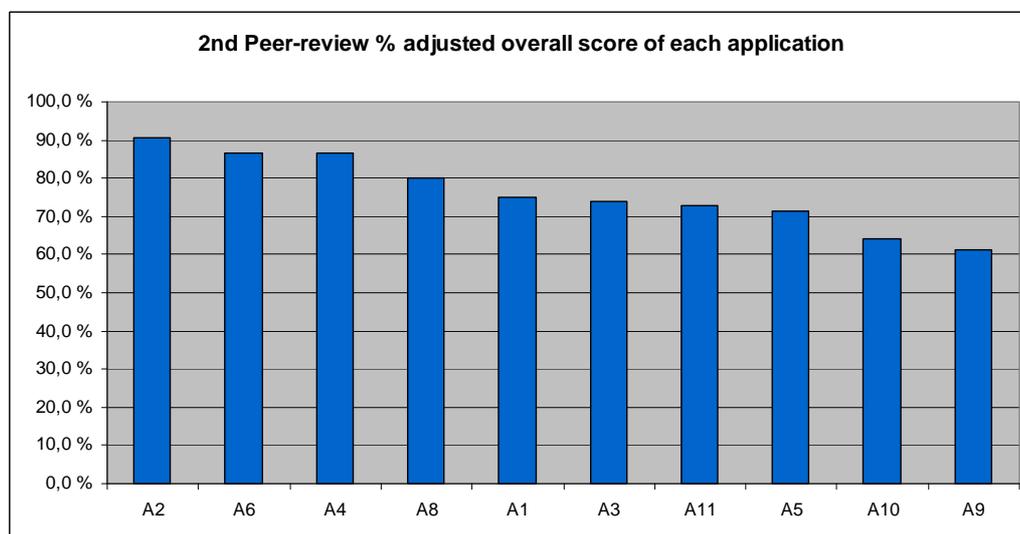


Figure 2: Overall adjusted %-score for all aspects covered in the 2nd Peer-review (unassessed aspects not counted towards percentage score)

Figure 3 summarizes the target fulfilment/achievement for all applications for all aspects assessed. A target-score of 2,5 was set as the threshold for a satisfactory score within each aspect. The score of 2,5 relates to the following scale: Excellent=4,0; Good=3,0; Average=2,0; Poor=1,0. Aspects scoring below this threshold is flagged as needing more attention.

A9 and A10's General aspects are flagged in Figure 3 as needing more attention. However, it should be noted that the General aspects is related to that the peer-reviewers found that descriptions of the General aspects of the applications were insufficient and should be improved. I.e. the textual description needs attention and not the contents.

It should also be noted that the business aspects for all the applications were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models, cost-benefit and sensitivity analyses of the applications as these were not yet finalized at the time of the peer-review.

	A1	A2	A3	A4	A5	A6	A8	A9	A10	A11
General aspects	3,3	4,0	3,0	3,7	3,0	3,5	3,8	2,3*	2,4*	3,0
Business aspects	3,0	3,2	3,3	3,7	2,8	3,7	3,0	2,4	2,0	3,0
Technical aspects	2,5	4,0	2,5	3,0	2,5	3,0	3,5	2,5	3,0	2,5
Innovativeness_aspects	3,0	3,5	3,0	3,0	3,0	3,0	3,5	3,5	2,5	3,0
Risk aspects	2,8	3,5	2,7	3,3	2,8	3,5	2,5	2,5	3,2	2,8
Summary-Overall rating	3,0	3,5	3,0	3,5	3,0	3,5	3,5	2,5	2,5	3,0

* Assessment of the General aspects of for A9 and A10 is very much related to the poor description in the application document being used for review. I.e. details were not sufficiently described by the application owner.

Figure 3: Assessment mean score and target fulfilment of all applications. Red = target of assessment score of at least 2,5 not achieved. (4,0=Excellent; 3,0=Good; 2,0=Average; 1,0=Poor)

The following were the final comments from the peer-reviewers: Rate the overall Application:

- **A1 – Reviewer 1: Good, Reviewer 2: Good**
The A1 application is found to be sound and to have a vast application area so it is definitely worth the risk and the effort.
- **A2 – Reviewer 1: Good, Reviewer 2: Excellent**
The A2 application is found to be technically good. However, the business assessment needs improvement (*please note BEEM not implemented as described above*).
- **A3 – Reviewer 1: Good, Reviewer 2: Good**
The demonstrator itself is a very interesting idea, and is very hot topic due to the environmental focus.
- **A4 – Reviewer 1: Good, Reviewer 2: Excellent**
is easy to understand that it may bring a significant added value to all the actors involved. However, the lack of software test achieved results description makes it difficult to assess the actual exploitability of the solution proposed.
- **A5 – Reviewer 1: Good, Reviewer 2: Good**
The reviewers finds the A5 application promising.
- **A6 – Reviewer 1: Excellent, Reviewer 2: Good**
This application provides big potential for adding value for the application owner and for its customers.
- **A8 – Reviewer 1: Good, Reviewer 2: Excellent**
The overall A8 application, representing a test case for remote monitoring and predictive maintenance strategies applied to static goods, is a very promising solution, which can represent really a huge step beyond the state-of-the-art.
- **A9 – Reviewer 1: Average, Reviewer 2: Good**
Reviewer 1's final comment is that the description of the application is a bit unstructured and somewhat difficult to get the hold on. No comment from reviewer 2.
- **A10 – Reviewer 1: Good, Reviewer 2: Average**
The provided supplementary background information of the application is good. The application has some potential, but could be improved.
- **A11 – Reviewer 1: Good, Reviewer 2: Good**
The proposed application offers good potential for considerable savings.

2 2nd Peer-reviews of the PROMISE applications A1 to A11

2.1 Introduction - The 2nd Peer-review of the PROMISE applications

This report presents the results from the 2nd peer-reviews of the PROMISE applications. As for the 1st peer-review presented in the approved DI3.7¹, the application owners prepared a detailed description of their applications based on the application's status of month 35/36 of the PROMISE project. This description was then integrated into a peer-review package containing: 1) Instructions to the peer-reviewer, 2) The description of the application, and 3) An evaluation form for reviewing the application. The peer-review packages were distributed to peer-reviewers not directly involved in the respective application. They assessed technical feasibility, potential business impact, innovativeness and risks. The aspects were graded and commented using the following scale: A=Excellent, B=Good, C=Average, D=Poor. In addition, the peer-reviewers were asked specifically to name any additional risks and where the peer-reviewers saw the scope/use of the innovation beyond the existing application.

In almost all applications the PROMISE components (PEID, PDKM, Middleware, DSS) will be implemented, integrated and customized to satisfy the application scenarios' requirements. Thus, each application can be considered a summary of results on which the PROMISE project can be reviewed. For this reason the peer-review has been carried out from the application point of view (according to the recommendations of the EU-reviewers and as described in the DOW). The 1st peer-reviews were based on the project status as shown in the PROMISE Roadmap in Figure 4 and reflect the status at Month 22 of the applications and related research. The results from the 1st peer-review are reported in the approved deliverable DI3.7¹. The 2nd peer-review was carried out based on the status at Month 35/36 of the PROMISE project (i.e. before the applications/demonstrators were fully developed).

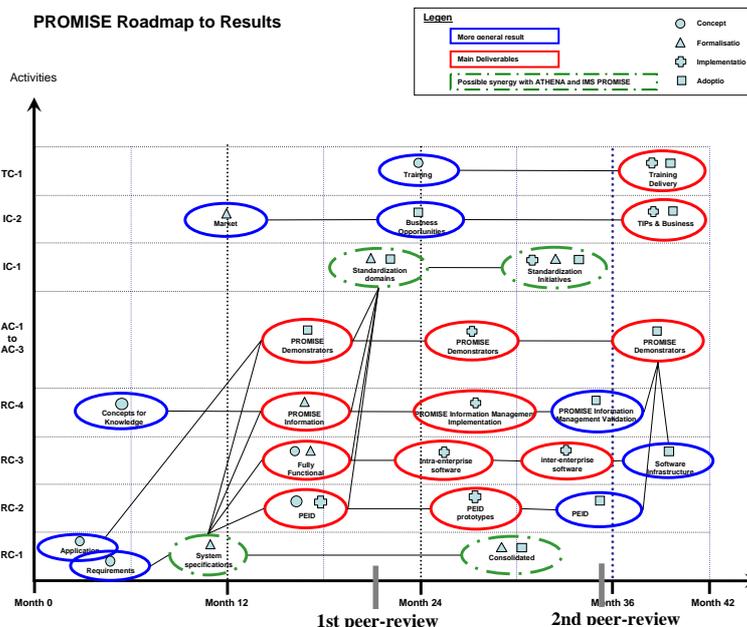


Figure 4: The PROMISE roadmap to results (according to the PROMISE DOW) and the status of the applications the peer-reviews are based on

¹ DI3.7 “First self assessment and peer review of the PROMISE applications – Conclusions”, PROMISE Report M30

2.2 Identification of peer-reviewers

As can be found in the overall description of Task TI3.8 in WP I3 a sub-objective was, if possible, to involve the Industrial Reference Group (IRG) as peer-reviewers of the PROMISE applications. However, at the time of identifying the peer-reviewers, the IRG couldn't be used for this purpose.

Due to the above, and due to the challenges related to the protection of the Intellectual Property Rights (IPR) in case technical deliverables went outside the Consortium, the following strategy was used for identifying the peer-reviewers. This strategy is the same as for the 1st peer-review and described in the approved DI3.7¹.

Each application was reviewed by at two different peer-reviewers from the PROMISE partners with insights into the technical/business aspects related to PROMISE and, preferably those who were not directly involved in PROMISE activities.

Each PROMISE partner was contacted and asked to propose peer-reviewers based on the above criterion. Based on the feedback from the partners, the following persons were chosen as peer-reviewers of the 2nd peer-review and given the responsibility as shown in Figure 5.

Application	Peer-reviewer	Peer-reviewer
A1	Heiko Duin (BIBA)	Jagath Gamage (SINTEF ICT)
A2	Michele Francano (CRF)	Jian Zou (CIMRU)
A3	Irene Jensen (SINTEF ICT)	Mikko Laakso (HUT)
A4	Jian Zou (CIMRU)	Enrico Tamburini (FIDIA)
A5	Jagath Gamage (SINTEF ICT)	Heiko Duin (BIBA)
A6	Ville Hinkka (HUT)	Jagath Gamage (SINTEF ICT)
A8	Enrico Tamburini (FIDIA)	Irene Jensen (SINTEF ICT)
A9	Bård Myhre (SINTEF ICT)	Marco Sacco (ITIA)
A10	Mikko Laakso (HUT)	Bård Myhre (SINTEF ICT)
A11	Marco Sacco (ITIA)	Ville Hinkka (HUT)

Figure 5: Overview of peer-reviewers of the 2nd Peer-review of the PROMISE applications

2.3 Structure and contents of the peer-review packages

Each peer-reviewer received a peer-review package consisting of the three parts described below.

A - Introduction to peer-review

The first material of the peer-review package is a brief documentation containing the objectives of the peer-review, main deadlines of the peer review process, and references to the Peer Review Coordinator, the person who manages the peer review process.

B - Results to be reviewed

The second material of the peer-review package contained the core of the review process; it contained the content to be reviewed by the peer-reviewers, including a short two-page description of the main approach followed in the application and a summary of the obtained results. The main contents revolved around the application results which covered:

- Background: general information of the context in which the application has been conceived and designed
- Objectives: description of the application's targets
- Implementation of technologies in the application
- Functionalities: description of the designed functionalities offered by the application
- Innovativeness: clear identification of the original concepts, methods and tools
- System architecture: Component descriptions, design and interactions
- Benefits: explanation of the main advantages (business and technical)
- Risks: explanation of the main risks (business and technical) related to the application and the presentation of a contingency plan.

It's important to note that the business aspects of all applications were in the progress of being improved based on the Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models. It should also be noted that the results to be reviewed are based on the status of the applications at month 35/36 of the 42-month long PROMISE project. As such, the peer-review results do not reflect the final result of the PROMISE applications.

C - Peer review guidelines and aspects covered in the peer-review

The third element of the peer-review package contained the criteria on which the peer-reviewers assessed the applications. Each aspect covered in the peer-review form addresses an important aspect related to the application. These are the basis for the analysing of the peer-review results. Figure 6 shows the categories and aspects that were covered.

Categories	Aspects (graded A=Excellent=4, B=Good=3, C=Average=2, D=Poor=1)
General	<ul style="list-style-type: none"> The Application's background and objectives are clearly stated in the document and understandable The Application's functionalities are well presented and understandable in the document The Application's architecture is well presented and understandable in the document
Business	<ul style="list-style-type: none"> The impact on reinforcing competitiveness of the application is understandable and acceptable The significance of the impact has been demonstrated The application demonstrates a clear added value in carrying out the work with PROMISE technologies
Technical	<ul style="list-style-type: none"> The technologies have been properly implemented in the application
Innovativeness	<ul style="list-style-type: none"> The presented results represent clear progress beyond the current state-of-the-art Where does the reviewer see the scope of this innovation beyond the existing application in your own or in other industries (<i>textual input, not graded A-D</i>)
Risks	<ul style="list-style-type: none"> Risks have been sufficiently identified The risks' magnitude has been sufficiently estimated The risk is acceptable Do you identify additional critical risks that may compromise the results of the Application not identified? (<i>textual input, not graded A-D</i>)
Summary	<ul style="list-style-type: none"> Rate the overall Application

Figure 6: The categories and aspects covered in the peer-review

2.4 Peer-review analysis approach

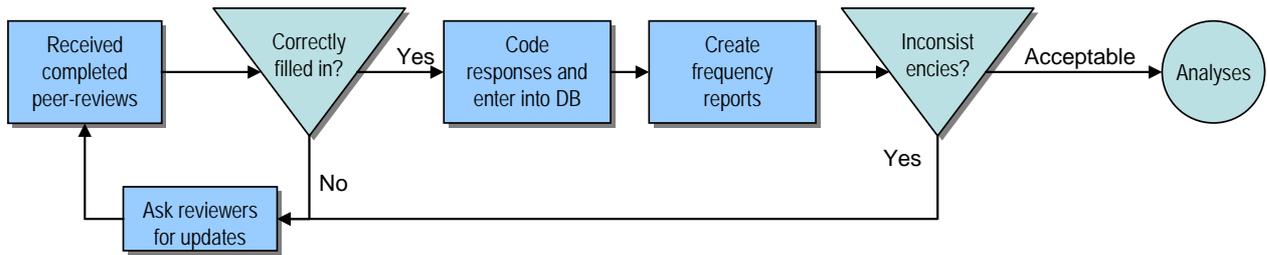
After the application owners themselves have contributed and approved their respective peer-review packages, the peer-reviewers received their packages according to Figure 5. The packages were then completed by the peer-reviewers.

After receiving the assessments from the peer-reviewers, analysing the results is the next step that must be carried out. The analytical methodology consists of four main parts:

- Frequency reporting and consistency check of received data
- Overall analysis of all applications (i.e. concluding on the overall PROMISE project)
- Detailed analysis of each application
- Reporting the results

The overall analytical approach is illustrated in Figure 7.

Frequency reporting and consistency check of received data



Detailed analysis of each application and overall PROMISE application analysis



Figure 7: The PROMISE peer-review analysis methodology

The overall steps shown in Figure 7 are described in the approved deliverable DI3.7. The only repetition from DI3.7 is the coding of the assessments as shown in Figure 8.

Grade		Code/Score
A	Excellent	4
B	Good	3
C	Average	2
D	Poor	1
No answer	-	0

Figure 8: Peer-review assessment grading and score of grades

3 2nd Peer-review results

In the subsequent sections, the peer-review results for each application are presented and discussed. An overall assessment is provided in the Executive summary on page 3 of this report.

The structure of the detailed analysis per application is as follows:

- Brief recap of the main focus of the application
- Summarized graphs and results of the peer-review
- A discussion/summary of each main aspect covered. Included is also comments on whether or not the aspect has received a satisfactory score of at least 2,5. This score is based on that Excellent=4; Good=3; Average=2; Poor=1. A score under 2,5 flags that this area needs more attention.

It's important to note that the business aspects of all applications were in the progress of being improved based on the Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology at the time of the peer-reviews. As such, the peer-reviewers did not assess the up-to-date and much improved application business models.

With regard of a comparison between the 1st and the 2nd peer-review, it's important to note there has been a lot of development of the applications between the 1st (at month 22) and the 2nd (at month 35/36) peer-reviews. Further, since the applications have developed changes in focus and solutions as the research- and application-teams together have worked to find solutions to the technical challenging aspects of the PROMISE technology and applications, have also naturally occurred. This development has resulted in more comprehensive application descriptions for the 2nd peer-review, and hence more complicated descriptions. This has put a lot of demand on the application owners in order to create an understandable description of the more complicated aspects of their applications. In some instances this did not succeed (e.g. for the general aspects of A9 and A10). A final point is that since different peer-reviewers have been used in the 1st and the 2nd peer-review, they have emphasized different aspects when assessing and grading. In short, the above discussion shows that we can conclude that there are differences between the 1st and the 2nd peer-review, however, a direct comparison on e.g. scores etc are difficult to carry out due to the fact that results can be misinterpreted. I.e. one cannot claim that application Ax has become better (or worse) when comparing the 1st and the 2nd peer-review results.

3.1 2nd Peer-review results: Application A1 CRF (EOL)

3.1.1 Main focus of application

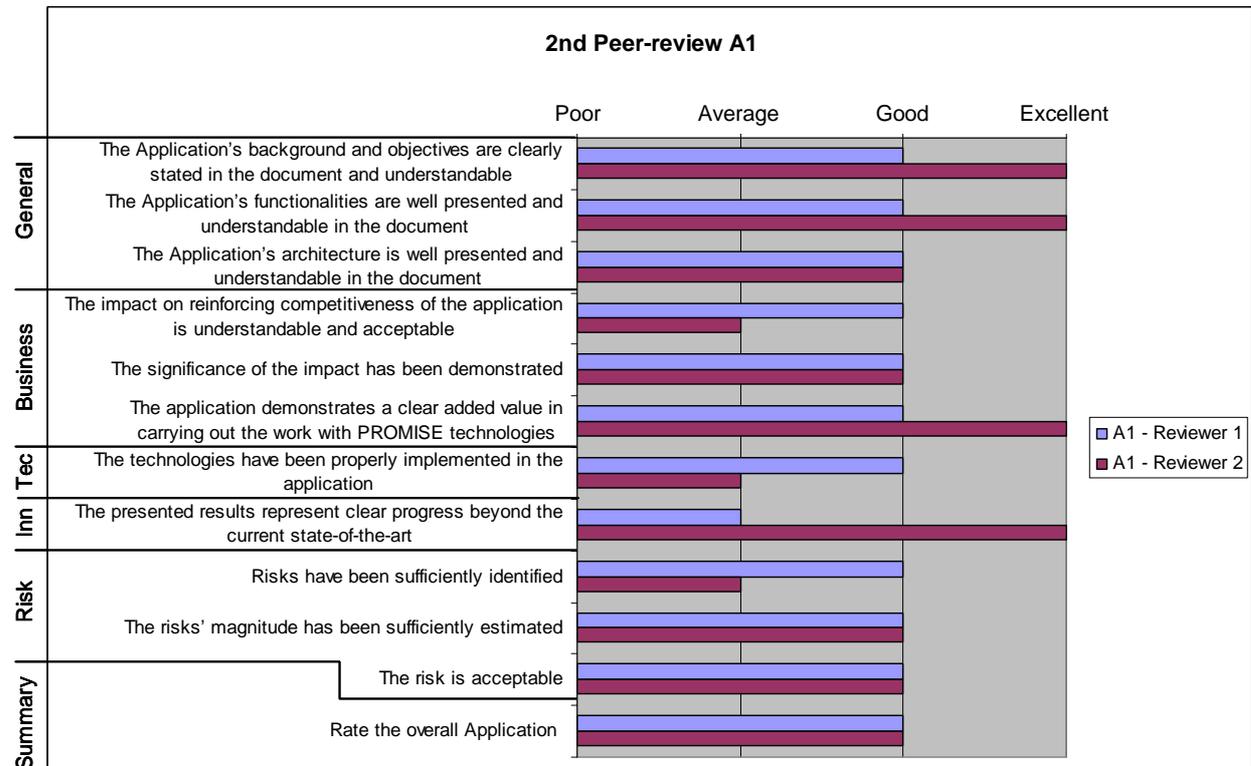
The ELV (End of Life Vehicle) directive (EU/2000/53) introduced by the EU in 2000 addresses pollution arising from vehicles that have reached the end of their useful life. The directive specifies thresholds for the reuse, recycling and recovery of materials from ELVs. By 2006 the ratio of materials in an ELV which should be reused, recycled or recovered will reach 85% of the total vehicle weight and 95% by 2015. The objective of CRF is to assess the use of PEID for improved decision making (based on information concerning parts status and history stored on the PEID, materials tracking and for testing the achievement of recycling and reuse targets as stated by the European directives.

3.1.2 A1 – summarized results based on peer-reviewers comments and assessments

Application A1 receives a total score of 72 out of 96 (adjusted %score of 75,0%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A1	35,0	37,0	36,0	72,0	75,0 %	0	96	75,0 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	Yes	Yes
Risks:	Additional risks identified	No	Yes

Figure 9: 2nd Peer-review results A1

General aspects ► *Score satisfactory* (Score = 3,3 \geq threshold of 2,5)

The A1 general aspects are assessed as Excellent/Good. Only minor items have been mentioned by the reviewers.

Business aspects² ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The overall impression of the business aspects of A1 is assessed as good. However, the impact on competitiveness is not explicitly addressed in the application description.

Technical aspects ► *Score satisfactory* (Score = 2,5 \geq threshold of 2,5)

Reviewer 2 comments that detailed implementation plans and the feasibility of the technologies are not included in the document. Especially the issues regarding RFID and wireless communications between tags and readers are critical in this respect. Also the challenges associated with middleware are to be identified.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

Reviewer 1 comments that the technology is not beyond state-of-the-art, but that these types of scenarios have not yet been implemented, which makes it a step beyond state-of-the-art in the application area. The application solution is found to be usable in other industries as well; e.g. in all related manufacturing industries, e.g. machines, aircraft, etc). The information saved in OBD can also be used during routine services to the vehicle during MOL. Reviewer 2 also points out that this innovation can be used during disposal of house-old apparatus like washing machine, dish washers etc.

Risk aspects ► *Score satisfactory* (Score = 2,8 \geq threshold of 2,5)

The risk aspects are found to be satisfactory. However it is stressed that some identified risks need alternative solutions to avoid a total collapse of the application. Further, that software challenges and risks associated with actors and their co-operation should be explored.

Summary aspect ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The A1 application receives an overall rating of Good. It is found to be sound and to have a vast application area so it is definitely worth the risk and the effort.

² The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

3.2 2nd Peer-review results: Application A2 CATERPILLAR (EOL)

3.2.1 Main focus of application

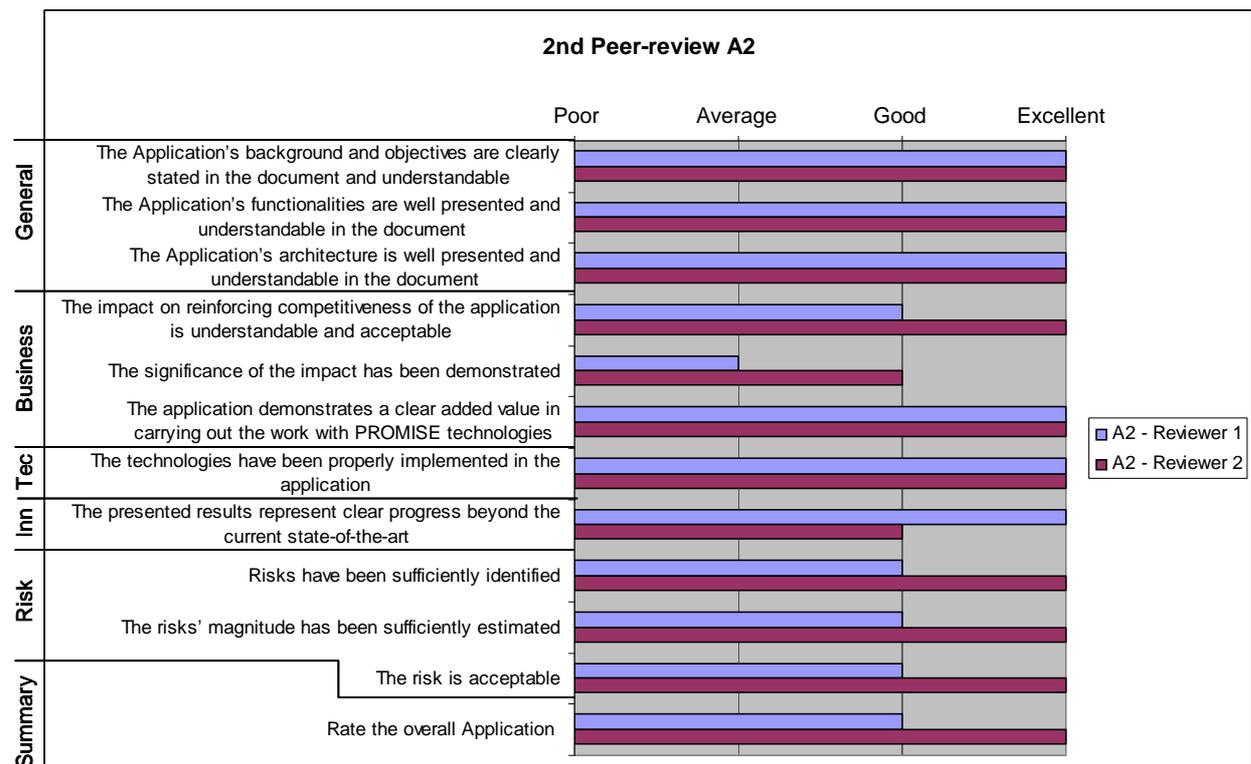
This demonstrator is designed to improve EOL management of CAT engines using smart embedded systems and IT infrastructure to efficiently transform data into decision and knowledge. During multiple life cycles of engine components, useful information will be collected to be able to improve decision-making at end of life of the engine for deciding whether to re-use or salvage components or purchase new ones for building remanufactured engines.

3.2.2 A2 – summarized results based on peer-reviewers comments and assessments

Application A2 receives a total score of 87 out of 96 (adjusted %score of 90,6%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A2	41,0	46,0	43,5	87,0	90,6 %	0	96	90,6 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	No	No
Risks:	Additional risks identified	No	No

Figure 10: Peer-results A2

General aspects ► *Score satisfactory* (Score = 4,0 \geq threshold of 2,5)

The general aspects of A2 are found to be reasonable and clearly presented.

Business aspects³ ► *Score satisfactory* (Score = 3,3 \geq threshold of 2,5)

The significance of the impact on business is found to be promising and has been discussed understandably and acceptably. However, no financial data is given to sustain it and the business aspects should be presented and discussed in more detail.

Technical aspects ► *Score satisfactory* (Score = 4,0 \geq threshold of 2,5)

The technologies involved in the application are found to have been discussed and analyzed necessarily and properly.

Innovativeness aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The presented results are reasonable and have surely made clear progress beyond the current state-of-the-art. The reviewers are only familiar with that similar work is mentioned in research papers.

Risk aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5))

It is pointed out that the involvement of key stakeholders in the company is taken for granted, which has to be demonstrated. However, the risks discussed and identified seem to be reasonable and sufficient. None of the reviewers identifies new risks not covered by the application description.

Summary aspect ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The A2 application receives an overall rating of Good/Excellent. The application is found to be technically good, however, the business assessment has to be improved (see footnote).

³ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications

3.3 2nd Peer-review results: Application A3 INDYON (EOL)

3.3.1 Main focus of application

The aim of the scenario is to improve the information flow throughout the EOL phase of the chosen product (e.g. car bumpers) and the BOL phase of the resulting recycled material (e.g. granular plastic), bridging the information gaps present in the state-of-the-art and completing the information loop. On that basis, it aims to optimise processes within these phases by providing real-time product and context information to a number of back-end systems, and by integrating DSS into the existing backend in order to more effectively handle these processes. The objective of the A3 Demonstrator is to show how the tracking and tracing of products identified for recycling can be enhanced using the PROMISE PEID technology and PDKM/DSS system in combination with automated indoor and outdoor navigation systems.

3.3.2 A3 – summarized results based on peer-reviewers comments and assessments

Application A3 receives a total score of 71 out of 96 (adjusted %score of 74,0%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A3	34,0	37,0	35,5	71,0	74,0 %	0	96	74,0 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.

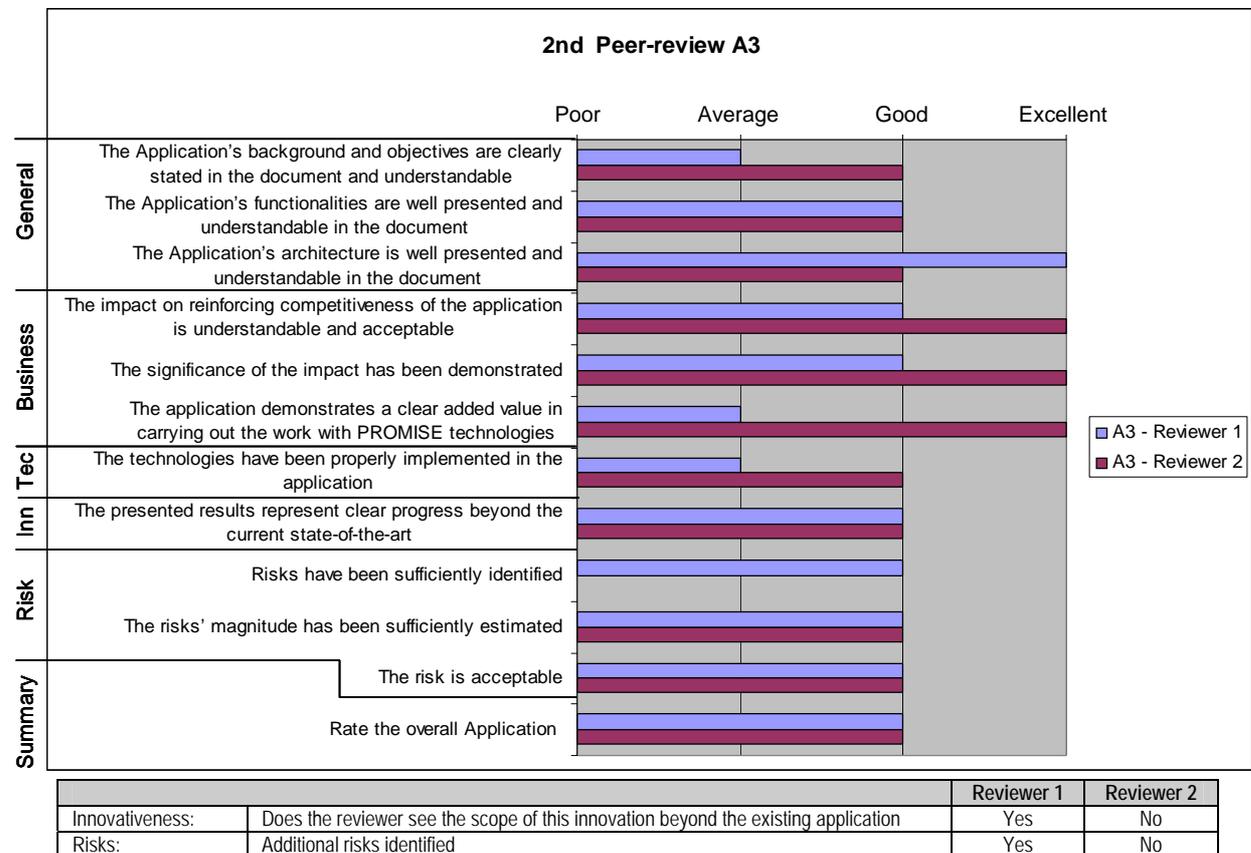


Figure 11: Peer-review results A3

General aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The general aspects of A3 are assessed as Good. Especially is the architecture and component description both detailed and logically built up.

Business aspects⁴ ► *Score satisfactory* (Score = 3,3 \geq threshold of 2,5)

The reverse logistic sector would surely benefit from this kind of solution, and the figures and analysis shown are convincing. However, the lack of end users involved in A3 is a minus.

Technical aspects ► *Score satisfactory* (Score = 2,5 \geq threshold of 2,5)

The description of the technical aspects should have been more thorough with more illustrations. However, it was a good idea to have the “bumper” as an example.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The risk aspects of this application are assessed to be Good, and the system will be an improvement on “paperless”, “human error” and other points. The idea of also including positioning can be interesting for the food/fishery industry.

Risk aspects ► *Score satisfactory* (Score = 2,7 \geq threshold of 2,5)

The risk aspects, as a demonstrator, are found to be acceptable but the risk aspects as they are identified are on a very general level. The human factor, or focus on user interface to take such a system to use should also have been mentioned.

Summary aspect ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The A3 application receives an overall rating of Good. The demonstrator itself is a very interesting idea, and is a very hot topic due to the environmental focus.

⁴ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications

3.4 2nd Peer-review results: Application A4 CRF (MOL)

3.4.1 Main focus of application

The overall objective of the A4 is to support the maintenance of a fleet of trucks, optimising the maintenance plan and increasing the overall availability of the trucks. Closing the information loop using the Demonstrator "Information management for predictive maintenance" will improve the knowledge about the customer habits and the mission profile of the vehicle and finally enable to:

- Evaluate degradation profile of some selected critical components
- Evaluate incipient failures
- Implementing an adaptive coupon where the intervention to be performed are dynamically planned according to the true wear out level of each component

3.4.2 A4 – summarized results based on peer-reviewers comments and assessments

Application A2 receives a total score of 83 out of 96 (adjusted %score of 86,5%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A4	38,0	45,0	41,5	83,0	86,5 %	0	96	86,5 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.

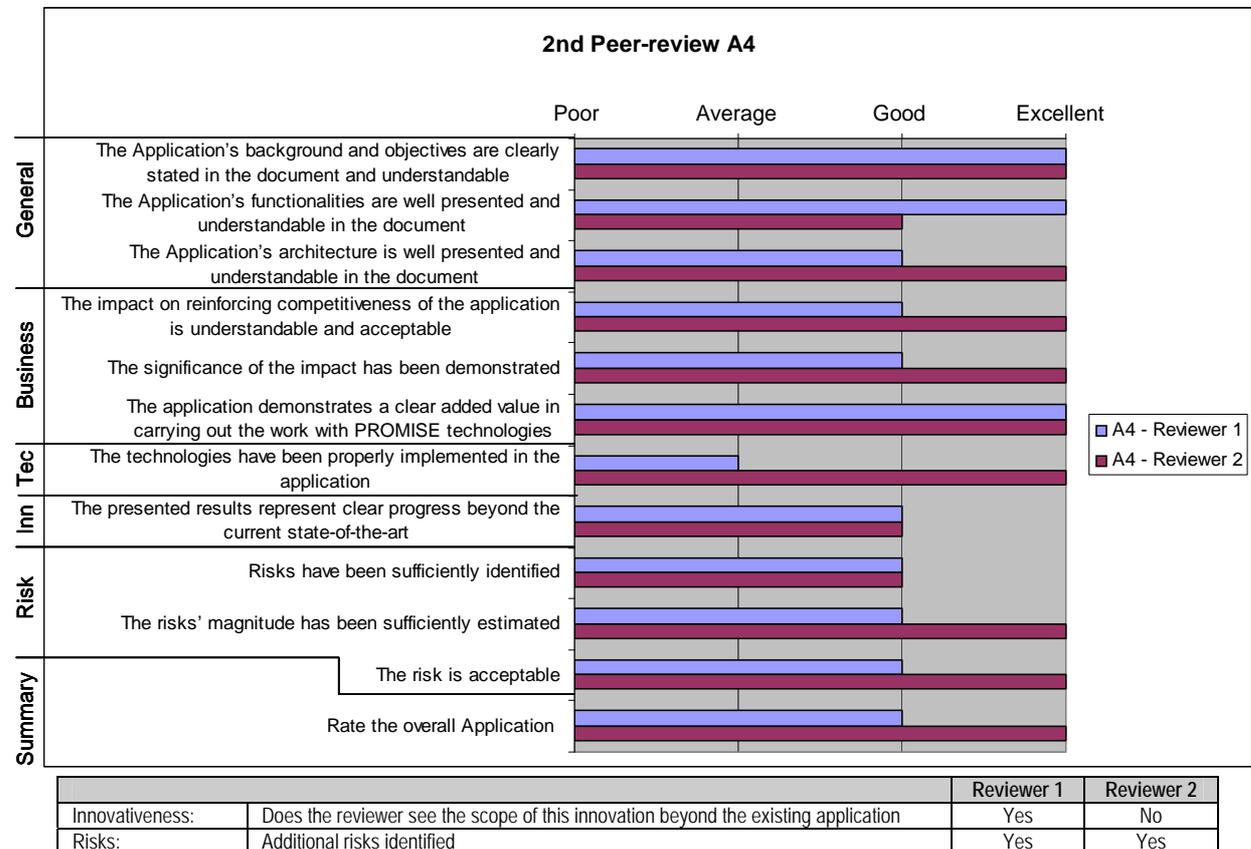


Figure 12: Peer-review results A4

General aspects ► *Score satisfactory* (Score = 3,7 \geq threshold of 2,5)

The presentation of the application's background, objectives and functionalities are assessed as Excellent. The architecture is found understandable and assessed as good, but both reviewers comment that there should be more use of diagrams in order to ease the understanding of the architecture.

Business aspects⁵ ► *Score satisfactory* (Score = 3,7 \geq threshold of 2,5)

The business aspects are assessed to be Good/Excellent for this application and the application provides a clear added value with respect to the PROMISE technologies.

Technical aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The functional architecture of the application is found to be clear, however, the level of integration of technologies inside the demonstrator has not been deeply described.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The achievement of the foreseen results will surely represent a clear progress beyond the State-of-the-art, and the innovations regarding this application are understandable, but not very clear. The general approach not only adapts to automotive sector. Also machine tools manufactures/end user can take advantage from the implementation of such solution. In addition, potentially all machinery sectors could be interested in innovative and dynamic maintenance solutions.

Risk aspects ► *Score satisfactory* (Score = 3,3 \geq threshold of 2,5)

The reviewers assess that both technical and business risk assessments have been carried out in a comprehensive way. Anyway, some key potential risks have not been taken into account, and especially business risks should have been addressed in more detail.

Summary aspect ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The A4 application receives an overall rating of Good/Excellent. It is easy to understand that it may bring a significant added value to all the actors involved. The lack of software test achieved results description makes it difficult to assess the actual exploitability of the solution proposed.

⁵ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications

3.5 2nd Peer-review results: Application A5 CAT (EOL)

3.5.1 Main focus of application

The A5 application deals with the capability of product lifecycle management of heavy vehicles and Structures through fatigue monitoring of Structures by using new devices attached onto the structures indicating fatigue damage of local points. These physical measures, as well as data collection linked to machine configuration and application type will specify customer use of their machine and will enable scheduling maintenance operations accordingly. Furthermore, owners could use remaining value of the structure for any resale decisions. For a fleet of vehicles, field data collection will be used for improving the Design of CAT structures dedicated to different applications and markets.

3.5.2 A5 – summarized results based on peer-reviewers comments and assessments

Application A2 receives a total score of 65,5 out of 96 (adjusted %score of 71,4%). After discrepancy checks of business aspects, any discrepancies between the reviewers have been found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A5	38,0	30,5	34,3	68,5	71,4 %	0	96	71,4 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.

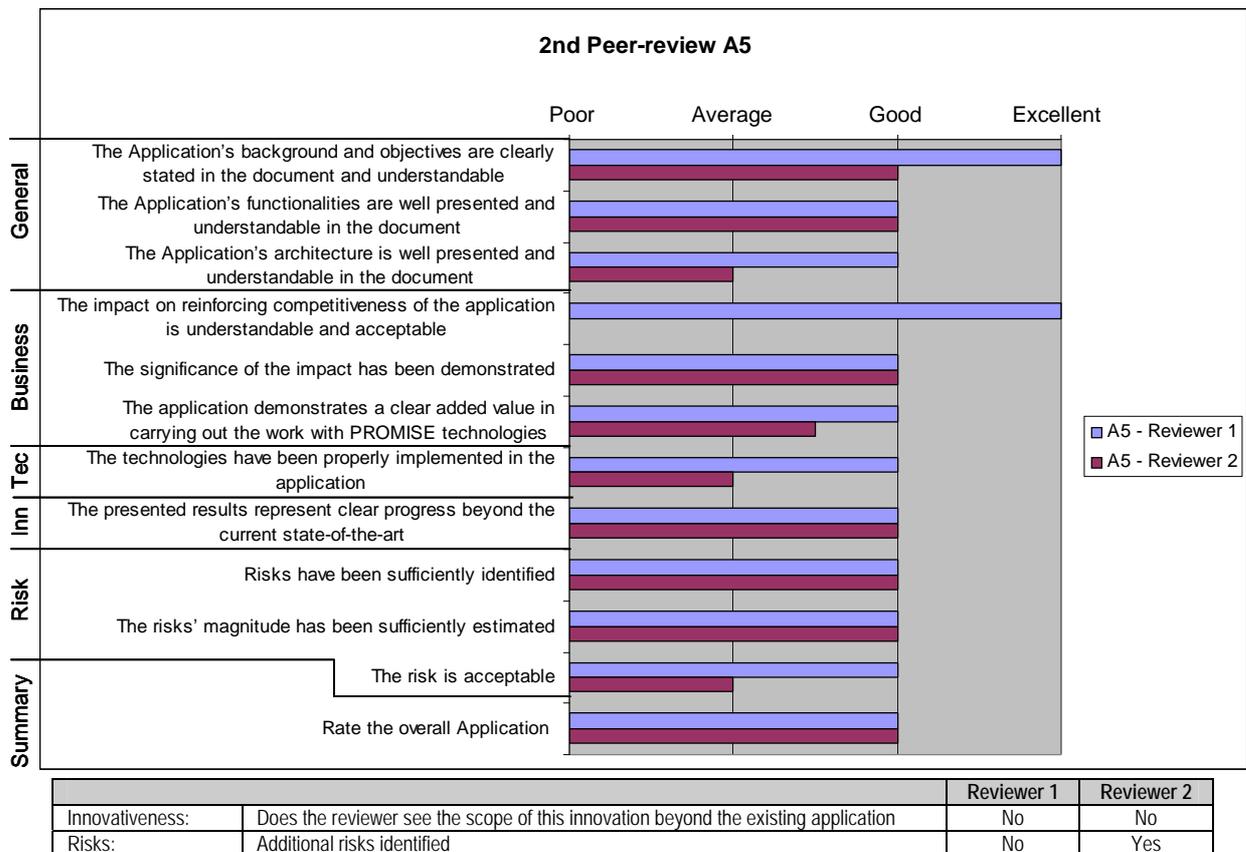


Figure 13: Peer-review results A5

General aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

Backgrounds and objectives are clearly stated, however, the necessity and the motivation for the current application are not so evident although predictive maintenance and field problem solving are important topics.

Business aspects⁶ ► *Score satisfactory* (Score = 2,8 \geq threshold of 2,5)

The reviewers differ significantly in the assessment of the impact on reinforcing competitiveness of the application. Reviewer 1 finds that the competitiveness is understandable and acceptable and that it could have a big impact, when available on a large scale. The low score of reviewer 2 is based on that it is not explicitly stated how the suggested application affect the supplier in favour. It would be nice to know if the end user is really interested in having such a system (at the expense of added costs). Otherwise, the system will have a negative effect on sales. I.e. this point has been very much emphasized by reviewer 2 when setting the score. This discrepancy has been checked and found to be acceptable as the comments from the reviewers highlights the rationale for the grade given. On the other sub-aspects of business, the reviewers are in agreement: the present application makes sure the information flow between supplier, dealer and end user. The use of this information leads to better design and more efficient use of the product.

Technical aspects ► *Score satisfactory* (Score = 2,5 \geq threshold of 2,5)

The technology to be used is well described, but only a few technologies are implemented in detail (or demonstrated).

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The application area is the main focus, where progress is beyond where the state-of-the-art occurs. Considering the existence of IT systems that capture on-board sensor data, the present application seems to be an extension of their capabilities.

Risk aspects ► *Score satisfactory* (Score = 2,8 \geq threshold of 2,5)

According to the reviewers there is a detailed analysis of the risks with e.g. RFID and software developments. However, an overall risk assessment is missing. Still, the potential benefits and probability of obtaining the benefits outweighs the risks.

Summary aspect ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The A5 application receives an overall rating of Good, and the reviewers finds the application promising.

⁶ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications

3.6 2nd Peer-review results: Application A6 FIDIA (MOL)

3.6.1 Main focus of application

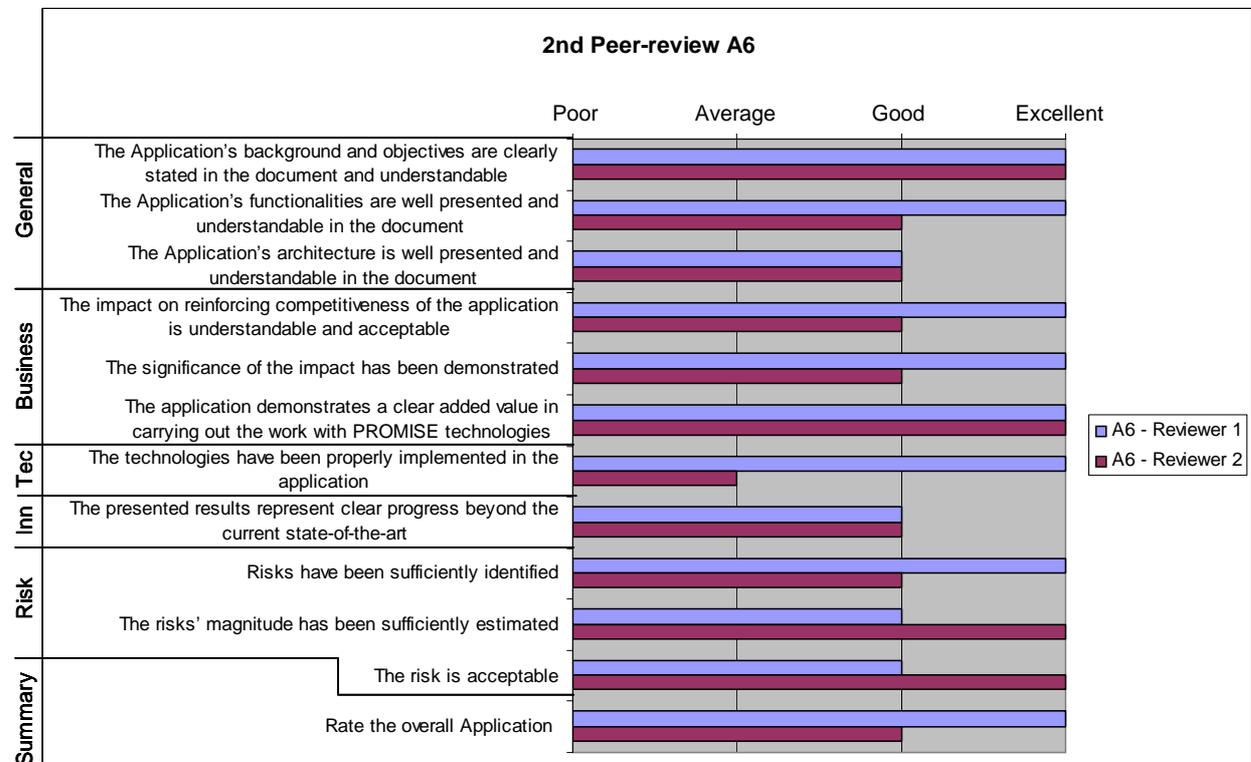
Fidia machines (e.g. high-speed milling systems; and servo drives for milling systems) are often customised according to the needs of each individual customer, and high costs are usually incurred in production losses due to machinery breakdown, customers ‘on-site’ assistance during the set-up stages, as well as during the later stages of the life cycle of the machine, whenever maintenance work is needed, especially in the frequent case where the user site is several hundreds or thousands of kilometres from the supplier site. Modern Information Technologies offer the opportunity of dramatically reducing machine unavailability enhancing their diagnostic performances.

3.6.2 A6 – summarized results based on peer-reviewers comments and assessments

Application A6 receives a total score of 83 out of 96 (adjusted %score of 86,5%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A6	44,0	39,0	41,5	83,0	86,5 %	0	96	86,5 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	Yes	Yes
Risks:	Additional risks identified	No	Yes

Figure 14: Peer-review results A6

General aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The reviewers grades the application's background and objectives as Good/Excellent. The application's background conveys the necessity for the current application and harmonise the objectives accordingly. It also gives the present state of the art in different application sectors. There are very good and clearly stated descriptions of the application and explanations of what kind of added value this application can offer to the application company and its customers.

Business aspects⁷ ► *Score satisfactory* (Score = 3,7 \geq threshold of 2,5)

The benefits, both economical and non-economical, for the end-user and supplier are identified. They indirectly lead to more competitive products and cheaper services. This application clearly offers added value for the customer and the use of the application

Technical aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

An insight into the implementation is given. Probable pit-holes and solutions selected are also given.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The scope of innovation is that the technology can be used wherever one needs to monitor and keep track of the health condition of a machine, which is very critical in production processes. The application is also applicable in other industries, which produces machines for production. It may be possible to use the same idea also for maintenance of e.g. engines or base stations.

Risk aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

Five technical related and four business related risks have been identified, and the impact of the risks do not seem to be underestimated. Comparing to the potential benefits, the risks do not seem to be unacceptable.

Summary aspect ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

This application provides big potential for adding value for the application owner and for its customers.

⁷ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

3.7 2nd Peer-review results: Application A8 WRAP (MOL)

3.7.1 Main focus of application

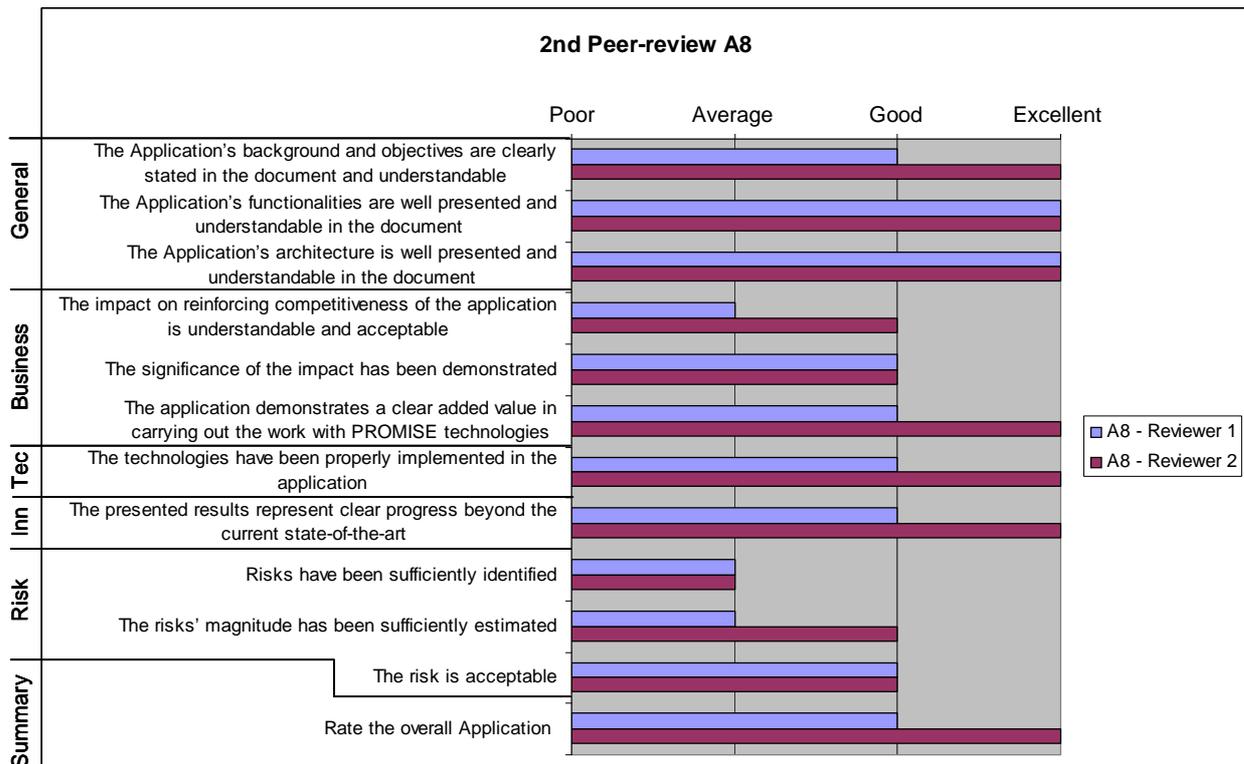
The main objective of the PROMISE WPA8 MOL cluster is to develop appropriate technology, including product lifecycle models, PEID (Product Embedded Information Devices) with associated firmware and software, components and tools for decision-making based on data gathered through a product lifecycle system. The aim of WRAP in this project is to develop technical requirements for a household appliance, in particular for a refrigerator, in order to monitor it, during its functioning period at end-user's house, (MOL) by a remote monitoring centre able to perform predictive maintenance.

3.7.2 A8 – summarized results based on peer-reviewers comments and assessments

Application A8 receives a total score of 77 out of 96 (adjusted %score of 80,2%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A8	35,0	42,0	38,5	77,0	80,2 %	0	96	80,2 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	Yes	Yes
Risks:	Additional risks identified	Yes	Yes

Figure 15: Peer-review results A8

General aspects ► *Score satisfactory* (Score = 3,8 \geq threshold of 2,5)

The document provides an exhaustive description of both the objectives, functionalities and architecture related to the application.

Business aspects⁸ ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

Savings coming from a more efficient in-line product test, cheaper warranty extension offer and the possibility to have a feedback from the slow rate changes in devices' electrical behaviour seem to be the keys allowing to put on the market high-tech appliances at competitive prices. The significance of the impact has been demonstrated in the sense that remote monitoring can be widely applied at the house level, enabling chances that can significantly condition people's practices.

Technical aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The implementation has been presented very clearly. Both the implementation and the integration levels have reached a significant development level, ensuring the application a promising future, at least from the technical point of view.

Innovativeness aspects ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

Both reviewers agree that the presented results represent clear progress beyond the current state-of-the-art. The scope of the innovation can also be utilised beyond this application and can be extended to other electric equipment and instruments in many areas. E.g. the health sector and maintenance of numerous instruments, machine tools manufactures/end user can take even a higher advantage from the implementation of such solutions. And also potentially all machinery sectors could be interested in innovative and dynamic maintenance solutions

Risk aspects ► *Score satisfactory* (Score = 2,5 \geq threshold of 2,5)

Both technical and business risk assessments have been carried out in a comprehensive way. However, some key potential risks have not been taken into account like: from the business point of view, customers shouldn't be ready to understand the utility of diffuse remote monitoring, causing some difficult to reach mass customers. Marketing strategies and specific advertisement have to be taken into account in order to avoid such risk, which is highly probable and may have high impact.

Summary aspect ► *Score satisfactory* (Score = 3,5 \geq threshold of 2,5)

The overall application, representing a test case for remote monitoring and predictive maintenance strategies applied to static goods, is a very promising solution, which can represent really a huge step beyond the state-of-the-art.

⁸ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

3.8 2nd Peer-review results: Application A9 INTRACOM (MOL)

3.8.1 Main focus of application

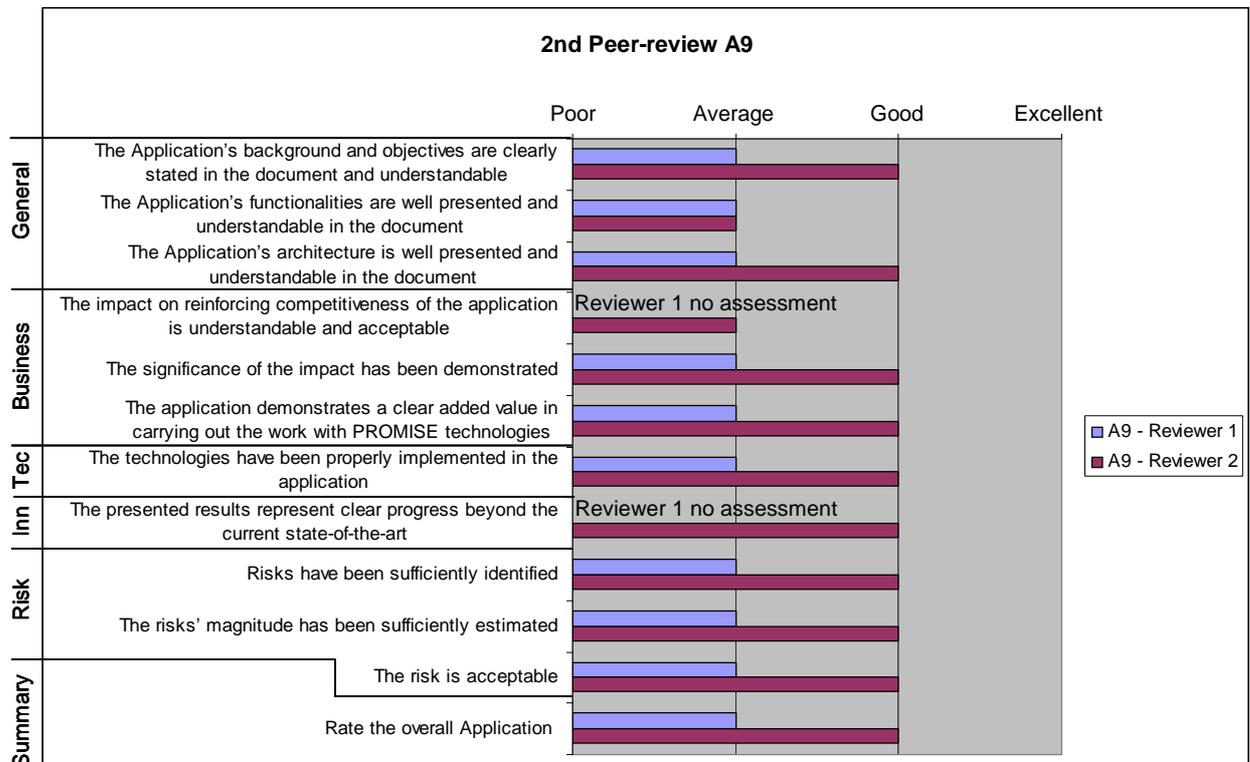
INTRACOM's demonstrator is based on the company's Next Generation Multi-Service Access Node featuring broadband and narrowband subscriber interfaces. It is the last element in the access network before the subscriber's home, and is thus the vehicle for delivering broadband services. The main goal of A9 demonstrator is to present how INTRACOM technicians and engineers could be supported in key areas of their workflow by utilizing PROMISE technologies. The aim is to improve the information creation and flow throughout the Middle-of-Life (MOL) phase by exploiting PROMISE technologies. Technologies used to optimize the MOL processes will be PROMISE PEID-RFID technology, PROMISE Middleware, PDKM and DSS. The areas are decision making about problems solving, preventive maintenance and product improvements.

3.8.2 A9 – summarized results based on peer-reviewers comments and assessments

Application A9 receives a total score of 54 out of 88 (adjusted %score of 61,4%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A9	20,0	34,0	27,0	54,0	56,3 %	2	88	61,4 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	No	Yes
Risks:	Additional risks identified	Yes	No

Figure 16: Peer-review results A9

General aspects ► *Score not satisfactory* (Score = 2,3 < threshold of 2,5)

The architecture is understandable and interrelations between different modules are clearly expressed. However, both reviewers find that the description of the general aspects could be improved. I.e. the target not achieved for the General aspects of A9 is related to the presented structure in the peer-review package rather than the real contents of application A9.

Business aspects⁹ ► *Score not satisfactory* (Score = 2,4 < threshold of 2,5)

A more detailed analysis of impact on the market could be interesting. The cost and benefit factors suggest that the application will have an important impact, although the figures seem somewhat unmotivated. However, the impact on the company is shown. The application demonstrates the benefits gained using an architecture including most of PROMISE components and modules.

Technical aspects ► *Score satisfactory* (Score = 2,5 ≥ threshold of 2,5)

No comments from the reviewers, other than that one of the reviewers find it hard to tell based on the provided description.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 ≥ threshold of 2,5)

The scope of this innovation can be used in the integration of different technical solutions for improvement of knowledge management.

Risk aspects ► *Score satisfactory* (Score = 2,5 ≥ threshold of 2,5)

The risks seem somewhat random, but still can be said to have been properly identified. Risks regarding actual use and implementation (“the human factor”) seem not to have been included.

Summary aspect ► *Score satisfactory* (Score = 2,5 ≥ threshold of 2,5)

Reviewer 1’s final comment is that the description of the application is a bit unstructured and somewhat difficult to get the hold on. No comment from reviewer 2.

⁹ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

3.9 2nd Peer-review results: Application A10 BT-LOC (BOL)

3.9.1 Main focus of application

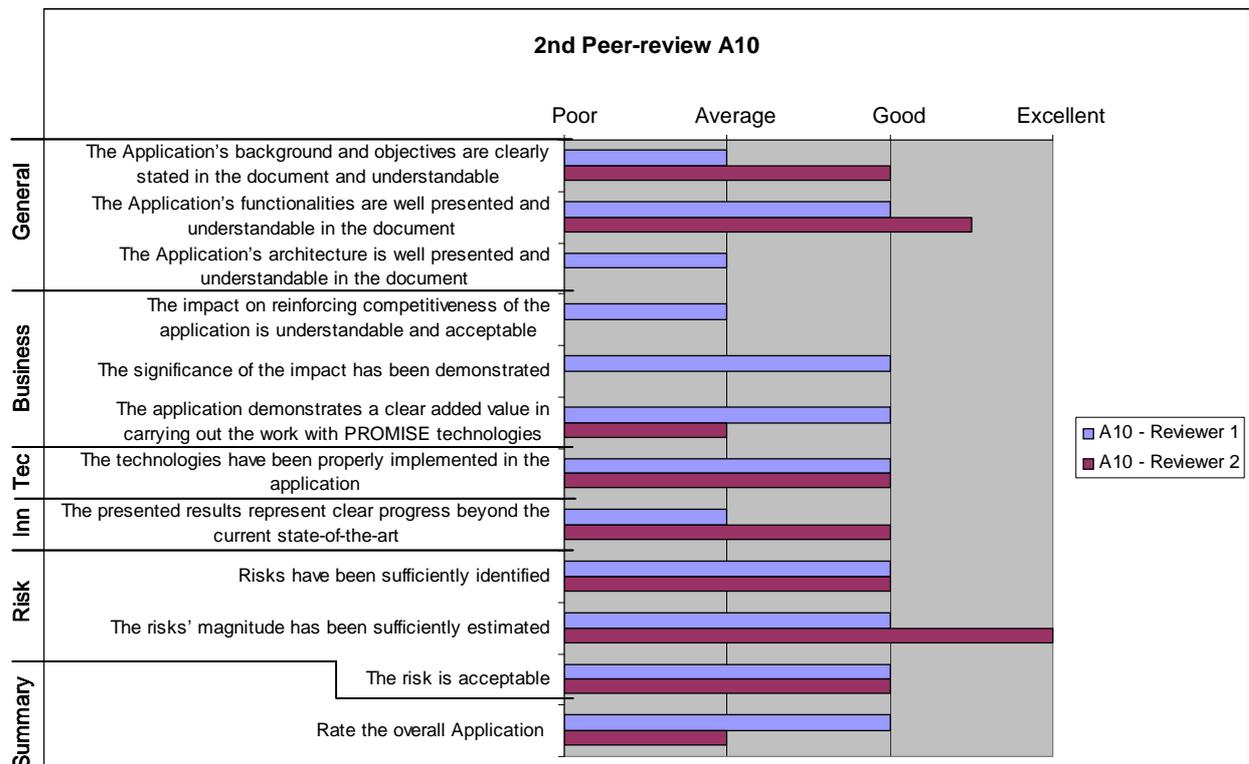
The main focus of this demonstrator is to develop and assess the DfX decision strategy within PROMISE DSS (Decision Support System) and DfX knowledge management within Product Data Knowledge Management (PDKM). The reason for this focus is that the main interest of BT-LOC is to improve the availability of locomotives to reduce life cycle costs and increase the satisfaction of customers. In addition to the knowledge regarding RAM/LCC (reliability, availability, maintainability/life cycle cost), the demonstrator aims also at generating knowledge regarding safety and environment.

3.9.2 A10 – summarized results based on peer-reviewers comments and assessments

Application A10 receives a total score of 61,5 out of 96 (adjusted %score of 64,1%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A10	32,0	29,5	30,8	61,5	64,1 %	0	96	64,1 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	Yes	No
Risks:	Additional risks identified	No	No

Figure 17: Peer-review results A10

General aspects ► *Score not satisfactory* (Score = 2,4 < threshold of 2,5)

Objectives are quite clearly defined; however there is quite lot of them, and reviewer 2 has some doubts if all of them can be reached successfully. The functional description seems thorough, the architecture, however, is described on a general level only and quite briefly.

Business aspects¹⁰ ► *Score not satisfactory* (Score = 2,0 < threshold of 2,5)

The benefits are described on a general level only and quite brief. The impact and its significance have not been quite properly demonstrated

Technical aspects ► *Score satisfactory* (Score = 3,0 ≥ threshold of 2,5)

Everything seems to be ok and the functions with use-cases are well explained..

Innovativeness aspects ► *Score satisfactory* (Score = 2,5 ≥ threshold of 2,5)

The presented results are somewhat unclear. However, if put into use, this kind of system could naturally provide some progress with regards to state-of-the-art. Unfortunately, this progress is not that clearly defined.

Risk aspects ► *Score satisfactory* (Score = 3,2 ≥ threshold of 2,5)

The main risks are identified, and those risks that have been identified are sufficiently estimated. The risk is found to be sufficiently high to be a research project. Some of the risks have very high probability and also high impact. There should be much focus put to them to make sure they do not come true or at least their impact is reduced.

Summary aspect ► *Score satisfactory* (Score = 2,5 ≥ threshold of 2,5)

The provided supplementary background information of the application is good. The application has some potential but could be improved.

¹⁰ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

3.10 2nd Peer-review results: Application A11 POLIMI (BOL)

3.10.1 Main focus of application

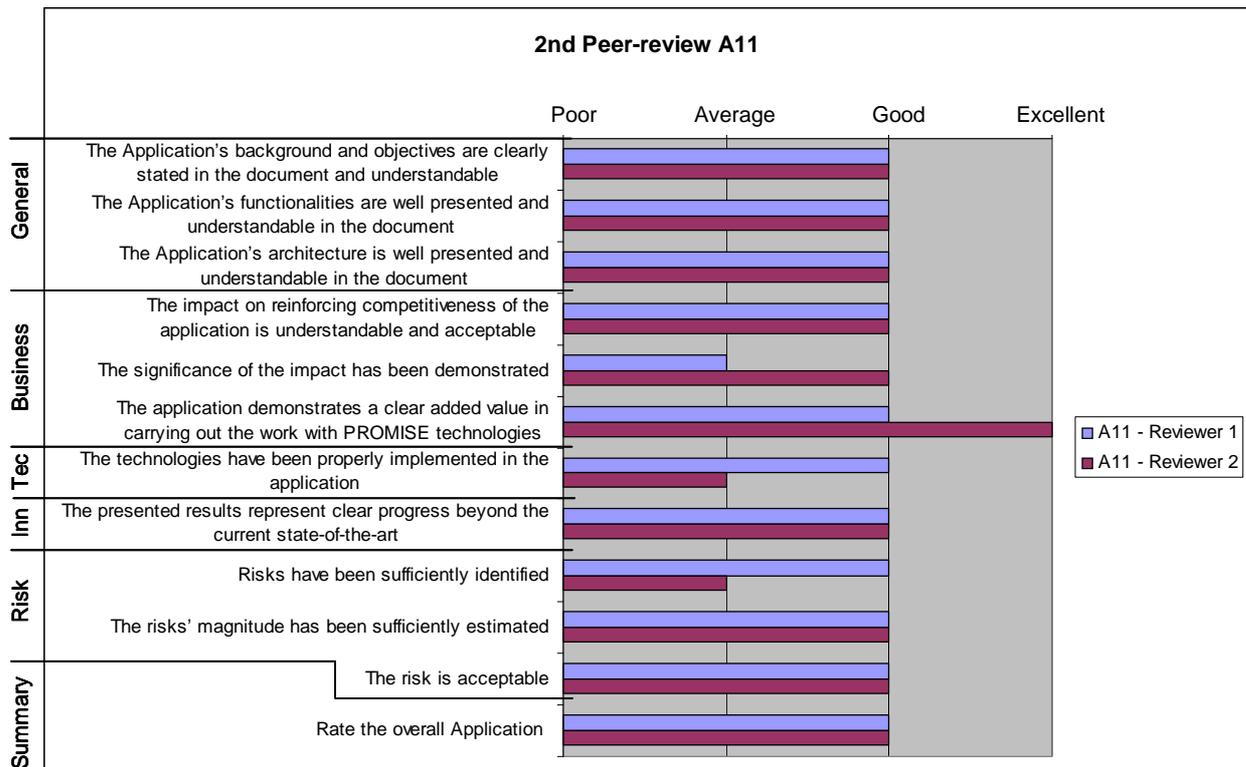
The application aims at closing the information loops between the experience in the product's MOL and EOL phases and the decisions needed to adapt a production system in the BOL phase. This is done by supporting the decisions on designing the production system reconfiguration, in order to properly react to product changes derived directly from the filed data collected on the product; and enabling engineers to carry out What...If? analyses concerning the impact of product changes on the production system performance and its profitability.

3.10.2 A11 – Score and illustrated results

Application A2 receives a total score of 70 out of 96 (adjusted %score of 72,9%). Any discrepancies between the reviewers are found to be acceptable.

Score of application	Reviewer 1	Reviewer 2	Mean score	Total score	% score	Aspects un-assessed	Adj Max points possible	Adj %score
A11	35,0	35,0	35,0	70,0	72,9 %	0	96	72,9 %
Mean score all applications				72,7	75,7 %			76,4 %

Max score per reviewer is 48. Some aspects in some of the applications were left unassessed by the peer-reviewers. This yields a new Adj. max point possible for these applications, which in turn yields the Adj. % score.



		Reviewer 1	Reviewer 2
Innovativeness:	Does the reviewer see the scope of this innovation beyond the existing application	Yes	Yes
Risks:	Additional risks identified	No	Yes

Figure 18: Peer-review results A11

General aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

All aspects within this category are rated Good by the reviewers. The objectives and background are clearly expressed and described. The functionalities in the application are properly presented, components and actors are identified and interrelations explained. The architecture is clearly described even if could be more incisive with a more schematic approach

Business aspects¹¹ ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

If the application works and different parties start to use it, the application adds value for all the users. There are good estimation calculations of benefits of the application, however, more reference to market potential could be useful. It is shown that the application offers considerable potential for savings with rather small investments for the new system.

Technical aspects ► *Score satisfactory* (Score = 2,5 \geq threshold of 2,5)

The technologies seem to be implemented in a correct way. However, the application seems not to be technically very challenging, even if modification of the application to meet the users' needs may have required a lot of time.

Innovativeness aspects ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

Comparing to the state-of-the-art presented in the document, this application offers lot of possibilities to develop manufacturing processes. The methodologies and tools implemented that are stated in the document can be exploited wherever there is a frequent need of product modification and for all mechanical industries than outsource component production, and the scope of this innovation can be useful in the manufacturing processes of almost any other industries.

Risk aspects¹² ► *Score satisfactory* (Score = 2,8 \geq threshold of 2,5)

Four technical and two business risks have been identified and analysed. There are probably other risks, especially business risks that are not covered. It seems as if risks are taken seriously, and that their impacts are not underestimated. And also when comparing potential benefits of the application to the investment and risks of failure, the risk is not too big.

Summary aspect ► *Score satisfactory* (Score = 3,0 \geq threshold of 2,5)

The proposed application offers good potential for considerable savings.

¹¹ The business aspects were not peer-reviewed based on the improved Business Effect Evaluation Methodology (BEEM) and the Cost-Benefit methodology. As such, the peer-reviewers did not assess the up-to-date and much improved business models of the PROMISE applications.

¹² The risks aspects of A11 have been addressed in the BEEM methodology where six cases are covered. See **Error! Reference source not found.** on page **Error! Bookmark not defined.**