DT1.5: Training assessment

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ABSTRACT	This document forms the final deliverable of the PROMISE training work package by reviewing current course status in terms of delivery and evaluation, provides the public dissemination strategy of internal courses, and summarises a public dissemination activity that took place as part of the work package.

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Abbreviations

BOL	Beginning Of Life
CMS	Course Management System
DSS	Decision Support System
EOL	End Of Life
LMS	Learning Management System
MOL	Middle Of Life
PDKM	Product Data and Knowledge Management
PEID	Product Embedded Information Device

1 Introduction

1.1 PROMISE Training goal

WPT1 aims to design and provide training for:

- improving knowledge on PROMISE technology and its exploitation
- supporting the development of demonstrators by delivering the necessary technical knowledge on the new technologies developed in the project.

1.2 Purpose of this document

The reference instructional design model used to design and develop the training architecture has been presented in Deliverable DT1.2, which formed the Macro phase of the PROMISE training design and delivery.

Deliverable DT1.3 specified the micro-phase and established the delivery mechanisms for individual courses. In this phase the instructional strategy is designed on the basis of the defined specifications. Furthermore specifications on learners, goals, contents and infrastructure are further detailed following a spiral approach.

Deliverable DT1.4 gave a description of the training facility, common to all courses. These include the IT infrastructure, Moodle, and the evaluation of training. The deliverable also reported on the development and delivery progress of the courses, presenting any changes to the delivery schedule.

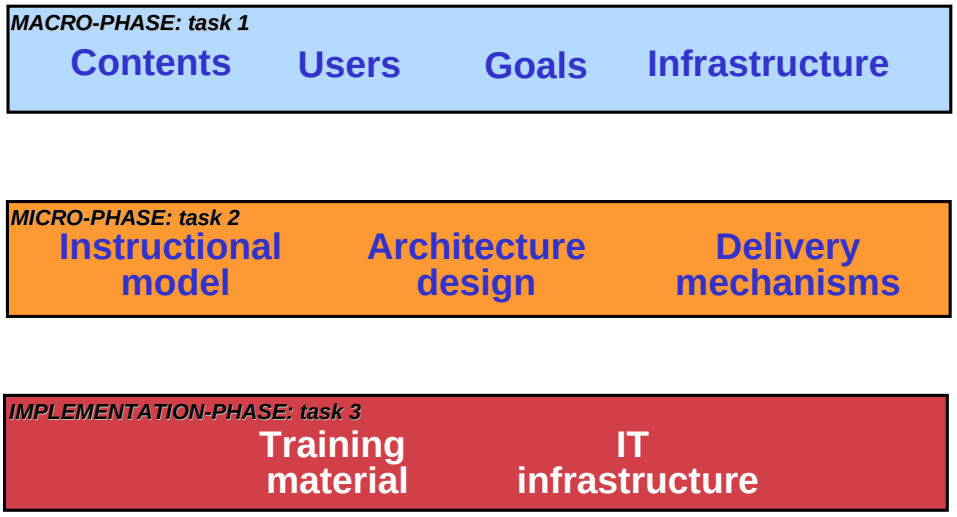


Figure 1. PROMISE Training Model: from the learner analysis to the delivery of contents.

In this final deliverable of the PROMISE training work package, we provide an assessment regarding the training and delivery, summarising the results of the training activities. In addition, we provide the consortium's decision on the public availability of courses after the end of the project and give a summary on an inter-project training workshop developed and delivered partly by the PROMISE training work package to increase public awareness of the project and disseminate current results.

1.3 Structure of the document

This document is structured as follows:

Section 2 presents the **public dissemination strategy,** achieved as a result of reviewer recommendations,

Section 3 presents the **delivery and evaluation status** of the courses,

Section 4 summarises achievements on the **inter-project training workshop** initiated, developed and delivered partly by PROMISE to disseminate project findings to similar FP P6 projects.

Section 5 draws the **conclusions** of this document.

2 Public dissemination of courses

Following the review meeting taking place on 1-2 November 2007 in Milan, a recommendation was made to assess the potential public availability of PROMISE courses. As a result of the recommendation, the consortium decided that most training modules can be made publicly available as they are after the end of the project as shown on Table 1. Out of a total of 61 modules 8 modules will not be available due to sensitive content or the laboratory based nature of the module. The remaining modules will be made available after the end of the project by removing the password protection on the Moodle website. The reason for providing availability after the end of PROMISE is to use the remaining time for refining the courses according to evaluation provided by PROMISE consortium members.

Table 1 Public availability of PROMISE courses

Course/Module Number	Course/Module Name	Make training content publicly available as it is?	Do not make content available.
TC1.1	Introduction to TC1 training	x	
TC1.2	What is PROMISE?	x	
TC1.3	Application areas	x	
TC1.4	PROMISE system Architecture	x	
TC1.5	PROMISE components (HW/SW)	x	
TC1.6	How to integrate existing systems (HW/SW) into PROMISE architecture	x	
TC1.7	How to implement PROMISE applications	x	
TC1.8	Examples of business impact using PROMISE technology (demo cases)	x	
Course/Module Number	**Course/Module Name**		

TC2.1	Introduction to Decision Support in Product Lifecycle Management	x	
TC2.2	Usage of a DSS	x	
TC2.3	Advances in Decision Support in Product Lifecycle Management	x	
TC2.4	Programming decision support scenarios in a DSS	x	
Course/Module Number	**Course/Module Name**		
TC3.1	PDKM description	x	
TC3.2	Products	x	
TC3.3	Additional attributes	x	
TC3.4	Product structures	x	
TC3.5	Field data	x	
TC3.6	Events	x	
Course/Module Number	**Course/Module Name**		
TC4.1	Motivation & Background	x	
TC4.2	Components	x	
TC4.3	Physics of RFID	x	
TC4.4	Legislation and policy issues	x	
TC4.5	RFID DIY		x
TC4.6	RFID integration	x	
TC4.7	RFID based product data management	x	
Course/Module Number	**Course/Module Name**		
TC5.1	Middleware	x	
TC5.2	PROMISE Middleware	x	
TC5.3	Installation and setup	x	
Course/Module Number	**Course/Module Name**	x	
BC1.1	Introduction of PLM	x	
BC1.2	Closed-loop PLM	x	
BC1.3	Introduction of system architecture for closed-loop PLM	x	
BC1.4	Introduction of whole product lifecycle	x	
BC1.5	Introduction of BOL	x	
BC1.6	Introduction of MOL	x	
BC1.7	Introduction of EOL	x	
Course/Module Number	**Course/Module Name**		
BC2.1	Affected value chains	x	
BC2.2	Business effects on the company	x	
BC2.3	Benefits and costs of adopting PROMISE BOL solutions	x	
BC2.4	Business effects on partners	x	
BC2.5	Cost models	x	

Course/Module Number	Course/Module Name		
BC3.1	Motivation and Background	x	
BC3.2	Introduction to Product Lifecycle Management	x	
BC3.3	Case study – CAT application (A2 / A5)		x
BC3.4	Information flows in Product Lifecycle Management	x	
BC3.5	Introduction to the concept Extended Product	x	
BC3.6	Product instance specific services	x	
BC3.7	MOL environmental legislation	x	
BC3.8	PROMISE Technologies	x	
BC3.9	PROMISE MOL technology's business profit-cost analysis	x	
BC3.10	Related publications—PROMISE dissemination on MOL		x
BC3.11	Tutorial based on other MOL Scenarios from PROMISE		x
Course/Module Number	**Course/Module Name**		
BC4.1	Introduction to BC4 training	x	
BC4.2	Introduction to Product Lifecycle Management	x	
BC4.3	Introduction to Reverse Logistic	x	
BC4.4	Disposition routes in EOL	x	
BC4.5	Information flows in Product Lifecycle Management	x	
BC4.6	EOL environmental legislation		x
BC4.7	PROMISE Technologies	x	
BC4.8	PROMISE EOL technology's business profit-cost analysis		x
BC4.9	Relative publications—PROMISE dissemination on EOL		x
BC4.10	Case study–ELV information management, Metallic components		x

3 Course delivery and evaluation

3.1 TC1: Technical course on PROMISE technologies at system level

The objective of TC1 is to give an overall presentation of the PROMISE project, architecture and technology. The modules present the latest status of PROMISE results, describe the potential and motivate both internal and external partners about the impact of this technology. The course modules therefore need to be continuously updated to show the last developments. The modules are based on input from all partners and edited by SINTEF.

TC1 is delivered as self study modules using power point presentations. The modules can be used by PROMISE partners to present the project to both internal and external partners who might be interested in PROMISE results. In this case the presentations can easily be modified depending on the audience.

It was originally planned that the TC1 modules should be delivered in the period until December 2007. To be able to use these modules as described, the course modules are continuously updated. TC1.6 and TC1.7 will not be made before the end of the project. TC1.2 has already been used in different PROMISE meetings and external presentations (Zurich, Lausanne etc). Due to the characteristics of this course the normal evaluation process has not been performed. On the other side feedback from the consortium and audience has already lead to changes and improvements.

All modules will be uploaded and available in the Moodle by end of the project.

3.2 TC2: Technical course on PROMISE DSS technology

The Decision Support System (DSS) technology course aims to provide a detailed knowledge of use and extension of the PROMISE DSS. There are four modules introducing different types of learners to their specific area. These modules are related to the following tasks:

- Installation of the DSS module,
- Usage of the DSS module,
- Overview of product analysis methods, and
- Extension of the algorithmic part of the DSS

The material is based on the work carried out in PROMISE WP R8. Participants are expected to be programmers from research institutes who are involved in the development phase of the DSS modules for BOL, MOL and EOL phases and technical staff from the PROMISE demonstrator owners. This course was delivered by COGNIDATA.

Face to face content of TC2 was delivered in September 06 which constituted 50% of the delivery of this course. The remainder of the course in the form of updated self-study documentation was delivered in November 2007 in the Moodle system.

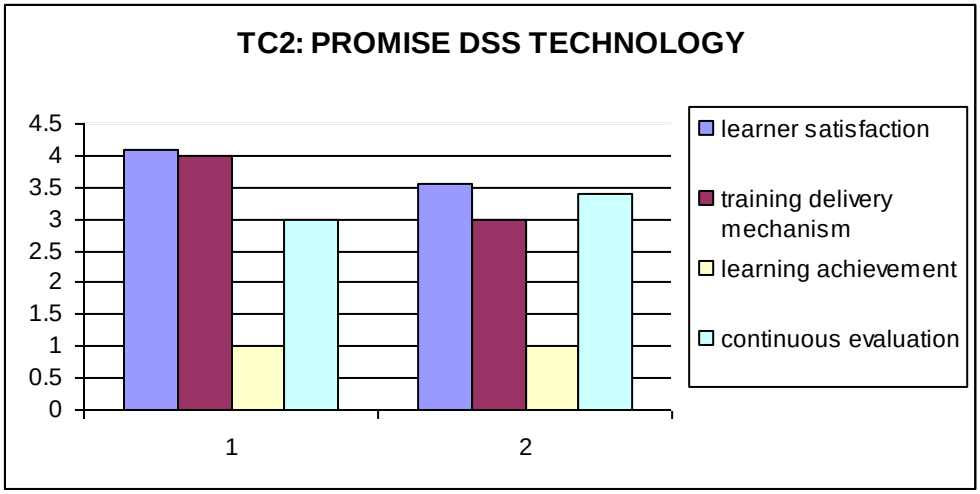


Figure 2 TC2 course evaluation

Evaluation of the course is shown on Figure 2. The course has been delivered to a total of 11 learners from the PROMISE consortium. 2 of the learners have submitted evaluation forms. It can be said that the course was successful in terms of the training delivery mechanism, continuous use of the material learned, and learners' satisfaction on the content. Learning achievement however, was not successful as the participants failed to answer DSS related questions. This may

be due to the difficulty of the questionnaire presented or the lack of content coverage with respect to the questionnaire. Cognidata will look into this issue and update their course and questionnaire accordingly by discussing any issues with the learners before the end of PROMISE i.e. before the course is publicly available.

3.3 TC3: Technical course on PROMISE PDKM technology

The PROMISE PDKM technology course aims to provide a detailed knowledge of the PDKM component developed in PROMISE. These participants are PROMISE PDKM back-end key-users who develop back-end object modelling and creation. Key users are also responsible for populating PDKM knowledge within their organisation and/or application scenario. The course was designed and delivered by InMediasP.

A total of 12 participants were trained on two face-to-face training sessions in April 2007. The remainder of the course was distance-based and distributed to learners over May, June and July 2007. These were in the form self-study guides address specific issues of PDKM back-end usage and required previous knowledge.

Out of 12 participants, 6 have provided evaluation on the course, as shown on Figure 3. The course has achieved all learning targets as the average evaluation is over 70% in each evaluation category.

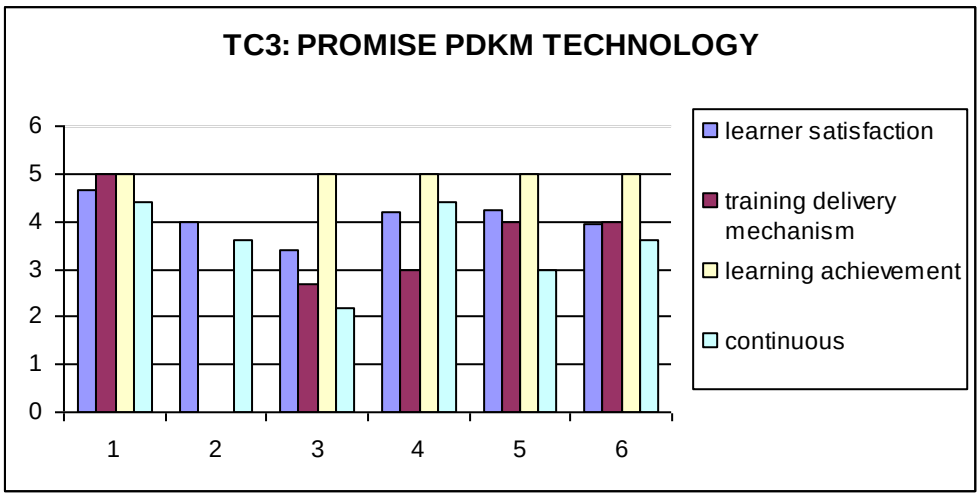


Figure 3 TC3 course evaluation

3.4 TC4: Technical course on PROMISE PEID technology

The PEID technology course aims to provide a detailed knowledge of the PEID component developed in PROMISE. TC4 course content was delivered by Cambridge. There are seven modules introducing the learners to a range of considerations when employing the PEID technology. These include considerations relating to the physics of RFID such as environmental influences on its effective usage, hardware and software integration and RFID based product data management, as well as legislation and policy issues to consider when deploying RFID solutions. A total of 25 participants were expected, including technical staff from application owners (end user group) and programmers and researchers from universities (research group). The course is now completed with 10 participants. In addition to 10 participants from PROMISE partner

organisations, 2 participants from EU FP6 project BRIDGE (Building Radio Frequency Identification for the Global Environment) were welcomed at Cambridge. The domain expertise of participants ranged from IT to mechanical and production engineering.
TC4 was delivered in July 2007 using face to face lectures, case studies, demos and lab modules. After lectures, case studies and demos, the learners used the Cambridge Auto ID laboratory for the RFID DIY module. A dock door simulation environment was built to offer the learners a real-life like experiment where they could play with PEID components such as sensors and RFID tags and readers. The learners were separated in groups to compete in getting high read rates by modifying the orientation of the tags on cases and pallets. This allowed a collaborative environment where learners could learn from each others' mistakes under expert supervision. Although all content was uploaded in the Moodle after the course, the main delivery and assessment of the course represents the face t o face session.

Figure 4 TC4 participants at the RFID DIY module

Out of 10 participants, 7 have provided evaluation on the course, as shown on Figure 5. The course has achieved all learning targets as the average evaluation is over 70% in each evaluation category.

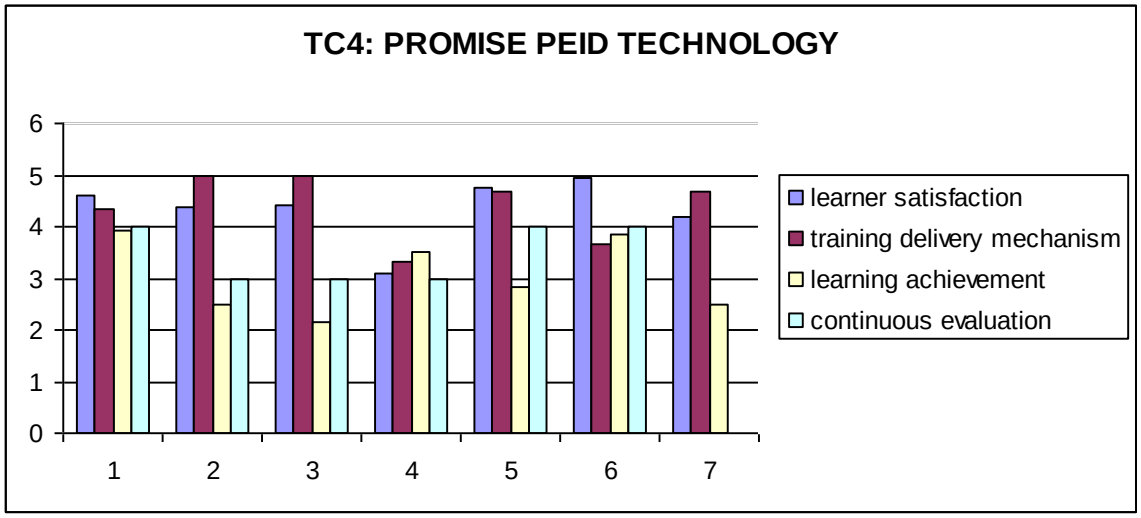


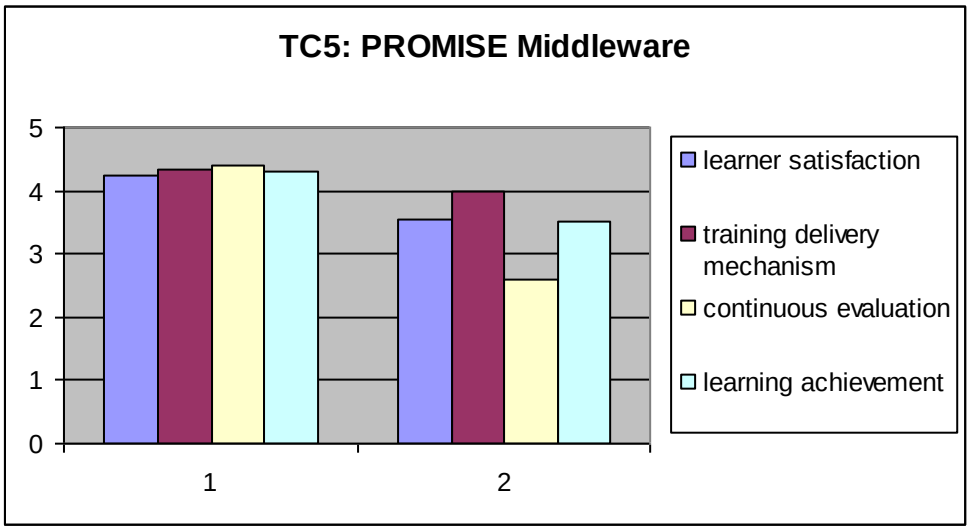
Figure 5 TC4 course evaluation

3.5 TC5: Technical course on PROMISE Middleware technology

The PROMISE Middleware technology course aims to provide a detailed knowledge of the Middleware component developed in PROMISE. The PROMISE Middleware technology course aims to provide a basic understanding of the Middleware concept, its role in PROMISE and how it can be put into use by end-users.

A total of 15 participants were expected, including technical staff from the PROMISE end users who will be responsible for applying the PEID concept to suit their application (end user group). This course was delivered by HUT at the end of January 2008 as a self-study course using tutorials and case studies.

Figure 6 TC5 course evaluation



Out of the 15 participants 2 have provided evaluation on the course as shown on Figure 6. The course has achieved all learning targets as the average evaluation is over 70% in each evaluation category.

3.6 BC1: Business course over whole life cycle

BC1 aims to provide main PROMISE concepts, technologies, and benefits overall the lifecycle and presents a business view over the PROMISE benefits. Most people interested in the whole product lifecycle are expected to be persons at a certain management level of a company or researchers or engineers working in the lifecycle engineering area. The content on the whole product lifecycle will be useful for trainees of various industry domains and academic researchers. Learners are expected to be of diverse backgrounds, especially, IT, Logistics, Finance, Mechanical Engineering, Marketing and Sales, Research. The PROMISE whole life cycle business course aims to provide to provide the basic concept of product lifecycle management, characteristics of PROMISE PLM, conceptual system architecture, and research issues and tools of each product lifecycle phase. A total of 33 participants were expected, including individuals interested in the whole spectrum of product lifecycle including BOL, MOL, and EOL (end user group). This course was delivered by EPFL.

BC1 was delivered in the period from October to December 2007 as a self study course using case studies. A face to face delivery was given at the Lausanne inter-project training workshop, to PROMISE, BRIDGE, and DYNAMITE consortium which included 53 participants in total. Out of these, 10 participants provided evaluation of the course as shown on Figure 7. The course has achieved all learning targets as the average evaluation is over 70% in each evaluation category.

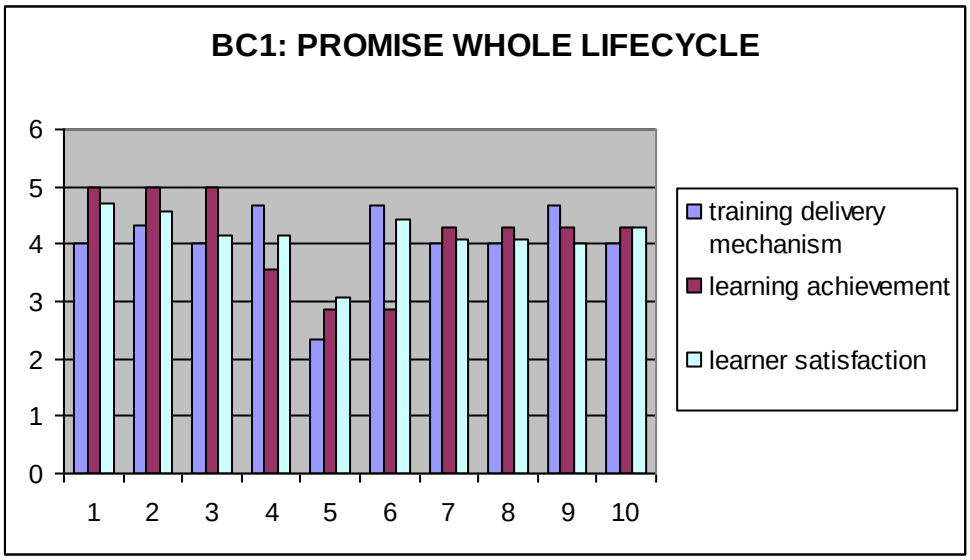


Figure 7 BC1 course evaluation

3.7 BC2: Business course on BOL phase

BC2 aims to provide main PROMISE concepts, technologies, and benefits in the BOL lifecycle phase and presents a business view over the benefits deriving from the application of PROMISE technologies in the BOL phase. Typical learners interested in "business" BOL course are Producers, with leading positions in their respective companies.

This course is delivered by POLIMI. Although the course was originally scheduled to be delivered in November 2007, final materials were uploaded in February 2008. The course has not yet been assessed due to delays in finding students given the late delivery. POLIMI will provide evaluation before the end of the PROMISE project and update material on Moodle accordingly before public availability.

3.8 BC3: Business course on MOL phase

The BC3 course provides a business view of the benefits deriving from the application of PROMISE technologies in the MOL phase. This course was delivered by BIBA. The delivery date of the BC3 shifted from the end of 2007 to February 2008 due to the availability of course development partners. BC3 is delivered using lectures and as a self study course using lectures, tutorials and case studies.

3 participants have evaluated the course as shown in Figure 8. The course has achieved learning targets as the average evaluation is over 70% in each evaluation category except training delivery mechanism. In this module the training delivery mechanism was thought not to be the right mechanism due to the complexity of the topics. BIBA will update their Moodle material accordingly before the end of the project.

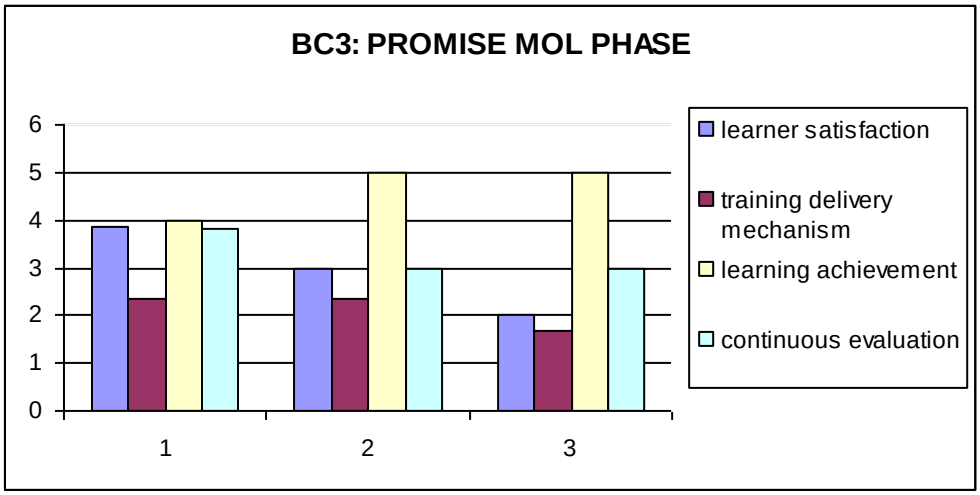


Figure 8 BC3 course evaluation

3.9 BC4: Business course on EOL phase

The PROMISE whole life cycle business course aims to provide the economic aspects of PROMISE EOL solutions and results, with a focus on business benefits and fixed and potential costs. Typical learners interested in "business" EOL course are End Users, with leading positions in their respective companies. Learners can come from a variety of domains, but especially IT, logistics, finance / controlling. A total of 12-24 participants are expected. This course is delivered by CIMRU. BC4 was delivered in November 2007 as a self study course using case studies.

Out of the 12 participants 3 have evaluated the course as shown in Figure 9. The course has achieved all learning targets as the average evaluation is over 70% in each evaluation category.

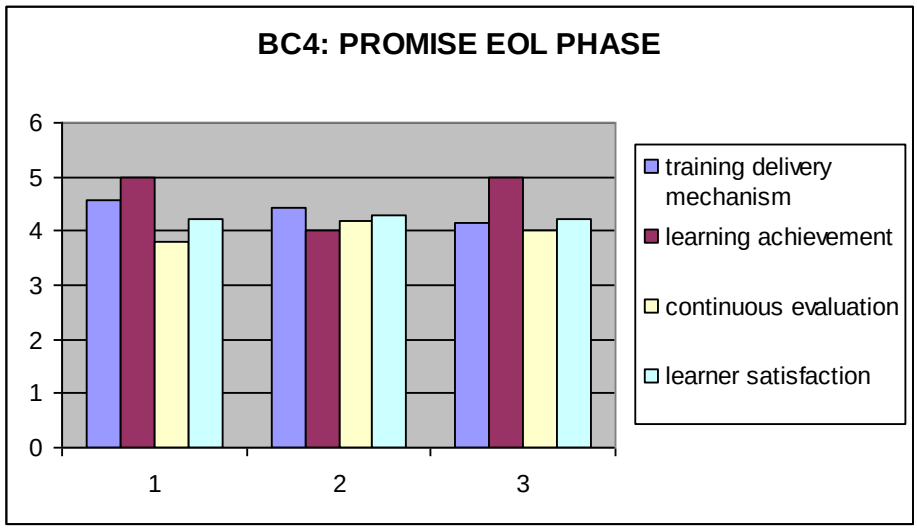


Figure 9 BC4 course evaluation

4 Inter-project training workshop

An inter-project training workshop with the title "Advances in wireless sensing, tracking and smart information processing technologies for Product, Asset and Maintenance Lifecycle Management" was held on 18-20 February 2008 at EPFL, Lausanne, Switzerland. In this workshop, the latest developments and achievements of the three organising FP6 projects (BRIDGE, PROMISE and DYNAMITE) were presented in the form of training sessions so that the audience gets the state of the art on the so called "emerging technologies" and how they can be used on Product, Asset and Maintenance Lifecycle Management. PROMISE played an active role in initiating, developing and delivering the workshop. During the training slot for PROMISE PLM Business needs (as part of TC1), Business course on Overall Lifecycle (as part of BC1), Technical course on PEID (as part of TC4), Technical course on Middleware (as part of TC5), Technical course on PDKM (as part of TC3), Technical course on DSS (as part of TC2) were delivered as well as, EOL demonstrators from Caterpillar and MOL demonstrators from FIAT. A total of 53 participants were welcomed.

BRIDGE (Building Radio frequency IDentification solutions for the Global Environment) is an Integrated Project aiming to research, develop and implement tools to enable the deployment of RFID and EPCglobal Network applications. The project will develop easy-to-use technological solutions for the European business community including SMEs, ensuring a basis for collaborative systems for efficient, effective and secure supply chains.

DYNAMITE (Dynamic Decisions in Maintenance) aims to deliver a blend of leading-edge communications and sensor technology, combined with state-of-the-art diagnostic and prognostic techniques, which will advance the capabilities of European industry in maintenance. The monitoring of machines and processes for predictive maintenance and control is crucial for sustainable and competitive industry in Europe. DYNAMITE will create an infrastructure for mobile monitoring technology and create new devices which will make major advances in capability for decision systems incorporating sensors and algorithms. The key features include wireless telemetry, intelligent local history in smart tags, and on-line instrumentation.

The first day, the program involved an overall presentation of the three projects and the Final Workshop of the IMS project PROMISE with presentation from the international partners of PROMISE from Japan, Australia, USA and South Korea. The second and third day, the program involves training sessions and case studies of the technologies developed in the three organising projects.

Participants discussed advances in wireless sensing, tracking and smart information processing technologies for Product, Asset and Maintenance Lifecycle Management and looked into the latest developments and achievements of the three organising FP6 projects. The discussions focused on commonalities across the various projects and comparisons on emerging technologies across various stages of development. *BRIDGE* was represented by the University of Cambridge, British Telecom and SAP, *PROMISE* by Ecole Polytechnique Federale de Lausanne, InMediasP, INDYON, ITIA, Politecnico di Milano, University of Bremen, and *DYNAMITE* by Centro Ricerche FIAT, Växjö University, Martechnic, Université Henri Poincaré, Zenon Automation Technologies, Prisma Electronics, and RC Athena.

Participants expressed that the workshop provided an ideal platform for discussion, training and networking. Given the success, it is planned to repeat the workshop on an annual basis as the projects continue to progress.

Figure 10 Inter-project training workshop held in Lausanne

5 Conclusions

This document reported on the progress of the PROMISE training work package implementation phase, forming part of Task TT1.5: Assessment of training. The PROMISE training model developed as part of DT1.2, and DT1.3 was followed to design and deliver training to the internal PROMISE consortium. DT1.4 was concerned with development of the online training platform to deliver self-study courses.

During the project some courses have changed their design and delivery mechanism. For instance TC1 is now re-modelled with the aim to inform and motivate external partners about the impact of PROMISE technology. Hence, internal evaluation has not been performed on this course. All courses have been uploaded onto the Moodle system however two courses (TC2 and BC3) need to be updated before the end of the project due to poor evaluation on learning achievement and training delivery mechanism respectively. In addition, BC2 has not yet been assessed due to delays in finalising the course and finding appropriate participants. The remainder of the courses all have been evaluated successfully, achieving the evaluation targets outlined in DT1.3.

In addition to internal PROMISE training activities, as part of the training work package in PROMISE, an inter-project workshop was held in Lausanne to bring together researchers and practitioners from three EU FP6 projects: PROMISE, DYNAMITE and BRIDGE. The workshop resulted in considerable success and provided a valuable discussion and dissemination platform.

6 Appendix A: Evaluation of learner satisfaction

PROMISE Training Learner Satisfaction Evaluation Form

This evaluation sheet assesses the satisfaction of the learner with the contents, and instructional delivery of a module.

Please circle the extent to which you agree or disagree with these statements with 1 being strongly disagree and 5 being strongly agree.

Course name: Technical Course on PROMISE PEID Technology

ID	STATEMENT	SCORE				
Training Course Content		**Disagree**				**Agree**
1	I understood the objectives of the course	1	2	3	4	5
2	The objectives of the course were adequately met	1	2	3	4	5
3	The course was logically sequenced	1	2	3	4	5
5	There were examples which helped me to understand the course content	1	2	3	4	5
6	The course had sufficient content	1	2	3	4	5
7	The course had up-to-date content	1	2	3	4	5
Instruction Materials						
8	The course materials were helpful in understanding the course content	1	2	3	4	5
9	The course material will be useful for my job	1	2	3	4	5
General Evaluation						
10	My time spent on this course was worthwhile	1	2	3	4	5
11	I have learned new content	1	2	3	4	5
12	My expectations for this course were met	1	2	3	4	5
13	I would recommend this course to others	1	2	3	4	5
14	I will have an opportunity to apply the skills/knowledge I have developed	1	2	3	4	5
Instructional Presentation (Please fill this in if you have had face to face instruction)						
15	The instructors appeared knowledgeable about the	1	2	3	4	5

	subject					
16	The instructors were responsive to my needs/questions	1	2	3	4	5
17	The instructors' presentation of the course content was clear and informative	1	2	3	4	5
18	The instructors were enthusiastic about teaching the subject	1	2	3	4	5
19	The instructors were prepared and organised for the class	1	2	3	4	5
20	Participants were encouraged to take part in class discussions and activities	1	2	3	4	5
21	The length of the course was appropriate to cover the content	1	2	3	4	5
22	The time given to complete practice activities was appropriate	1	2	3	4	5

Things you liked **MOST**

……

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……

……

Things you like **LEAST**

……

……

……

……

Any other comments / suggestions

……

……

……

……

Thank you for filling in this questionnaire!

7 Appendix B: Evaluation of training delivery mechanism

PROMISE Training Delivery Mechanism

Evaluation Form

This evaluation sheet assesses the satisfaction of the learner with the mechanism used in delivering a module. The mechanism here may refer to various delivery types such as a power point presentation, a demonstration or a video.

Please circle the extent to which you agree or disagree with these statements.
1 is strongly disagree and 5 is strongly agree.

Course name: Technical course on PROMISE PEID technology

ID	STATEMENT	SCORE				
Delivery mechanism		**Disagree**				**Agree**
1	The module delivery mechanism was the right mechanism	1	2	3	4	5
2	Structure of the course was easy to follow	1	2	3	4	5
3	The delivery mechanism enabled me to learn the content I needed	1	2	3	4	5
Online (please fill in only if you have used any online material for this module)						
4	The Moodle system is easy to use	1	2	3	4	5
5	The operation of the Moodle system was stable	1	2	3	4	5
6	Moodle system enabled me to control my learning progress	1	2	3	4	5
7	I followed all of the training content on the Moodle platform for this course	1	2	3	4	5

How can we improve the delivery mechanism of this course?

……

……

……

Thank you for filling in this questionnaire!

8 Appendix C: Evaluation of learning achievement

8.1 TC2: PROMISE DSS Technology

PROMISE Training Learning Achievement
Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: Technical course on PROMISE DSS technology	
1	How can you access data in PDKM?
2	Please list two methods for data mining.
3	Please explain what kind of data should be in the PDKM for product analysis?
4	Name two optimisation methods.
Bonus question	Please explain the entity relationship model of the PDKM.

8.2 TC3: PROMISE PDKM Technology

PROMISE Training Learning Achievement
Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: Technical course on PROMISE PDKM technology	
1	What is a transaction?

2 How are product types and instances modelled in PDKM back-end?

3 Which objects are used to model additional attributes?

4 How is field data stored for product instances ?

5 Which object is used in order to model events?

8.3 TC4: PROMISE PEID Technology

PROMISE Training Learning Achievement Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: Technical course on PROMISE PEID technology

Please give brief answers to the following questions

TC4.1 Motivation and background

1 What are the advantages of RFID over barcodes?

2 Which one of the following is a problem during RFID readings?

a. metal content

b. line of sight

c. size of tags

d. all of the above

3 What are the different methods to overcome the problem above?

TC4.2 Components

1 Name two chipless RFID technologies

2 What is not part of an UHF RFID reader operating in Europe?

a. transmitter
b. receiver
c. antenna
d. SAW device
e. DSP

TC4.3 Physics of RFID

1 Calculate the free space electromagnetic wavelength at 1 GHz.

2 What is gain of a dipole antenna?

TC4.6.2 RFID Sensor Integration

1 What is the difference between hardware and logical integration of RFID and sensors?

2 Can Class 1 Generation 2 RFID readers read wireless sensor nodes directly (i.e. when no RFID tag is used)?

TC4.6.2 RFID Software Integration

1 Name two technologies that can be used to specify interfaces in a way that is agnostic to programming language

2 Why are standards important in software integration?

TC4.7 Product Data Management

1 Name three essential ingredients for product lifecycle information management

2 Name three of the selection criteria for the choice of Product Embedded Information Device (PEID)

8.4 TC5: PROMISE Middleware Technology

Course name: Technical course on PROMISE Middleware

Please give brief answers to the following questions

1 Why is it important to define the term "middleware" whenever starting a technical discussion about it?

2 Is middeware one of the tiers of three-tier systems?

3 Is the HUT implementation of the Promise Messaging Interface compatible with the SAP implementation?

4 What is Dialog?

2	Why does SAP use UPnP in its middleware implementation?

8.5 BC1: Business course over whole life cycle

PROMISE Training Learning Achievement Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: BC1: Business course over whole lifecycle

Please give brief answers to the following questions

BC1.1 Introduction to PLM

1 What is the core of PLM?

2 What is the limitation of previous PLM systems?

BC1.2-1.3 Introduction to Closed-loop PLM

1 What is the main difference between 'closed-loop PLM' and 'PLM'?

2 What does PEID stand for?

3 Please describe some application layers for the system architecture of closed-loop PLM.

BC1.4-BC1.7 Challenging research issues of BOL, MOL, and EOL

1 What are the main challenging research issues in BOL?

2 What are the main challenging research issues in MOL?

3 What are the main challenging research issues in EOL?

8.6 BC2: Business course on BOL phase

8.7 BC3: Business course on MOL phase

PROMISE Training Learning Achievement Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: Business course on MOL phase

Please give brief answers to the following questions

BC3.2 Introduction to Product Lifecycle Management

1 What are the roots of Product Lifecycle Management (PLM)?

a. CAD
b. PDM
c. ERP
d. all of the above

2 What might affect the decision whether you are going to use the tern part, product or sub-product for describing a composite object of a product?

a. the context
b. the viewpoint
c. the hierarchy level where the object is located in the Bill of Material
d. all of the above

3 The number of product stakeholders and amount of information to be managed for a product …

a. Increases over the lifecycle of a product item
b. Is more or less constant over the lifecycle of a product item
c. Decreases over the lifecycle of a product item

BC3.3 Information flows in Product Lifecycle Management

1 MOL information is considered as rather …

a. Static
b. Dynamic

MOL information can be used to support or improve …

f. EOL decision processes (product design)
2 g. MOL decision processes (e.g. maintenance)
h. EOL decision processes (Reuse vs Remanufacturing vs. recycling)

Name two or more possible implementation approaches for the item-specific information management.

BC3.4 Case study – CAT application

1 What are the benefits of the Caterpillar remanufacturing scenario?

a. EOL decision processes (product design)
b. MOL decision processes (e.g. maintenance)
c. EOL decision processes (Reuse vs Remanufacturing vs. recycling)
d. all of the above

2 Who are the actors in this scenario?

a. Caterpillar Production
a. Caterpillar Reman
b. Caterpillar maintenance service
c. Product User / Owner

BC3.5 Introduction to the concept Extended Product

1 What are the components of the concept Extended Product?

a. Product kernel
b. Product shell
c. Services

2 Name two Extended Product examples

BC3.6 PROMISE Technologies

1 What are the basic components of a PROMISE closed loop PLM solution?

2 What implementation approach is used for the Caterpillar scenario in PROMISE??

d. Centralized PLM-Network
e. De-Centralized PLM-Network (with or without explicit References)

8.8 BC4: Business course on EOL phase

PROMISE Training Learning Achievement Evaluation Form

This evaluation sheet assesses the learning achievement of the participant.

Course name: BC4—EOL Business Course	
1	In Product Lifecycle Management, what happens when a product reaches the end-of-life phase?
2	What are the information requirements for EOL decision-making?
3	Which legislation is related to the processing of end-of-life vehicles in the automotive industry?
4	List the business benefits associated with the adoption of PROMISE in EOL?
5	List the business costs associated with the adoption of PROMISE in EOL?

9 Appendix D: Continuous evaluation

PROMISE Training Continuous Learning Evaluation Form

This evaluation sheet assesses the use of the module contents in the long term.

Please circle the extent to which you agree or disagree with these statements with 1 being strongly disagree and 5 being strongly agree.

Course name: Technical Course on PROMISE PEID			
ID	STATEMENT	SCORE	
		Disagree	**Agree**

1	The course enabled me to apply the skills/knowledge I have gained	1	2	3	4	5
2	Could you give an example of a time you have applied the knowledge you have gained from this module? (please continue on to question 3 if you have not used the contents of this module at all)					
3	I will use what I have learned in this module in the future.	1	2	3	4	5
4	I am continuing to develop my learning in this subject.	1	2	3	4	5
5	The time I spent on this course was worthwhile	1	2	3	4	5
6	I would recommend this course to others	1	2	3	4	5

Any other comments / suggestions

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