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1 Executive Summary

The MYCAREVENT project understands itself as a pioneer for remote automotive services in Europe with the aim to provide a common technical interface to the vehicle and to strengthen competition within the European after sales market.

Beside researching and working on technological issues like mobile communication and applications, remote services, the creation of a service portal, ontology, and business models one of the work packages deals with training. It is not sufficient just to disseminate information about the project to interested parties, but potential consumers / users need to be qualified to be able to make use of the benefits of MYCAREVENT.

Workpackage 8 deals with those issues by developing training products and services around MYCAREVENT. The overall vision of the MYCAREVENT training is to offer user-centric qualification programmes. The participants will be familiarized with the contents of MYCAREVENT and will be empowered to use the MYCAREVENT products and services most efficiently in the day-to-day work.

As the scope of the potential MYCAREVENT products and services cannot be determined completely in this early stage of the project, the primary WP 8 activities aim at

- identifying and describing training target groups and training objectives,
- defining the general training concept and appropriate training methods,
- developing state-of-the-art training modules that are based on the pilot demonstrations foreseen in project month 18 (March 2006).

Later the training modules will be tailored and adopted to the final outcomes of MYCAREVENT.

The MYCAREVENT training design follows the principles of Instructional Systems Design (ISD)¹ and the ISO/IEC FDIS 19796-1². In general following five steps are addressed:

1. Analysis of stakeholder specific training needs and methods
2. Design of stakeholder specific training packages / curricula / e-learning scenarios
3. Development and production of training / e-learning programmes
4. Implementation and rollout of training / e-learning programmes
5. Evaluation of training / continuous improvement

This document describes the results of the first step: the needs and requirements analysis, the methods applied for analysis and the consequences for training design and development.

Following the pilot scenarios I and II target groups for training will be mechanics and roadside assistants. As MYCAREVENT services shall be self-explanatory, drivers are not seen as core training target group at first, but will nevertheless be considered in the design of MYCAREVENT training. However call centre operators seem to be an additional training target group.

¹ The most widely used methodology for developing training programs is called Instructional Systems Design (ISD). ISD evolved from post-World War II research in the United States military to find a more effective and manageable way to create training programs. These efforts led to early ISD models that were developed and taught in the late 1960's at Florida State University. (Dick, W. & Cary, L. (1978), *The Systematic Design of Instruction*, Third Edition, Harper Collins)

² ISO/IEC FDIS 19796-1 Information technology - Learning, education and training - Quality management, assurance and metrics metrics - Part 1: General approach; this standard is now finalized, publication expected in December 2005.

The overall approach follows a blended learning scenario combining “traditional” training in classroom, self-study material and e-learning (in terms of web based training). The classroom training will be held at the occasion of the demonstration events. E-learning will be offered via the MYCAREVENT portal.

Depending on the target groups the main training objectives identified are

- to access, use and navigate in the portal,
- to be aware of the data offering, -quality and pricing models,
- to handle the respective workflows and
- to be aware of the underlying concepts.

They are listed in detail in table 7.

2 Introduction

MYCAREVENT is a European research project consisting of leading industrial partners from the automotive and telecommunications sector and scientific research focused on service development, process and organisation management, e-Business, communication networks, as well as expert systems. These partners will generate an integrated technical solution that provides an interface to the vehicle and to vehicle data. New business models providing innovative services to the customer under the new "Block Exemption Regulation"³ will be designed. This way, MYCAREVENT will offer benefits to the end users, drivers and professional users.

Basically MYCAREVENT is a technology oriented research project within the automotive service world. However, in the end the consumers and users decide on success or failure. On one hand they will base their decision on the benefit that MYCAREVENT offers to them. On the other hand their opinion will also depend on their ability and willingness to make use of those benefits. Amongst other factors this also depends on their competence to deal with MYCAREVENT results. As a consequence they need to be qualified accordingly.

Workpackage 8 (WP 8) covers the qualification aspects by conceiving user-specific training strategies and developing appropriate training products and services.

In this early stage of the project the definition of training requirements and potential training objectives can only be preliminary, as the concrete outcomes of the project and final functionalities of the demonstrators and the portal had not been developed completely. Therefore requirements arising at the occasion of the pilot demonstrations in PM 18 (March 2006) will be monitored and added to this document later.

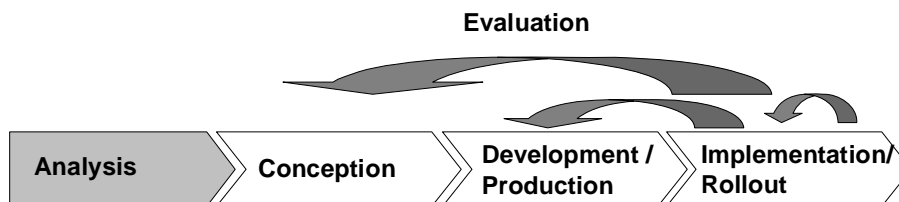
³ The new Automotive Block Exemption Regulation (BER) 1400/2002/EC:
http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_203/l_20320020801en00300041.pdf (last query on 05.12.2005)

2.1 Analysis of training needs and requirements as baseline for all training related activities

Figure 1 depicts the general approach for training development and delivery as proposed by the ISD model (ref. footnote 1). Typically four phases and the evaluation process are considered:

- Analysis
- Conception
- Development
- Implementation / Roll-out and
- Evaluation of training performance and results

Figure 1 - Training processes - Overview



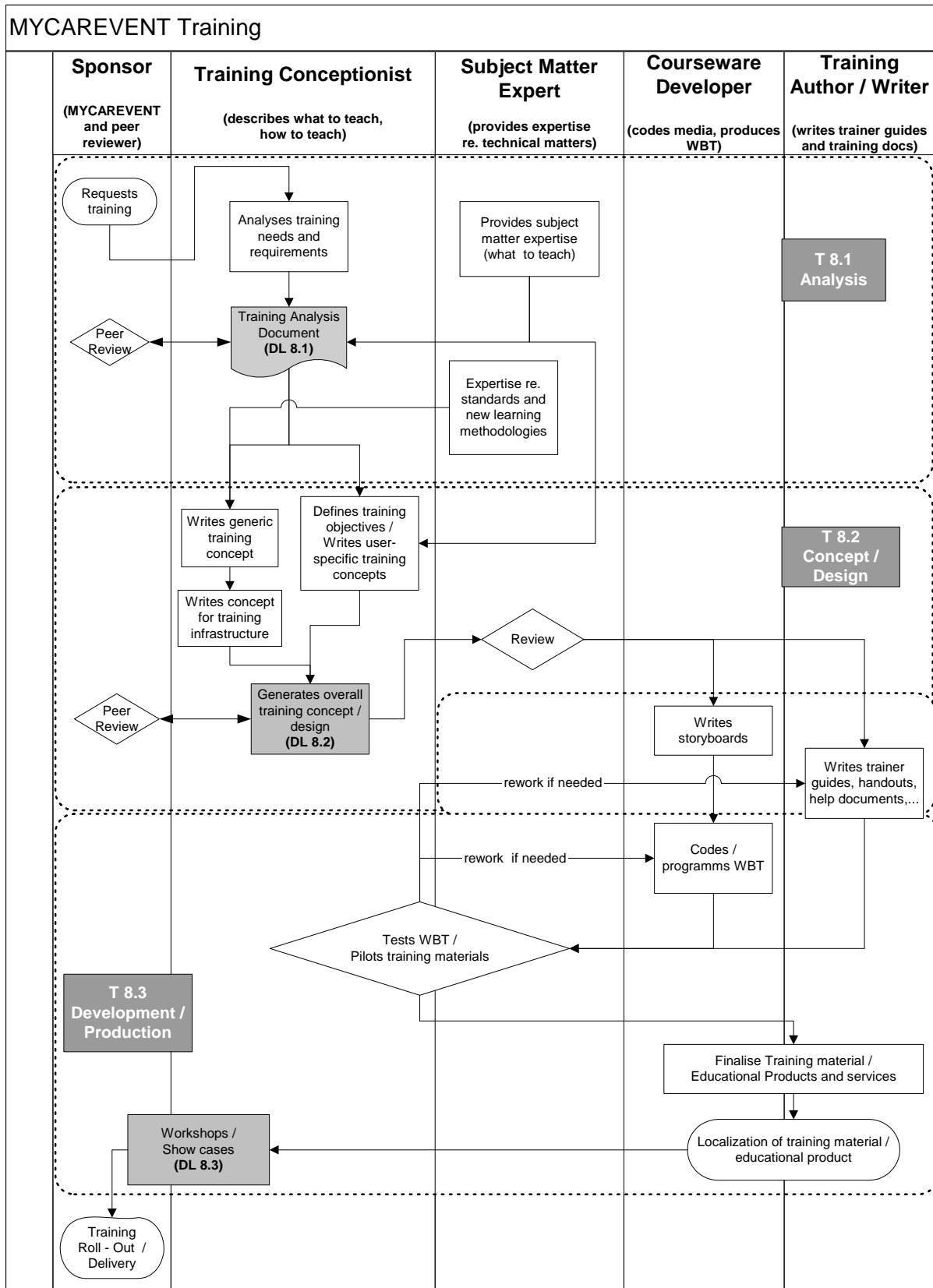
Following this ISD model the generic training development workflow has been adapted for MYCAREVENT (Fig. 2). It specifies activities for all training stakeholder groups.

The *sponsor* is the person or organization that requests and finances the training. The *training conceptionist* – often denominated as “instructional designer” – describes what and how to teach. He is the central point, leading and coordinating all development activities. *Subject matter experts* consult with respect to the training topics and validate the training content. The *courseware developer* produces the training by coding software and/or creating multimedia elements. An *author / writer* creates training documents for the trainer and the participants.

Fig. 2 depicts the entire training development and production process for MYCAREVENT. Starting top left with the training request by the sponsor (represented by the Board of Excellence) the first deliverable in workpackage 8 is the training analysis DL 8.1; it is this document.

The next phase will be the concept and design phase, leading to the deliverable DL 8.2 (“training conception and design”). It describes the generic and user-specific training concepts and the infrastructure for training delivery. Ultimately DL 8.3 will comprise the “educational products” / training materials to be demonstrated / delivered in training workshops / show case scenarios.

Figure 2 - Workflow of MYCAREVENT training activities and related deliverables⁴



⁴ The number of deliverables in this workflow has been reduced from seven to three according to the reviewers' feedback at the occasion of the 1st review meeting in Brussels on Dec. 15th and 16th 2005.

2.1.1 Analysis phase

The first step into the development of a new project is usually a phase of analysis and assessment of the existing situation, including the identification of general goals. Training projects are no exception to this, although this phase is often neglected or considered of minor importance. A thorough analysis, though, is the indispensable foundation for a successful development and subsequent implementation.

As-Is Analysis:

Usually following areas are included in the framework of the training as-is analysis:

- Current employee profile based on the job profiles of the target group
- Technological framework: existing system, existing infrastructure (PC, Internet/Intranet connection, networks, mobile communication ...).

Needs Assessment:

The needs assessment incorporates the following aspects:

- Determining the needs of the employees: In order to start training matched to the needs of an individual, the needs of the individuals must be determined (skill gap, competence building, development potential, career path, ...)

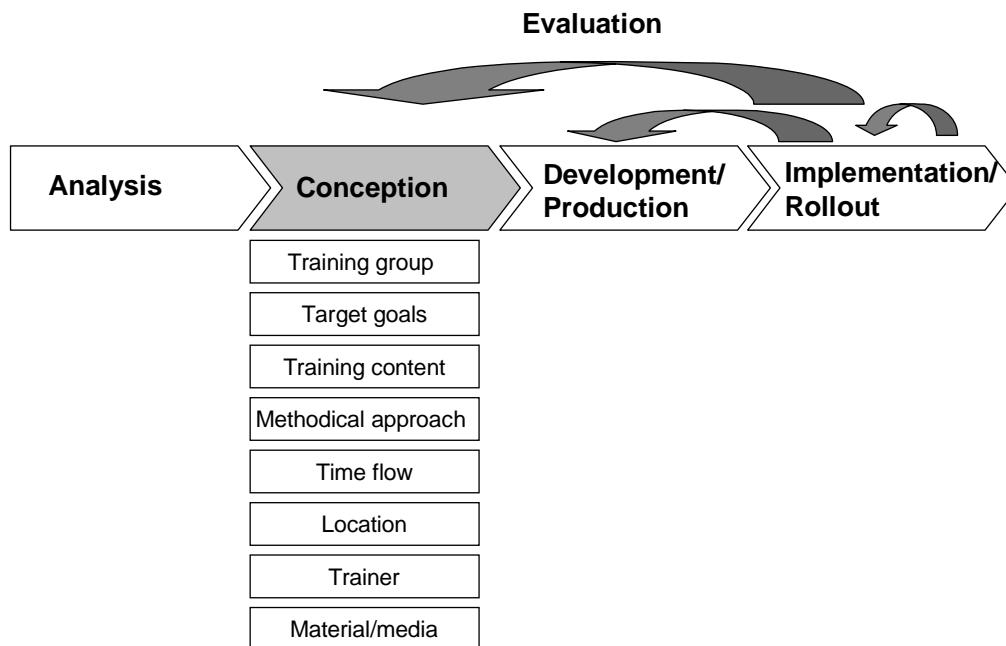
Draft Should-Be Definition (Recommendations)⁵

- Draft definition of the should-be profile of the employees (professional approach in reasoning / negotiating, methodological and social competence, expertise, global player) from the sponsor's point of view
- Technical requirements definition (PCs, multimedia, equipment, software, bandwidth)
- Organizational / other requirements definition (training centres, accommodations, office workplace / off-site / at home, standards, e.g. ISO 9000, organizational and operational structure training, learning philosophy,...).

⁵ Often already during the analysis phase first ideas regarding the should-be situation can be derived. However this does not replace the conception phase.

2.1.2 Concept phase

Figure 3 - Training processes - Conception



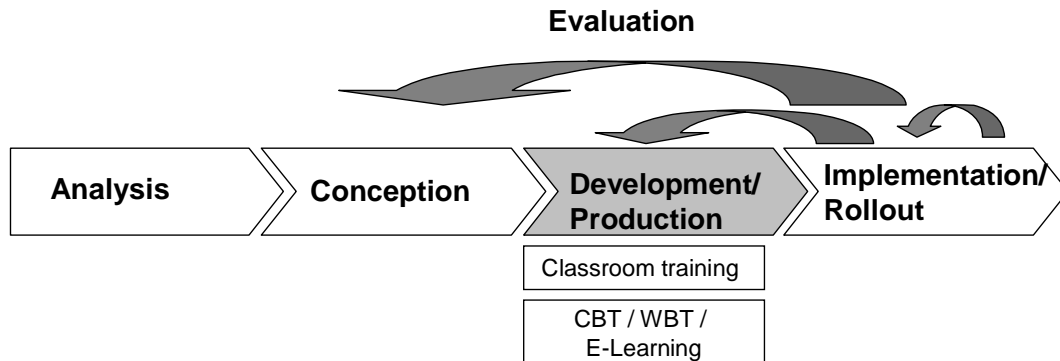
Based on the results of the analysis phase as well as on goals to be achieved, the conception of the training specific to a target group is carried out. It forms the basis for the training material to be developed and produced and deals with:

- Target groups: Definition of the target groups the training is to be developed for (size of the target groups, role structure, geographic distribution)
- Training goals: Draft definition of the training goals
- Training content: Depending on the findings often a modular structure is advisable (basic and specific modules)
- Methodical approach: Also depending on the findings, a pure classroom training, e-learning or a mix of both ("blended learning") will be defined here
- Time flow: Time flow definition of the individual training modules
- Location: Depending on the geographic distribution of the trainees training locations are determined
- Trainer: Based on the requirements and the training subject, a trainer profile is created and trainers matching the profile are selected.
- Materials/Media: Technical or IT-tools, supporting systems and software applications (e.g. training management system TMS⁶) are identified. Additionally needed materials and media like beamer, flip chart, whiteboard etc. are listed.

⁶ A Training (or often denominated) Learning Management System is a software package, usually on a large scale, that enables the management and delivery of training / learning content and resources to users. Most TMS systems are web-based to facilitate "anytime, anywhere" access to learning content and administration.

2.1.3 Training development

Figure 4 - Training processes – Development / Production



The materials and training products comprising the various modules are created based on the training concept. Among the various types of training the dominant ones are:

Classroom Training:

The materials made available for classroom training should comprise:

- *Trainer handbook:* The trainer handbook contains all the information the trainer needs for performing the training in a structured form (checklists for training implementation and planning, curriculum for each training step, detailed learning targets for each training step, training methods, PowerPoint presentation, cross references to the presentation and participant documents of each training step, continuative notes for the trainer)
- *Participant documents:* The participant documents contain the training subject matter in a clearly arranged form and are used by the participants during the training and also serve as reference material in their daily work.

Computer based / Web based training (CBT / WBT):

If the analysis results indicate the need of computer or web based training (CBT / WBT)⁷, a different workflow for the development and production of those has to be followed.

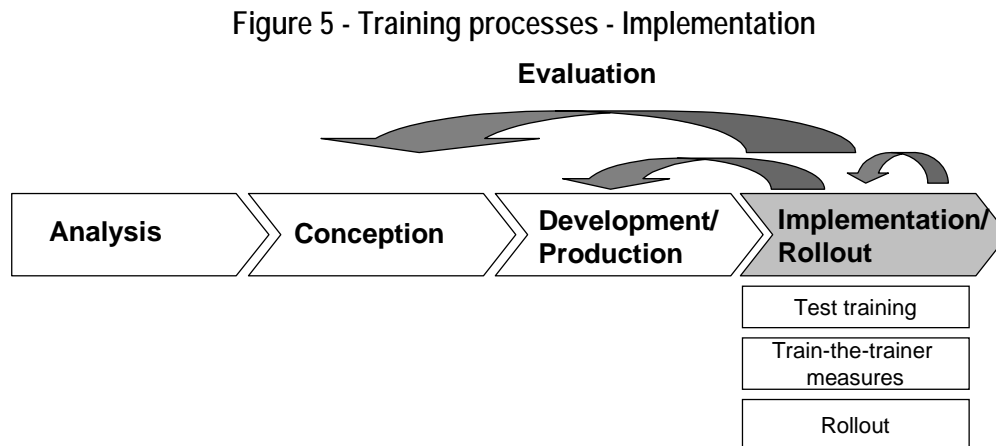
After the conception the first different step will be the creation of a storyboard. This describes all screen shots with content (text, graphics), animation, navigation, metadata and additional information. It will be the work instructions for the course developer (programmer). At the same time the storyboard helps the sponsor and instructional designer to validate the expected outcome in an early phase of the production. Such the thorough creation of a storyboard is of utmost importance for quality learning programmes.

The next major step comprises the writing of the code and compiling all media and data to generate the final learning programme.

In parallel – if needed - interfaces with a portal or training management system have to be developed or adapted. Of course a series of review steps shall guarantee that the final product meets the requirements.

⁷ The difference between both not only lays in the technology (offline for CBT and online for WBT), but also relies on different learning concepts (e.g. making use of online communities in the case of a good WBT).

2.1.4 Training implementation



Test training:

The training modules need to be tested / piloted prior to being given to the users. During test trainings representatives⁸ of the target groups identify and document weaknesses in the training. Supported by checklists they focus on content, organizational and didactical issues.

Train-the-Trainer measures:

Often it is advisable to use a train-the-trainer approach. This means, that trainers first participate as "simple" participants in the training and give feedback from their expert view. Later they act as multipliers and teach the content themselves.

Rollout

Rollout is the "delivery" of training. According to the training plan, classroom training is being given and the e-learning modules are being distributed.

2.1.5 Evaluation

While the training measures are being implemented, the training manager responsible for the rollout applies an evaluation concept which aims to monitor and improve the training on an ongoing basis⁹.

Typically paper or online questionnaires are to be filled out by participants at the end of a classroom-training or after having completed a CBT / WBT. Amongst other training content, quality of the training and the trainer, the expectations of the participants and the organisation of the training will be evaluated.

⁸ The representatives should be selected by the sponsor or by the subject matter experts. They have relevant subject experience in their day-to-day work and are competent to give feedback regarding the training delivery and content.

⁹ Most partners are using evaluation measures within their own organisations. Consequently they requested a similar procedure for MYCAREVENT training.

2.2 Training in the context of MYCAREVENT

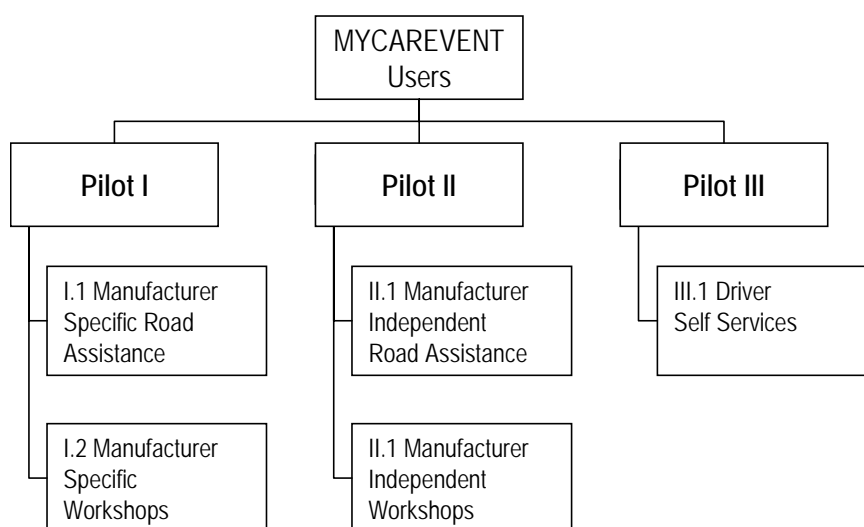
MYCAREVENT results and services address different stakeholders in the European aftermarket. This requires communication and training of potential users. The intention of WP8 training is to provide tools for trainers, facilitators and other stakeholders to transfer the results into the practical day-to-day work and to enable the different users to benefit of the outcomes of MYCAREVENT, respectively.

The outlined products and results of MYCAREVENT represent a large step to establishing a system of mobile users and workers, as new applications and services, which can be seamlessly and securely accessed by mobile devices, will be developed and implemented. These applications will e.g. enable mechanics to send the right information on car failures and receive faster in return appropriate repair solutions. Payment modes and rules for gathering information will no longer be complex structures, but will enable the mechanics to easily understand the conditions with easy-to-read instructions. Thus, a higher mobility will be provided in the After Sales Market of the European Automotive Industry.

Aiming at MYCAREVENT having a large impact on the European Aftermarket, MYCAREVENT training will transfer qualification to the “trainees” to handle MYCAREVENT products and services. To provide a base for the sustainability of the project’s results, the training conception supports the dissemination of MYCAREVENT products and services.

To take into account the different stakeholders’ requirements, MYCAREVENT is following a structure of five user groups, distinguishing manufacturer specific (OEM) workshops and roadside assistances, independent workshops and roadside assistance and the drivers themselves.

Figure 6 - User groups at MYCAREVENT



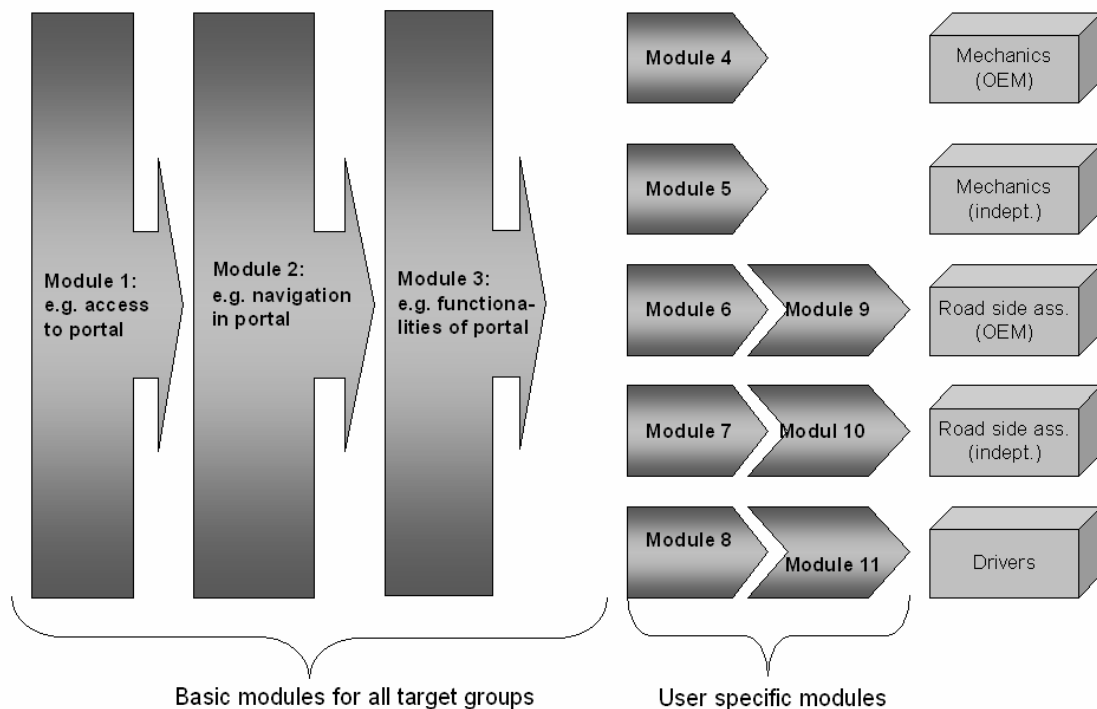
According to the project’s structure, MYCAREVENT products and services are developed user-specifically. The pilots are represented by partners of three countries: Germany (manufacturer specific road side assistance and workshops), Great Britain (independent road ride assistance and workshops) and Spain (drivers). In order to reach a wide range of trainees, a multilingual training system will be developed. The trainings will be offered in three languages: English, Spanish and German.

As a consequence, the training concept could adapt MYCAREVENT’s partition and be planned for five user groups. MYCAREVENT training follows a modular procedure, which integrates the individual requirements in the user group specific training units such that the members of each user group will be familiarized with the structure, tools and possibilities, contents. To achieve a maximum of standardization for the training a basic “general training” module will be common for all users. Taking into account that MYCAREVENT is a technical oriented project within the EC IST framework, a combination of e-learning and classroom training courses will be considered. Furthermore, training of

drivers is regarded as to being a marketing instrument for a broad public. Its extent and applicability will be evaluated during runtime of the project.

Within the progressing project, feedback loops from users and partners to the training developers provide valuable data for the evaluation of the training concept. Providing a heterogeneous group of test candidates with MYCAREVENT preliminary products and results, the training itself will allow the developers of products and services to evaluate and refine their findings.

Figure 7 - Modular approach of MYCAREVENT training



As stated before MYCAREVENT training will follow the principles for Instructional Systems Design (ISD)¹⁰ and apply appropriate standards and procedures on learning technologies, concepts and modelling, where useful. In the course of the project, the concrete application of training related standards for MYCAREVENT will be determined.

Pursuing the user-specific approach, a portal will make MYCAREVENT results accessible for all user groups and e.g. even enable the drivers to make use of the innovative possibilities of self-assistance. Furthermore, gender-specific issues as suggested by the MYCAREVENT gender action plan can be covered by integrating adequate elements into the training where needed (this will further be evaluated during the project). WP 8 training strives for finding and creating training products and services to be performed in the context of MYCAREVENT. The products and services so far developed in the other work packages give a main input to the training structure and contents (chapter 3.2).

¹⁰ Refer to footnote #1

3 Methodology for training analysis

As depicted in chapter 2.1 the analysis of training needs and requirements builds the basis for developing training products and services that

- address users' needs
- fulfil sponsors' expectations with respect to goals and resources
- follow didactical principles for further training
- transfer required skills to work with MYCAREVENT products and services

Therefore a three-step approach has been chosen to identify relevant issues:

- interpretation of job profiles of service patrols and workshop mechanics
- evaluation of available deliverables and potential outcomes of MYCAREVENT
- interviews with project partners

3.1 Evaluation of job descriptions

To get an overall impression about the educational background, the abilities and the day-to-day tasks of the target groups, job profiles for service patrols and garage mechanics have been evaluated. RAC and BMW provided appropriate documents.

3.1.1 Mechanics

The work of automotive service technicians and mechanics has evolved from mechanical repair to a high technology job. Today, integrated electronic systems and complex computers run vehicles and measure their performance while on the road. Technicians must have an increasingly broad base of knowledge about how numerous and complex vehicle components work and interact, as well as have the ability to work with electronic diagnostic equipment and computer-based technical reference materials. While needing the ability to operating those diagnostic tools and software, they do not need a general computer literacy (this is important for the implementation of e-learning products).

Their task is to perform all maintenance and repair jobs concerning one or several makes – depending on the environment (OEM / independent) they are working in.

Typically in franchised workshops the mechanics have no direct contact with the drivers, but receive their orders from the service consultants¹¹.

Their main tasks comprise the faultless performance of their jobs, the professional handling of tools and equipment and the provision for safety and other mandatory regulations. Additionally the mechanics look out for the opportunity of supplementary tasks to avoid upcoming problems, to increase customer satisfaction and to leverage turnover.

The mechanics' core job requires the ability to diagnose the source of a problem quickly and accurately. This requires a good reasoning ability and a thorough knowledge of automobiles.

They have successfully completed appropriate vocational training in mechanics and electrics. Additionally they regularly participate in company training that addresses the handling of specific tools or working and business procedures, respectively.

¹¹ However, in little, independent garages employees often work in a more "familiar" way and the mechanic can act as service consultant at the same time.

3.1.2 Roadside assistants

Roadside assistants are automotive mechanics with additional qualifications. They provide services to drivers in roadside breakdown situations and try to solve the problem on the spot, avoiding towing the car. They are representatives of their organizations and shall promote business, following standards and regulations and be most flexible with respect to meeting all business needs.

They are equipped with electronic (diagnostic) devices, computer based technical reference materials, and communication tools and should be familiar with using a laptop. Not every employee however, has the needed PC skills and computer literacy is quite inhomogeneous.

Hence on one hand the road side assistants have to be specialists in diagnostic procedures, need a basic understanding in electronics and technical understanding, know repair techniques and fulfil all requirements of a mechanic. On the other hand, being in direct contact with the driver, additionally they need distinctive social and methodological skills.

A breakdown is an unpleasant situation for the driver. Potential stress due to time pressure, safety issues, constraints of an outdoor working environment and the increasing number and complexity of electronic failures request experienced mechanics that are able to communicate and work professionally in this difficult situation facing the customer whilst ensuring the safety of the driver and occupants of the broken down vehicle.

In order to be able to work unsupervised, they must have several years of practical experience within the motor trade working with different types of vehicles. Furthermore it is requested and expected, that they keep up-to-date with continuous training.

3.2 *Evaluation of MYCAREVENT deliverables*

To identify possible training topics it is necessary to know and analyze the outcomes of MYCAREVENT. As a consequence a quantity of documents / deliverables had been evaluated to deduct potential training requirements and to identify potential training subjects.

WP8 will explicitly take all upcoming deliverables into account that have an impact on training – such as e.g. the handling and structure of the MYCAREVENT platform.

3.2.1 Evaluation of DL 2.1

The Consolidated User Survey (DL 2.1b) summarizes the survey results with respect to drivers, garage technicians and roadside assistants.

Drivers:

No specific training subjects and no need to formally train drivers could be deducted from the report. By definition MYCAREVENT services shall be simple to use and self explanatory. Anyhow, if WBT is provided, drivers shall receive the opportunity to take advantage of MYCAREVENT training. This can be done with small modules (like "How to formulate a question in such way, that the answer is helpful?"), by frequently asked questions (FAQ) and by relying on the supporting hotline. The motivation to use MYCAREVENT products and services shall be enhanced by some minor training services.

Independent workshop technicians and mechanics:

In this group the acceptance of new / remote technology and services being developed by MYCAREVENT is very high. Most of them expect the comprehensibility and relevance of remote tools and repair information delivered by MYCAREVENT as being good.

As consequence not much effort has to be put into the development of "basic motivational" modules rather than concentrating on modules with "technical subjects". However, there might be a need to

introduce the independent workshop technicians and mechanics to e-learning itself as they are not very much familiarized with it. This will be taken care of in the CBT/WBT themselves by imbedding a module explaining how to use the CBT/WBT.

Franchised workshop technicians and mechanics:

There is high acceptance for new / remote technologies and services in the medium and large size body shops, less acceptance however in the small-size ones (< 15 repairs per day).

Therefore a training module for small-sized workshops could be developed addressing acceptance and individual issues.

Roadside assistants:

With respect to the road side assistants the report states "... the (RAC) patrol has multimedia training material on his patrol van's PC. This material covers the use and practical application of the multimeter carried by the patrols."(Chapter 6.4.3)

One result of the personal interview of RAC representatives shows that at least RAC personnel is used to work with e-learning and has the necessary IT-equipment. However as stated above in the context of drivers, a training module introducing e-learning should also be part of a basic module for all trainings.

3.2.2 Evaluation of DL 2.3

The General Technical Master Plan (GTMP, DL 2.3) documents the "input for training" for each work package. Table 1 lists the respective statements; the training objectives are deducted from these.

Table 1 - Training related input / expectations from the GTMP

	Description in GTMP	Potential training topics
WP 1	The input for Training is limited from the content side, since PM is focused on good project conduct. Nonetheless, it will be evaluated if experience made during the project runtime might give input to Training, but will be from the current perspective limited in extent.	None
WP 2	Workpackage 2 covers the tasks related to the modelling of business relationships including various aspects like intended pricing strategies and the management of intellectual property protection. This does not include the elaboration of technical components for future use. The input for training activities resulting from workpackage 2 is therefore very limited. From the current perspective, it can be foreseen that pricing might have an impact on the behaviour of the user. It is expected, that different offers for information on how to resolve a particular problem come at different prices. As a result, the necessity to formulate rules on how they behave to find a good compromise between costs and quality or comprehensiveness of information may arise. These rules might be part of the training envisaged in MYCAREVENT.	<ul style="list-style-type: none"> • Pricing models
WP 3	The web-based ontology maintenance tool might require the development of user training material, user-oriented documentation and dissemination material. A training course and dissemination material will be required for teaching the Integrated Information Model and for publishing the developed standardized intermediate documents . On-line access and dissemination material will be required for the Information Architecture Terminology and for the associated XML schemas / DTDs due to the standardized "intermediate documents".	<ul style="list-style-type: none"> • Ontology maintenance tool • Integrated information model • Information architecture terminology
WP 4	The task of WP4 (mobile communication) is the development of a protocol stack containing several communication technologies, a high transport reliability protocol	

	Description in GTMP	Potential training topics
	<p>and a protocol ensuring the transmission security. One major aspect of the work is the transparency to the higher functionalities.</p> <p>Results and concepts of WP4 will be published and thus contribute to the dissemination. The publications have to undergo the MYCAREVENT review and permission process and will then build the major input to the training content.</p>	TBD
WP 5	<p>WP5 (remote services) will provide material for general dissemination on the results of the project. It will identify training needs for technicians and call handlers. WP 5 might be able to contribute to the requirements for training which would include: progressive training in automotive electronic principles, problem solving and diagnosis, specific topic training e.g. engine management, braking systems and, for call handlers, use of the portal.</p> <p>WP5 is working on tools and applications in isolation; its results will have to be integrated into working systems by WP7 before it will be worth offering any of its work for training those outside the project. WP5 is not a natural source of training materials but remains committed to supporting these activities as appropriate.</p>	<ul style="list-style-type: none"> • Use of portal (for call centre operators) • Automotive electronic principles * • Problem solving and diagnosis * • Engine management * • Braking systems * <p>* Note: Those topics should be basics for each professional user and not be part of MYCAREVENT training</p>
WP 6	<p>The web portal prototype is one gateway to the service portal for the provision of training data. It permits online-access to user training material. Training related issues could cover:</p> <p>How to access and navigate “through” the web front-end of the service portal</p> <p>How to improve the input “quality” (to enhance matching results e.g. for low skilled workers)</p>	<ul style="list-style-type: none"> • Navigating the portal • Optimising data entry
WP 7	<p>It is assumed that the technology developed for Work Package 7 will be used for demonstration purposes at motor trade events.</p> <p>Demonstration of the pilots will require the systems and applications developed for WP 7 (mobile applications).</p> <p>Task 7.4 will provide an input to dissemination activities.</p> <p>It is assumed that workshops will be held to demonstrate the developed system and train users in how to use it. Instruction manuals will be created that describe the operation of the system and it will also be possible to create CDs containing a dynamic screen capture of different elements of the user interface in action.</p>	<ul style="list-style-type: none"> • Training Workshops in using system • Handling mobile applications • Handling demonstrators
WP 9	--	none

3.2.3 Evaluation of DL 5.3

A first compilation of planned deliverables and services can be generated from DL 5.3¹², the “Definition of Service, Workflow and Information World”. This document has been checked with respect to possible training issues. The results are listed in table 2.

Table 2 – MYCAREVENT outcomes and potential training objectives based on DL 5.3

Topic / service	Users	Main characteristics of topic / service	Potential training objectives
Car Identification via VIN or registration number	Mechanics, Roadside assistants	<ul style="list-style-type: none"> User gets detailed information about technical data of a specific car 	<ul style="list-style-type: none"> Be aware of concept and data (country specific?) Be able to relate concept to own work Be able to use appropriate functionality in portal Be aware of legal issues Be able to deal with errors in functionalities (work-around)
En-Route Help	OEM and independent roadside assistants	<ul style="list-style-type: none"> User gets technical information about vehicle, fault and solutions, component locations, etc. Whilst en-route to the job 	<ul style="list-style-type: none"> Be aware of relevant parts of workflow Be able to handle workflow Be able to use appropriate functionalities in portal
Interactive Circuit Diagrams (IACD)	Mechanics, Road side assistants	<ul style="list-style-type: none"> Portal sends IACD-images to user, display of IACD and “non-IACD content” 	<ul style="list-style-type: none"> Be aware of concept of IACDs Understand role of OEM as provider for IACD in the context of MYCAREVENT Direct access to IACDs in portal Indirect access through search and solution picking list Be able to use IACDs to assist a repair Be able to validate IACDs (are these the right ones?)
Multi Media Repair Manuals (MMRM)	Mechanics, Road side assistants	<ul style="list-style-type: none"> Get repair information faster and more efficient 	<ul style="list-style-type: none"> Be aware of concept of MMRM Understand role of OEM as provider for MMRM in the context of MYCAREVENT Be able to distinguish all types of available documents Be able to use appropriate functionalities in portal Be able to use MMRM to assist a repair. Be able to validate MMRM (are these the right ones?)

¹² DL 5.3: Definition of Service, Workflow and Service Word, chapter 5 (version 1, 15.10.2005)

Topic / service	Users	Main characteristics of topic / service	Potential training objectives
Electronic Driver Manual	Drivers Call Centre Agents	<ul style="list-style-type: none"> Get driver manual information online 	<ul style="list-style-type: none"> Be able to access portal with a mobile device (driver) or PC (call centre agent) Be able to use appropriate functionalities of application
Remote Diagnostics and Advice for Driver	Drivers Call centre agents	<ul style="list-style-type: none"> Get diagnostic information about breakdown Get advice for specific situation Get instructions for very basic checks and repairs 	<ul style="list-style-type: none"> Understand process how to get information Be able to access portal with mobile device (in case of drivers) Be able to use appropriate functionalities of application
	Operators	<ul style="list-style-type: none"> Process workflows to drivers and to the service portal Expert system 	<ul style="list-style-type: none"> Understand workflow Be able to use appropriate functionalities of application Be able to interpret data to inform driver appropriately
Mobile Diagnostic Services	Roadside assistants, drivers	<ul style="list-style-type: none"> Get diagnostic information Expert system 	<ul style="list-style-type: none"> Be aware of concept, available data and workflow Relate concept to own situation, understand processes Be able to access portal with a mobile device Be able to use appropriate functionality in portal Be able to interpret information (expert system) Be aware of legal issues
Location Based, non-emergency services Nota: Service is not agreed within MYCAREVENT yet	Drivers	<ul style="list-style-type: none"> Vehicle tracking Immobilization Navigation Tourist information News... 	<ul style="list-style-type: none"> Tbd

3.2.4 Evaluation of DL 9.4

The “Workplan and Guidelines for Demonstration Activities” (DL 9.4) amongst other describe the context, the purpose and the “content” of the demonstrations. It lists key elements that should be demonstrated and assigned for training. Potential training objectives derived from this document are listed in table 3:

Table 3 - Key elements in pilot scenarios and potential training objectives¹³

Pilot I ("OEM")	Pilot II ("Independent")	Pilot III ("Drivers")	Potential training objectives
Access to service portal			<ul style="list-style-type: none"> Know, how to access portal
Procurement of repair information through the information bundle			<ul style="list-style-type: none"> Know ho to procure repair information through information bundle
Generation of an adequate picking list			<ul style="list-style-type: none"> Know how to interpret picking list
Graphical User Interface (GUI) for information bundle and solution picking list			<ul style="list-style-type: none"> Be able to navigate with GUI
Security of Digital Right Management (DRM) functionalities			<ul style="list-style-type: none"> Know meaning of DRM
Context sensitive presentation of IACDs			<ul style="list-style-type: none"> Know the concept of context sensitivity
	Remote diagnostics		<ul style="list-style-type: none"> Tbd
	First use of vehicle interface data		<ul style="list-style-type: none"> Tbd
	Process to populate the information bundle		<ul style="list-style-type: none"> Know concept of information bundles
		Driver mobile communications	<ul style="list-style-type: none"> Know how to use communication tools to access portal
		Application to access service portal via PDA / smart phone	<ul style="list-style-type: none"> Know how to use communication tools to access portal
		CCO access to service portal	<ul style="list-style-type: none"> Know how to access the service portal
		Electronic version of owner manual	<ul style="list-style-type: none"> Tbd
		Adaptation of owners manual to PDA / smart phone	<ul style="list-style-type: none"> Know how to navigate in manual
		Expert system for remote diagnostic and advice	<ul style="list-style-type: none"> Know about expert system

3.3 Interviews of project members

Partners within MYCAREVENT have been interviewed with respect to their expectations regarding training issues and – if applicable – in their role being representatives for a specific training target group.

¹³ Many of the potential training objectives listed here might also apply to call centre operators. In addition some objectives might also apply to several pilot scenarios. This will be validated during the conception phases.

Such BMW has experience with respect to OEM mechanics and roadside assistants and RAC and ACASERVI SA represent the independent roadside assistants.

Based on previous experiences and questionnaires used in similar projects, ESG and FIR developed a training analysis questionnaire¹⁴ that focused on following aspects:

- Partner's individual / personal expectation regarding the "training issue"
- Potential training offerings of partner with respect to MYCAREVENT
- Benefit of MYCAREVENT for roadside patrols and mechanics
- Benefit of MYCAREVENT qualified personnel for partner's organization
- Motivation for roadside patrols and mechanics to attend MYCAREVENT related training
- Training objectives / goals
- Training media and methodology
- Training material
- Evaluation of training, reporting
- Training locations
- E-learning
- Training standards
- Training business model

The questionnaire was not intended to be sent to the target groups for self-paced completion as in the case of the user surveys in WP 2. However the chosen methodology was performing personal interviews using the questionnaire as guidance. For practical reasons, most of the interviews were conducted via telephone or web conferencing (E-Learning for MYCAREVENT: ELMY).

Following persons / partners have been interviewed in August and September 2005:

Table 4 - Interviewed partners and persons

Company	Person(s)
ACASERVI SA	Mr. Castells
Omitec	Mr. Burke
CRF	Ms. Giordanino
PA	Mr. Schmidinger
DC	Ms. Diehr
BMW	Mr. Schaible, Mr. Pflieger, Mr. Schnepfer, Mr. Laib
RAC	Mr. Armitage, Mr. Taylor
VW	Mr. Büschleb
CSW	Mr. Stone

During the interviews catchwords had been written down and filed. Those answers served as basis for creating this document. The validity of the interpretation is guaranteed through the multi step review process (all interviewed partners were invited to give feedback to this document).

¹⁴ Ref. appendix #3

4 Analysis of requirements

4.1 *Perspective of the project MYCAREVENT on training needs*

4.1.1 Expectations and requirements

Based on the interviews with project members the following chapters describe the findings.

4.1.1.1 General

Besides creating training concepts, MYCAREVENT training will produce training material that will support the operation of the MYCAREVENT demonstrators. It is intended that training material will also be valid after the project without major modifications and thus will be a basis for later exploitation.

The main outcome of MYCAREVENT as a project is the service portal which supports a series of diverse applications. Partners expect that usage and handling of the portal and its applications will be taught to the target-groups. The operation of the demonstrators and the technical expertise developed during the project (e.g. multimedia repair manuals MMRM, interactive circuit diagrams IACD) is considered to be a valid training objective as well. Additionally information about the project in general, dedicated services and technical and non-technical interfaces shall be given.

It is expected that all training material will be available electronically and can be reused for partners' internal training. This requires easy-to-use, standardized formats for generating the material.

ACASERVI SA, RAC and BMW have been enquired for potential motivation of trainees to participate in MYCAREVENT training. They referred to two different aspects: One is from the employers' perspective and relates to pure optimization of working procedures and therefore e.g. to a higher repair rate. This means more turnover to the garage / roadside service and - in case of a beneficiary system – finally raise the employers' and – by parts – employees' income.

The other aspect is from the trainees' point of view and deals with issues like curiosity, pride of working with state-of-the-art technology and new applications and as such appeals to their intrinsic motivation.

Additionally another perspective could be shown to the trainees: employability. Being state-of-the-art means a competitive advantage with respect to colleagues and peers and can be used as a marketing issue to overcome potential resentments with respect to participation in training.

4.1.1.2 Subjects and learning objectives

Training should not only cover subjects (e.g. "ontology") but should follow precise training objectives that identify a learning outcome.

A subject per se is without any meaning and will be interpreted differently by different users. Therefore depending on the target group and the overall training goals the subject has to be converted into training objectives that describe a competency or skill the user shall gain by successfully completing the training. It is evident that prior to being able to formulate training objectives the skill gaps need to be identified. Typically this is being done by an instructional designer in cooperation with a subject matter expert, who can identify the competencies needed for a specific role or activity.

The interviews with the partners indicated subjects and potential learning objectives, listed in the tables below. Table 5 lists potential training subjects as interpreted by WP8 on the base of partners' answers. Table 6 are training objectives derived there from.

Table 5 - Potential training subjects resulting from partner interviews

No.	Training subject
1	Functionalities of the MYCAREVENT portal
2	Access to and general navigation in the portal
3	Structure of information, available data
4	Quality and types of delivered data
5	Access data via different end devices
6	Relation to existing diagnostic systems
7	Basics of IACD
8	Basics of Intelligent Communication lines INCO
9	Some background information about the "history" of MYCAREVENT
10	Pricing models / billing of services of MYCAREVENT

Table 6 - Potential training objectives derived from the list of training subjects

No.	Related training objective
1	Be aware of and be able to apply functionalities of the MYCAREVENT portal
2	Be able to access the MYCAREVENT portal, be able to navigate
3	Be able to explain the hierarchy and structure of the data stored
4	Be aware of the types, quality and value of delivered data, be able to validate data /
5	Be able to use intelligent mobile devices, be able to access MYCAREVENT via different end devices
6	Be able to explain the relation of the portal to existing diagnostic systems
7	Demonstrate understanding of the basics about IACD
8	Demonstrate understanding of the basics about INCO, be able to work around portal in the case of a failure
9	Be aware of background of MYCAREVENT
10	Be aware of the payment modes and pricing models for MYCAREVENT

An interesting point was made by ACASERVI SA: The above listed items basically deal with training "how to use the MYCAREVENT system". ACASERVI SA additionally is interested in the delivery of repair related training contents from OEM or third parties through the MYCAREVENT system. This is not being considered here, but might lead to the development of an appropriate business case (ref. Chapter 6.1).

4.1.2 Media for training

In recent years the training professionals' community recognized that a mix of traditional classroom seminars with appropriate didactical concepts and the use of e-learning are best-suited for many training challenges. Typically this is referred to as "blended learning".

Depending on the concrete scenario, number and geographical dispersion of trainees, the subject and many other factors, e-learning or seminars might dominate. MYCAREVENT fulfils many of the relevant criteria and therefore it is advisable to focus on the production of electronic material that is available for

self-study and can be run on- or offline. A solution based on the MYCAREVENT portal will be conceived and developed.

Innovative training solutions and tools as tele-tutoring and virtual classrooms¹⁵, chats, newsgroups and FAQ, etc. will be considered. For project meetings the web conferencing system / virtual classroom ELMY is being used. Similar to training in a live classroom this system can be used to teach several users not being at the same place at the same time.

During project runtime partners will give lectures to target groups via ELMY and experiment with those tools.

With respect to evaluation and monitoring training activities, some partners already do so within their organization. Therefore they are in favour of measuring success of learning, using indices as frequency of access to training material and the portal, mastery of tests, satisfaction of trainees with training offer, quality, accessibility, etc – where applicable. Appropriate evaluation methods can be supported by the existing partners' methods and tools and will be part of the design phase of MYCAREVENT training.

4.1.3 Limitations

Explicitly excluded from training developed by WP 8 is the following:

- Structure of architecture of service portal
- Implementation of the MYCAREVENT service portals for individual partners (ACASERVI SA, RAC, BMW, VW workshops, ...)
- Basic computer skills (using a standard PC will be prerequisite for training)
- Soft skills like customer orientation, complaint management, team work, time management

¹⁵ A remote trainer teaches via virtual classroom and/or supports the trainees

4.2 Synopsis of training target groups, training needs and preferred methods

4.2.1 Mechanics (OEM)

Mechanics are used to handling diagnostic tools and to use PCs e.g. for searching technical literature, manuals and other documentation. They know how to fill in templates for processing e.g. work orders and requesting spare parts. Many of them also use PCs for internet search and “standard applications”.

In addition to their vocational training taking place traditionally they work and learn with CBTs or WBTs.

An issue to overcome in implementing MYCAREVENT training via electronic means might be a lack in self-discipline and responsibility for the own learning process. Therefore training programs should have a similar look and feel (and graphical user interface GUI) as the ones that the mechanics are used to. This will lower the reluctance in using the programmes.

For these reasons, especially BMW and VW could support in providing examples or even their individual internal training design templates to develop a convenient system with a similar appearance to the “used looks”, which meets all user groups’ issues.

With respect to target groups, supervisors could take a role of master trainers and help their co-workers in learning with the training material provided.

Eventually a kind of trainer manual with didactical hints will be created for those purposes.

4.2.2 Mechanics (independent)

Mechanics from independent garages basically face the same scenario as OEM mechanics. According to them they see different information in the portal and the drop down lists may look different. But there are no big differences with respect to training except for the pricing model and the handling of different manufacturers’ cars and all various types of On-Board Diagnostic (OBD) tools and connectors. It might be necessary to account for this with different training modules.

4.2.3 Franchised roadside assistants (OEM)

Road side assistants are experienced mechanics with the same basic skills, who are able to work efficiently and self paced, even under high pressure. Due to their specific working environment (“on the road”) they can not rely on the direct support of colleagues if needed. Their main link to any support is via wireless electronic tools and cellular phone.

With respect to training issues those tools will be important means to deliver WBT and other training information. Road side assistants need to be able to operate those tools and to debug if necessary.

4.2.4 Independent roadside assistants

The situation of independent roadside assistants is somewhat more challenging than in that of OEM personnel (even if it is not expected, that they know details with respect to fixing any make). They are confronted with all makes of vehicles including motorcycles and various types of OBD systems and connectors. This calls for a generic approach to diagnostics, using generic equipment along with vehicle specific support data, to enable an accurate diagnosis and repair of the fault. In the case of a non-fix the roadside assistant may tow the vehicle to a garage, where the driver would expect the roadside assistant to provide the garage with an accurate diagnosis of the fault. Independent roadside assistants are expected to use terminology effectively to communicate with representatives of various manufacturers.

Furthermore additional personal, which is gained by outsourcing some minor services need to be trained. E.g. ACASERVI SA relies on “lower-level” subcontractors to perform simple tasks, as recharging a battery or replacing wheels.

4.2.5 Drivers

The driver could be a target group for training. He or she can get in contact with MYCAREVENT services or the portal in “less severe” breakdown situations¹⁶.

So he may be seeking assistance for an immediate, urgent problem that has rendered his/her vehicle immobile. Such information may include fuse identification, access to the engine compartment, etc. Alternatively, the request may be made under less pressurised conditions where the driver is seeking information that may typically be found in an owner’s handbook. For example, fitting roof bars, aligning headlights for UK or European driving, etc.

MYCAREVENT intends to make that information easily accessible. However as stated above, drivers shall receive the opportunity to take advantage of MYCAREVENT training even without a formal training, but by offering small lessons (e.g. how to formulate a question to get the right answer), frequently asked questions (FAQ) and a supporting hotline or similar.

The deliverables issued so far did not show differences for remote services between male and female drivers¹⁷. Therefore also no differentiation with respect to training will be made.

4.2.6 Other

During the evaluation of the analysis results it turned out that call centre operators (CCO) might be an additional potential training target group. E.g. they need to know how to access to the portal and how to communicate the data / information to the requester (driver or road side assistant). Similar to drivers they are not requested to have in-depth technical knowledge. Such their “training profile” is comparable to the drivers’ one and as consequence similar training modules for drivers and CCOs could be developed.

Another training target group might be the service consultants in the garages, who supervise the mechanics and partially act as on-the-job trainers. They could be given more detailed information for this task.

¹⁶ Ref. to DL 9.5

¹⁷ DL 2.1b, vers. 1, chapter 4

4.3 Summary: User-specific training targets

Table 7 summarizes the findings documented in the previous chapters and lists potential training objectives with respect to each target group. This list will be reviewed and refined in DL 8.3 (“user-specific training conception”).

Table 7 – Summary of user-specific training targets

Topic	Potential training objective	Mech.	Road side assistants	Drivers	Call Centre Operat.	Comments
Portal	<ul style="list-style-type: none"> Be able to access the portal 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be able to use communication tools to access portal 	(Yes)	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be able to navigate in the portal 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be aware of functionalities of portal 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be aware of types, quality and value of delivered data 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be able to query data in portal 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be able to validate data 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be aware of the hierarchy and structure of the data stored 	Yes	Yes	No	Yes	
	<ul style="list-style-type: none"> Be able to interpret the picking list 	Yes	Yes	No	No	
	<ul style="list-style-type: none"> Be able to optimise data entry to get the desired results 	Yes	Yes	No	Yes	
	<ul style="list-style-type: none"> Be able to work around portal in case of failure 	Yes	Yes	Yes	Yes	
Ontology	<ul style="list-style-type: none"> Be aware of the meaning of ontology for MYCAREVENT 	Yes	Yes	No	No	
Pricing Models	<ul style="list-style-type: none"> Be aware of the respective pricing model and be able to estimate the cost of a query 	Yes	Yes	Yes	Yes	
Demonstrators	<ul style="list-style-type: none"> Be able to handle demonstrator 	(Yes)	(Yes)	(Yes)	No	Only for demonstration sessions
Car Identification via VIN or registration number	<ul style="list-style-type: none"> Be aware of concept and data (country specific?) Relate concept to own work Be able to use appropriate functionality in portal Be aware of legal issues Deal with errors in functionalities (work-around) 	Yes	Yes	No	Yes	
En-Route Help	<ul style="list-style-type: none"> Be aware of the workflow Be able to handle workflow Be able to use appropriate functionalities in portal 	No	Yes	No	No	
Interactive Circuit	<ul style="list-style-type: none"> Be aware of the concept of IACDs Understand role of OEM as 	Yes	Yes	No	(Yes)	

Topic	Potential training objective	Mech.	Road side assistants	Drivers	Call Centre Operat.	Comments
Diagrams (IACD)	<p>provider for IACD in the context of MYCAREVENT</p> <ul style="list-style-type: none"> • Know how to directly access to IACDs in portal • Indirect access through search and solution picking list • Be able to use IACDs to assist a repair • Be able to validate IACDs (are these the right ones?) 					
Multi Media Repair Manuals (MMRM)	<ul style="list-style-type: none"> • Be aware of concept of MMRM • Understand role of OEM as provider for MMRM in the context of MYCAREVENT • Be aware of the types of available documents • Be able to use appropriate functionality in portal • Be able to use MMRM to assist a repair • Be able to validate MMRM (are these the right ones?) 	Yes	Yes	No	(Yes)	
Electronic Driver Manual	<ul style="list-style-type: none"> • Be able to access portal with mobile device • Be able to use appropriate functionalities of application 	No	Yes	Yes	(No)	Owner manual contains information which could be useful for roadside assistants
Remote Diagnostics and Advice for Drivers	<ul style="list-style-type: none"> • Understand workflow how to get diagnostic information • Be able to access portal with mobile device (in case of drivers) • Be able to use appropriate functionalities of application 	No	No	Yes	Yes	
	<ul style="list-style-type: none"> • Understand workflow how to support users • Understand concept of expert system • Be able to use appropriate functionalities of application • Be able to interpret data to inform driver appropriately 	No	No	No	Yes	

Topic	Potential training objective	Mech.	Road side assistants	Drivers	Call Centre Operat.	Comments
Mobile Diagnostic Services	<ul style="list-style-type: none"> Be aware of the concept, available data and workflow Relate concept to own situation, understand processes Be able to access portal with mobile device Be able to use appropriate functionality in portal Be able to interpret information (expert system) Be aware of legal issues 	No	Yes	Yes	(No)	
	<ul style="list-style-type: none"> Be able to procure repair information through information bundle 				No	
Mobile Communication	<ul style="list-style-type: none"> Be able to understand the concept of “always best connected” 				Yes	
DRM	<ul style="list-style-type: none"> Be aware of the meaning of DRM 	Yes	Yes	No	Yes	
Electronic Manual	<ul style="list-style-type: none"> Be able to navigate in an electronic manual 	No	Yes	Yes	Yes	Owner manual contains information which could be useful for roadside assistants
Expert System	<ul style="list-style-type: none"> Be aware of the operating mode of an expert system 	Yes	Yes	Yes	Yes	
Miscellaneous	<ul style="list-style-type: none"> Be aware of the concept of context sensitivity 	Yes	Yes	Yes	Yes	
	<ul style="list-style-type: none"> Be aware of the concept of information bundles 	No	No	Yes	Yes	
	<ul style="list-style-type: none"> Be aware of the relation of the portal and existing diagnostic systems 	Yes	Yes	No	Yes	
	<ul style="list-style-type: none"> Be aware of basics about INCO 	Yes	Yes	No	No	
MYCAREVENT	<ul style="list-style-type: none"> Be aware of the background of MYCAREVENT 	Yes	Yes	Yes	Yes	
Acceptance	<ul style="list-style-type: none"> Be aware of benefits of MYCAREVENT 	Yes	Yes	Yes	Yes	
E-learning	<ul style="list-style-type: none"> Be able to navigate a CBT/WBT 	(No)	(No)	(Yes)	(Yes)	A small “tutorial” on e-learning and navigating the CBT/WBT will be included in the WBT.

5 Framework analysis

After having identified the needs and requirements of the training target groups, the framework for the development and delivery of training products and services will be analysed.

At first relevant standards will be proposed and discussed and various training methods be evaluated. Then the organisational context and the framework with respect to training relevant IT equipment and tools will briefly be addressed.

5.1 *Standards in Learning, Education and Training*

Standards in general are created to serve defined purposes; typically they support e. g. rationalization, quality management, communication or globalization. A brief introduction to standards can be found in appendix 1 of this document.

This chapter gives an overview of the current development of standards and standardization in training and related areas, such as learning and education, managed by formal standards bodies, thus covering formal standards as well as normative documents. It also includes an assessment which of the standards can be considered relevant for MYCAREVENT.

Standards in education have a long history. Education, learning and training usually take place in a formalized context, such as an academic institution, a professional training centre or even a kindergarten. Curricula are standardized forms of documenting what is to be learned by whom, in what duration of time and when in the overall learning process. Tests and exams are standardized to allow for the comparison of one student to another and also of one group of students to another. Text books are a standardized way of delivering the same contents to a large group of students in one format, and even the way of studying can be standardized to be uniform to a group of learners regardless of their individual disposition.

Learning itself is a very individual process that is specific to each learner. The standardized products or services exemplarily described above very often do not reflect this, because the results of learning are in the focus of formal learning processes, not learning as a process itself, and are expected to be uniform for the largest number of learners as possible.

When information technologies started to be used for learning, education and training, products and services for these areas turned into commodities that could be traded worldwide if a customer could be found. The products and services were not anymore limited to the original context, reflected by language, culture, learning styles, e.g., but apparently could be technically easily transmitted to other contexts, and could be made available at the same time at different points in the world to different users. Contents could be bought and sold on the market so that they need not be developed by a provider of products or services, saving resources.

The customers now were in a very different position from what they had been before: How could they compare different offers if the framework of the original development was unknown to them? Would a specific offer cover their needs even if it was developed in a context that was different? Would contents bought from one supplier match the one bought from another one?

At this point, the need for standards, developed in consensus involving all stakeholders in learning, education and training on the international level, became apparent and urging. As reaction, ISO/IEC JTC 1/SC 36 Information Technologies for Learning, Education and Training was founded in 2000 to develop international standards. On the European level, a workshop was established in 1999 within the

framework of the CEN Information Society Standardization System (CEN/ISSS)¹⁸ to develop CEN Workshop Agreements (CWA) on Learning Technologies (LT).

In Germany, a unique example on the national level of standards activities in the field, several groups were constituted, within a research project that was financed by the German Federal Ministry of Education and Research, developing Publicly Available Specifications (PAS), results similar to CWA and their function in standardization approaches for national application and as proposal for subsequent international standardization.

In the United States several standards relevant for learning technologies were adopted by ANSI¹⁹ after having been developed by IEEE²⁰. Being national results, they do have considerable impact on industry worldwide; therefore they are listed in this chapter.

Overall quality can be considered the ultimate goal for the development of standards and other normative documents on learning, education and training. Due to the specifics of information technologies, this includes aspects of communication, globalization and rationalization. Unique to standards being developed on the three levels stated above are user centricity and a process as well as product oriented approach towards quality. Even though the standards were at least in part developed for information technology applications, several can be used for any learning, education and training processes.

5.1.1 Publicly Available Specifications (PAS)

As mentioned above German research and development activities led to the development of several national PAS.

PAS are normative documents developed in consortia affiliated to recognized standards bodies. This form of developing a specification of normative character is used when formal standardization is not an option; this may be the case when e.g. the elaboration of contents cannot yet be based on broad participation of all stakeholders, cannot draw on widely accepted state-of-the-art, e.g. in new technologies, or if the development schedule of a formal standard would not do justice to a rapidly evolving technology, such as information technology.

DIN and BSI are actively engaged in the development of PAS in general as part of an overall standardization strategy; BSI so far has not developed PAS in the field of learning, education or training. PAS are also developed on the international level in collaboration with ISO; here again there are none relevant for the scope of MYCAREVENT.

The following table lists German PAS that are of interest to MYCAREVENT. PAS 1032-1 was proposed as first draft of an ISO standard and will be published shortly as ISO/IEC 19796-1 (refer to table A3 in the appendix).

¹⁸ CEN/ISSS was created in mid-1997 by CEN (European Committee for Standardization) as the focus for its ICT (Information and Communications Technologies) activities; CEN/ISSS provides market players with a comprehensive and integrated range of standardization services and products, in order to contribute to the success of the Information Society in Europe.

The CEN/ISSS LT Workshop as a matter of principle does not to duplicate work already being done elsewhere, but ensures that diverse European requirements are properly addressed by global initiatives. Specifications, agreements, guidelines or recommendations will be developed when no initiative addressing the identified requirements is in place yet or when global solutions developed elsewhere need to be localized to European requirements.

In the domain of e-Learning and e-Training, considerable efforts are invested under the IST programme as well as via many national or European initiatives. Projects producing specifications, architectures, reference models, etc., with the intention of attracting broader support and recognition of their work, can use the Workshop as a useful tool for reaching a European-wide consensus on their deliverables.

¹⁹ ANSI – American National Standards Institute

²⁰ IEEE – Institute of Electrical and Electronics Engineers

Table 8 – Relevant PAS

Number	Title	Date
PAS 1032-1	Learning , education and training focusing on e-learning - Part 1: Reference model for quality management and quality assurance - Planning, development, realization and evaluation of processes and offers in learning, education and training/ Note: CD-ROM	2004-02
PAS 1032-2	Learning, education and training focusing on e-learning - Part 2: Didactic objects model; Modelling and description of scenarios for learning, education and training / Note: CD- ROM	2004-05
PAS 1037	Requirements relating to quality management systems for business-related education and training establishments: QM stage model	2004-04
PAS 1045	Further education and professional training databases and information systems - Criteria of the contents and for data exchange formats	2004-08
PAS 1052	Competence requirements of trainers in learning, education and training with a focus on e-learning	2005-

5.1.2 Application of Standards relevant for Training in MYCAREVENT

The tables listed in appendix 1 offer a large range of standards that could be relevant for MYCAREVENT. As it is the nature of formal standards, all these documents are recommendations. The use of identified standards within MYCAREVENT will be based on the accordant need

The selection of a standard is usually guided by a comparison of the field where a standard is needed and the scope of available standards, the more specific the information available, the more precise the match.

The development of training for MYCAREVENT is at its very beginning. It has not yet been determined where and which standards should be applied, except that training should be developed in a standardized approach.

The objectives of WP 8 Training are defined as conceiving, developing and producing training material as well as the distribution to the various target groups.²¹ This allows the conclusion that standards for processes and products might be considered the most relevant and the most suitable.

PAS 1032-1 as well as ISO/IEC 19796-1 (currently available as FDIS) describe a process for learning, education and training when using information technology, although the described process is valid also if no IT is applied. According to the scopes of these documents, this model process is to be used as reference to assess quality of learning, education and training existing or being developed. It includes sub-processes and also lists exemplary goals, methods, results, actors, metrics/criteria, and standards that might be relevant for processes and sub-processes. This reference model can therefore be applied to the processes in training that are covered by the scope of MYCAREVENT, to continuously assess their quality when training is being developed, and also be consulted when it comes to selecting standards themselves.

Table 9 lists the processes and sub-processes defined in ISO/IEC FDIS 19796-1 and gives a description of the processes. These processes and sub-processes are assessed for their relevance for training in MYCAREVENT; standards proposed in ISO/IEC FDIS 19796-1 as well as those documented in this deliverable and evaluated for the purpose of developing training will be listed in the last column.

²¹ Refer to the Description of Work for WP 8, PM 13-30

Table 9 – Processes and Sub-processes according to ISO/IEC FDIS 19796-1

Process	Description	Sub-process(es)	Relevance of process for MYCAREVENT	Standards assessed as relevant for the purpose by WP 8
Needs Analysis	In the needs analysis, the needs, requirements, demands, and constraints of an educational project are identified and defined.	<ul style="list-style-type: none"> – Initiation – Stakeholders definition – Definition of objectives – Demand analysis 	high for all sub-processes	yes
Framework / Context Analysis	In this category, the framework and the context of an educational project are defined.	<ul style="list-style-type: none"> – Analysis of the external context: e.g. legal, economic, social context – Qualifications – Resources (Budget, Schedule) – Environment 	high for specific sub-processes	yes
Conception / Design	Design and Conception of an educational process	<ul style="list-style-type: none"> – Learning objectives – Concept of the contents – Didactic Concept / Methods – Roles – Organizational Concept – Technical Concept – Design Concept – Media concept – Communication concept – Test / Evaluation 	high for all sub-processes	yes
Development / Production	Description of the development and production of the educational process	<ul style="list-style-type: none"> – Content realization – Design realization – Technical realization – Media realization 	high for all sub-processes	yes
Implementation	Description of the implementation of technological components	<ul style="list-style-type: none"> – Testing – Change Control – Activation – Technical Environment – Organization – Service concept 	high for all sub-processes	yes
Learning Process	Description of learning process (note of ed.: this is the actual learning situation, in the classroom, at home, etc.)	<ul style="list-style-type: none"> – Administration – Learning activities – Support of learning activities – Review of Competency Level – Support of transfer 	partially	yes
Evaluation	Description of the evaluation methods, principles, and procedures	<ul style="list-style-type: none"> – Evaluation planning – Performance evaluation – Data Analysis 	partially	yes

The above table covers processes in learning, education and training. MYCAREVENT training will also produce training material and learning products that are software products. Therefore also the series of

standards ISO 9421 *Ergonomic requirements for office work with visual display terminals (VDTs)* was taken into account. However as “training with VDTs” will happen in the usual environment of the trainees, it is assumed that those standards are fulfilled.

Overall there are 213 criteria in the ISO 9241 series that are relevant for software based learning products. PAS 1032-1 is referencing them. In Table 10 the criteria specific to learning products are listed and categorized.²²

Table 10 – Criteria specific to learning products

Category	No of criteria	No of descriptive criteria
General Conditions	101	32
Technical Aspects	103	23
Data storage and Data processing	37	14
Functionalities	69	29
Theoretical Aspects	80	17
Encoding of Information	59	3
Special modes of presentation	31	0

5.2 Training methods

Based on the analysis results, this section summarizes the advantages and disadvantages of various training methods with respect to the MYCAREVENT project and suggests the types of media to be produced.

5.2.1 Traditional forms of training and learning

Lectures in classrooms, training, teaching, presenting, demonstrating and other activities are trainer-centric. This means, they put the trainer in the focus of attention and rely on his or her didactical competencies. A “good” trainer will be able to motivate his students. He / she might apply group work, exercises, case studies and a mix of means to foster communication and collaboration between students.

Therefore a traditional training often is the best choice with respect to training effectiveness – if trainer-resources are available. However often trainer resources are limited and / or expensive and the choice of “unmanned” training (e.g. e-learning) is chosen to account for a large geographical dispersion of trainees, to be able to disperse training quickly and to keep costs low. Additionally e-learning content can easily be reused with no or only minor adaptations.

WP8 aims at developing training for the users of MYCAREVENT, who will benefit from it during and after completion of the project. After the runtime of MYCAREVENT, training will be performed within the partners organizations and using the MYCAREVENT portal.

To summarize, MYCAREVENT training will demonstrate the validity of the training concepts and developed training products by offering WBT for self-study and by rolling-out live training in the test scenario and demonstrator sessions. In addition documents for self-study and training material for traditional training will be created.

²² The lists based on ISO/IEC CD 19796-1.

5.2.2 IT-supported forms of training and learning (“E-Learning”)

E-learning is a collective term for all types of electronically supported learning / teaching methods. It comprises “local” learning (using locally installed applications, learning programs, CD-ROMs, video, etc.) and net-based learning (being connected to a server via the internet or intranet).

It enables various forms of training: self-paced, asynchronous, synchronous by locally dispersed (“virtual classrooms”), tele-training, user-groups, chats, etc.

The advantages of e-learning and the reason for relying on it in the context of MYCAREVENT are based on the following benefits:

- Less trainer activity for presenting content is needed (however a hotline for technical questions or an expert for subject questions has to be available)
- A large, geographically dispersed user group can be reached in short time
- Anywhere, anytime, anyhow
- Higher retention of content through customized learning
- Online training might be less intimidating than trainer-led courses
- Improved collaboration and interactivity among students (if supported by newsgroups, etc.)²³
- Substantial cost savings due to elimination of travel expenses
- Partners can administrate and update the contents after the runtime of MYCAREVENT on their own²⁴

5.2.3 Blended Learning

Teachers and trainers have been using blended learning all the time while combining various facilitation methods, learning styles, resource formats, classroom activities, technology, etc. into one learning “event”.

*Blended Learning is learning that is facilitated by the effective combination of different modes of delivery, models of teaching and styles of learning, and founded on transparent communication amongst all parties involved with a course.*²⁵

The core of this citation is the “communication” aspect. Trainees / users need to exchange their learning experiences to consolidate their knowledge. It should also be possible to evaluate the benefit of communities and propose an appropriate procedure for MYCAREVENT.

Due to organizational restrictions (ref. below) MYCAREVENT learning communities will rely on the web and be in a newsgroup format. Details will be worked out in the course of the project.

5.3 Organisational context for training delivery

Most of the MYCAREVENT partners have an internal training organization or outsource training to external vendors. Typically they internally coordinate resources and take care of the offer (catalogue), the administration of participants and classes, the booking and billing, etc.

²³ To enable collaboration of course there must be a person coordinating and steering the activities. This can be done by the subject matter expert or a especially qualified “tele-trainer”, who knows about the specifics of e-learning

²⁴ This happens at own risk, unless there is a regulative board, that handles the version control (ref. chapter 6)

²⁵ <http://www.aheinze.me.uk/> (last visited on 16.11.2005)

The training classes themselves are delivered by internal and external trainers, who at the same time often are responsible for the content and teach, bespoke “out of the box” classes.

Some organizations also follow structured work flows in the training development and delivery process to ensure quality educational products and services.

However in the course of the project some partners will act as trainers to teach the use of the demonstrators.

For distributing WBT via the portal in a self-service mode a hotline is needed to support users. If MYCAREVENT sets up a hotline, it should also answer to training related questions and either be able to answer technical questions (e.g.: “I cannot access the WBT.”) or forward subject-related questions to subject matter experts (e.g.: “I do not understand the picture in the 2nd lesson, screen 15 of the WBT”).

From the actual stage of the project, the need to design of a business for performing and administrating the training after the period of MYCAREVENT is presumable, especially to ensure the sustainability of MYCAREVENT training.

5.4 IT equipment, technology

Standard IT-based training (WBT) runs on standard office PCs with an internet connection. No special equipment is needed for this. If virtual classrooms / web conferencing is going to be used, a headset and optional a web cam might be required. However meantime those belong to standard equipment as well.

In case, that WBT is requested to run on other devices like mobile phones, PDAs or handhelds , the design and GUI of the WBTs has to comply with the possibilities of those devices.

First experiences are being made by some e-learning vendors, e.g. Giunti Labs²⁶ who are doing research in the area of m-learning.

Details with respect to the training infrastructure will be comprised in DL 8.2 (“training concept”).

²⁶ <http://www.giuntilabs.com/> (last visited on 19.12.2005)

6 Conclusion, open items

WP 8 “training” in MYCAREVENT aims at developing training products and services to support potential users of the MYCAREVENT products and services.

This deliverable DL 8.1 summarises the results of the analysis phase and describes the needs and requirements of the user groups. It provides the basis for the training concept, design and delivery.

Three training relevant user groups have been identified: mechanics (OEM and independent), road side assistants (independent and OEM), drivers and call centre operators. Latter can be treated similarly to a large extend, as they are not requested to have in-depth technical knowledge.

Successful completion of the training will result in all users having a good understanding of MYCAREVENT, including how and why the project came about and how the project can benefit them.

Depending on the individual requirements (and their authentication) the users will be enabled

- to identify the services offerings of MYCAREVENT and be aware of the relevant functionalities
- to access the MYCAREVENT portal via various communication devices
- to navigate in the portal
- to query most efficiently and effectively
- to obtain relevant vehicle specific data and support information
- to be aware of the quality and value of the information
- to interpret and relate the information to their own work
- to understand and handle the appropriate workflows
- to understand the underlying technical and business concepts
- to work around the portal in case of a failure.

With respect to training methods and media a “blended learning” approach seems most suitable. This approach combines traditional training methods (e.g. classroom seminars) with e-learning (WBT, online support). As most of the users are used to working with computers this will not be a major challenge.

The training will be designed in a modular way. Such single parts can be exchanged, tailored, reused and reassembled to reach maximum user-centricity.

The evaluation of relevant standards for education, training and learning brought up two areas: The final draft international standard ISO/IEC 19796-1 will be applied to steer all training relevant processes and to ensure training products and services with best efficiency and effectiveness²⁷. LOM / SCORM meta data models will be followed during the design and production phase, when web based training will be programmed.

As per submission date of this document not all requirements could be fixed, the development of the modules will be based on the pilot demonstrations foreseen in project month 18 (March 2006). Later the training will be tailored and adopted to the final outcomes of MYCAREVENT.

²⁷ This document follows the first two process steps “needs analysis” and “framework / content analysis”

6.1 *Lop - List of open points*

Table 11 - LoP- List of open points

Issue	Description	Involved partners	Comment
Business case for training	Create business case for training mechanics in independent garages....	tbd	ESG discusses this with consortium
Service hotline / Content Support	Create business case for training support / hotline	tbd	ESG discusses this with consortium
Technical support	Must be in line with MYCAREVENT portal support	tbd	ESG discusses this with VU
Trainer resources	Which partners / persons will act as trainer during the demonstration sessions	tbd	ESG discusses this with consortium
Training facility	Appropriate location and training equipment (hardware). Necessary hardware and software has to be discusses, listed, prepared, ...	tbd	BMW, VW, RAC, ACASERVI SA might offer their training centres.
Update of training	A process for version control and change requests might be needed	tbd	ESG discusses this with consortium
Update this DL 8.1	Add additional findings of the project to the document	ESG	After pilot demonstrations (PM 18)

Appendix 1: Standards and MYCAREVENT training

A 1.1 Standards for MYCAREVENT Training

Standards in general support e.g. rationalization, quality management, communication or globalization. An example of a standard developed for rationalization is DIN 198, *Trimmed Sizes of Paper according to DIN 476; Examples for Application of the A Series*, which reduces the variety of sizes of writing and other papers so that the user, among other things, can confidently look for an envelope to dispatch his or her letter. Quality management is covered by a large number of standards, the most known ones ISO 9000 and ISO 9001²⁸. Communication standards are not only those that deal with communication technology, but also those that cover terminologies, metrology and other areas that have to do with the ways of exchanging and understanding information. Globalization is a rather unspecific purpose definition. It is to express that a standard serving globalization is one that supports barrier-free trade or makes a technology accessible worldwide.

Standards are created on the level that best suits the interests of the concerned parties; this can be on an industry, on a national, regional or on the global level. The level reflects the maturity of the standardized item from a market as well as from a technical or technological perspective.

Standards can be developed in several ways; some are developed in consensus and following rules which are specific to recognized standards bodies. Others might be developed using platforms of such organizations, but without a broad consensus; another category of standards are developed in consensus but outside of such organizations or might be recognized as "standard" because a large section of the market uses them without having had any share in the development or because no other standard is available. To be able to distinguish the different types, the consensus based standards developed by a recognized standards body are usually called formal standards; if developed within the structure of that body but without following all rules, such as broad participation, the results are often called normative documents. All other standards are most often called non-formal or proprietary standards.

The use of formal standards is in all cases voluntary; standards may be used, though, by authorities to regulate certain areas. Traditionally, regulation for training as a specific part of education and learning, is in the domain of legislative bodies. They determine curricula, certification, accreditation and other aspects within their respective setting of training in the national educational framework. Other areas of training, such as company training on how to handle new machines or how to deliver a new service, are usually not regulated by an authority; here standards might be applied to provide quality and transparency of the training or to compare e.g. different training offers using characteristics or criteria defined in a standard. The rules for application of proprietary standards are set by the respective developers.

The following chapter A 1.2 gives an overview of existing standards, listed according to their origin and chapter A.1.3 will explore on the approach on quality in standards for learning, education and training.

²⁸ ISO 9000, Quality management systems – Fundamentals and vocabulary. ISO 9001, Quality management and quality assurance

A 1.2 Overview of Existing Standards and Standards Activities

The search on existing standards was done using information from the three standards developing bodies ISO, CEN and DIN. Perinorm,²⁹ a database copyrighted to DIN, BSI and AFNOR³⁰, was used to find further data on published standards.

The overview is structured into three sections. The first section deals with international results and activities, the second one with European documents and the third one with national results.

A 1.2.1 International Results and Activities

As discussed before, international activities in standardization on learning, education and training circle around quality from a user perspective. Quality standards in general are on the other hand a very important focus of ISO, the International Organization for Standardization, the most known and relevant ones being the ISO 9000 family.³¹ They were developed for quality management systems in organizations providing products and thus might result in misinterpretation when used for educational processes. This led to the development of a guideline for the application of ISO 9001 in education. This International Workshop Agreement (IWA) is listed here for the completeness of the overview of standards in learning, education and training. Other ISO standards on quality management and management systems are not shown due to their different nature as explained above.

Table 12 - International results relevant for approaches on quality management systems in education

Number	Date	Title	Abstract
IWA 2	2003-11	Quality management systems - Guidelines for the application of ISO 9001:2000 in education / Note: Corrected and reprinted in 2004	International Workshop Agreement IWA 2:2003 provides guidelines for the application of ISO 9001:2000 in educational organizations providing educational products. These guidelines do not add to, change or modify the requirements of ISO 9001:2000, and are not intended for use in contracts for compliance assessments or for certification. Each clause of ISO 9001:2000 is included before the corresponding text of IWA 2:2003. The whole text of ISO 9004:2000 is also included to provide a complete vision of the continual performance improvement of organizations.

While IWA 2 interprets the ISO 9000 series for quality management systems in educational processes, the intensions of the already mentioned committee ISO/IEC JTC 1 SC 36 Information Technologies in Learning, Education and Training concentrate on the user perspective. User is not defined as being the learner only; a user can also be a customer that wants to buy education or training or a company that invests resources into the training of employees.

SC 36 has seven Working Groups (WG) that elaborate standards. The Terms of Reference of the SC itself as well as of the WG define the respective scope and areas of work. The following table lists the Terms of Reference for SC36 and its Working Groups.

²⁹ Perinorm provides information on the most important national standards and technical rules in Europe, as well as on the standards of international organizations such as ISO, IEC and ITU. It contains more than 130.000 international and European entries, some 170.000 from Germany (including technical rules, national regulations and directives), and many more from 15 European countries and relevant standards developing countries outside of Europe (e. g. Japan, United States). Perinorm enables a search of existing standards as well as their history. The search criteria can be customized, allowing such criteria as origin, key words or classification codes. The database is updated monthly.

³⁰ BSI – British Standards Institution; AFNOR – Association Française de Normalisation

³¹ A cluster of about 15 ISO standards on quality management and management systems

Table 13 - Terms of reference of ISO/IEC JTC 1/SC 36 and its Working Groups

Committee/ WG	Title	Scope	Homepage
SC 36	Information Technology for Learning, Education, and Training	Standardization in the field of information technologies for learning, education, and training to support individuals, groups, or organizations, and to enable interoperability and reusability of resources and tools. The SC shall not create standards or technical reports that define educational standards, cultural conventions, learning objectives, or specific learning content. In the area of work of this new SC, standards and technical reports would not duplicate work done by other ISO or IEC TCs, SCs, or WGs with respect to their component, specialty, or domain. Instead, when appropriate, normative or informative references to other standards shall be included. Examples include documents on specialty topics such as multimedia, web content, cultural adaptation, and security.	http://jtc1sc36.org/
SC36/WG1	Vocabulary	Terminology-related standardization for ISO/IEC JTC1 SC36, and its supporting technologies	http://vocabulary.jtc1sc36.org
SC36/WG2	Collaborative Technology	IT-related standardization for collaboration, and its supporting technologies.	http://collab-tech.jtc1sc36.org
SC36/WG3	Learner Information	IT-related standardization for information associated with or about learners, and its supporting technologies.	http://learner-info.jtc1sc36.org
SC36/WG4	Management and Delivery of Learning, Education, and Training	IT-related standardization for the management and delivery of learning, education, and training, and its supporting technologies.	http://mdlet.jtc1sc36.org
SC36/WG5	Quality Assurance and Descriptive Frameworks	To describe and characterize processes, components, and attributes related to the quality and architecture of IT-supported environments in the field of learning, education, and training.	http://frameworks.jtc1sc36.org .
SC36/WG6	International Standardized Profiles	no details available	http://isp.jtc1sc36.org/
SC36/WG7	Standards for learning, education, and training in the area of culture, language, and human-functioning activities	no details available	http://clhfa.jtc1sc36.org/

SC 36 is in terms of standardization activities a quite young committee; therefore most of its standards are still under development. Table 13 shows standards that have been published in their final version or are circulating for public enquiry, Table 14 projects under development in SC 36 and Table 15 further work item that have not been formalized for a specific ISO development stage, yet.

Table 14 - Published and circulating standards of ISO/IEC JTC 1/SC 36

Number	Title	Date	Stage	Abstract	WG
ISO/IEC 24703	Information technology -- Participant Identifiers	2004-05	published	The purpose of ISO/IEC 24703:2004 is to define the data type of identifiers that can be associated with participants in learning, education and training. Participants may be users, teachers, agents, groups, organizations or institutions	3
ISO/IEC FDIS 19796-1	Information technology - Learning, education and training - Quality management, assurance and metrics - Part 1: General approach	2005-06	Final draft International Standard		5
ISO/IEC DIS 23988	A code of practice for the use of information technology (IT) in the delivery of assessments	2005-02	Draft International Standard		
ISO/IEC FPDISP 24725-2	Information technology -- Learning, education and training -- Profiles of standards and specifications -- Part 2: Profile of Rights Expression Language (REL)	2005-05	DIS ballot initiated	The purpose of this document is to define a profile of the MPEG-21 REL specification that meets the needs of the e-learning space ³²	6

Table 15 - Projects of ISO/IEC JTC 1/SC 36

Number	Title	Date	Stage	Abstract	WG
ISO/IEC CD 2382-36	Information technology -- Vocabulary -- Part 36: Learning, education, and training	2004-11	30.60 ³³	This international standard is intended to facilitate international communication in information technology for learning, education, and training. It presents core terms and definitions of selected concepts relevant to the field of information technology for learning, education, and training and identifies relationships among the entries. The entries are incorporated through the Registration Authority in English language. Translations into other languages will be provided by the National Bodies as appropriate and incorporated through the Registration Authority. In order to facilitate their translation into other languages, the definitions are drafted so as to	1

³² scope taken from SC36/N0660, dated 2003-12-16

³³ Comments / voting summary circulated

Number	Title	Date	Stage	Abstract	WG
				avoid, as far as possible, any peculiarity attached to a language. ³⁴	
ISO/IEC CD 19778-1	Information technology -- Learning, Education and Training – Collaborative Technology – Collaborative Workplace – Part 1: Data Model	2004-11	30.99 ³⁵	This standard specifies a Data Model for the Collaborative Workplace. The Collaborative Workplace is a fundamental function of collaborative learning environments. Within the standard the following are defined <ul style="list-style-type: none"> • The Collaborative Workplace Data Model • The Collaborative Log Data Model This standard dose not specifies a security and privacy for data. ³⁶	2
ISO/IEC CD 19780	Information Technology -- Learning, Education and Training – Collaborative Technology -- Learner to Learner Interaction Scheme.	2005-01	30.20 ³⁷	This international standard provides a data model for metadata instances that describe properties of settings for collaborative learning purposes (we call such metadata instance 'collaborative learning metadata instance'). The properties are related to the objectives of the collaborative learning, to the expected outcome, to the evaluation of the outcome, to the types of groups, to the involved participants, their roles, and their groupings, to the required learning material and tools, and to the related learning duration, These metadata instances are intended for supporting the set-up of the specified collaborative learning settings. This International standard is applicable to online learning, education, training involving multiple learners learning in groups. Note: There is a risk of improper access and misuse of personal and private data facilitated by the use of the Collaborative Learning metadata instance data described in this standard. It is the responsibility of the implementer to ensure proper use of a Collaborative Learning metadata instance data. ³⁸	2
ISO/IEC CD 19781-1	Information technology -- Learning, education, and training -- Registry - - Part 1: Registry	2004-02	30.92 ³⁹	This Standard is the description of the ISO/IEC JTC1 SC36 Metadata Registry. This Part only specifies object, tables, registers, and partitions that may be registered. ⁴⁰	1
ISO/IEC CD 19781-2	Information technology -- Learning, education, and training -- Registry -	2004-02	30.20	This Standard is a procedure standard for maintenance of the ISO/IEC JTC1 SC36 Metadata Registry. This Part only specifies the processes and	1

³⁴ scope taken from SC36/N0444, dated 2003-02-23

³⁵ stage 30.99 – CD approved for registration as DIS

³⁶ scope taken from SC36/N0354, dated 2002-11-08

³⁷ stage 30.30 – CD study/ballot initiated

³⁸ scope taken from SC36/N0643, dated 2003-11-03

³⁹ stage 30.92 – CD referred back to Working Group

⁴⁰ scope taken from SC36/N0445, dated 2003-02-23

Number	Title	Date	Stage	Abstract	WG
	- Part 2: Registration authority process			procedures of the registration authority process. ⁴¹	
ISO/IEC CD 19786	Information Technology -- Learning, education and training - - Participant Preference Information	2004-02	30.60	<p>This International Standard specifies accommodation information associated with participants in learning, education, and training. Accommodation information might include items connected with culture, language, function, devices, cognitive preferences, capabilities or human computer interfaces.</p> <p>The purpose of this International Standard is to provide a data model and bindings for specific categories of participant information. The accommodation information may used, for example, to cause learning, education, and training systems to adapt to the needs of their users.</p> <p>This International Standard is intended for use in scenarios in which users' needs are accommodated in conjunction with systems, applications, software, hardware, etc. This International Standard does not describe any user interface or user interface design.</p> <p>NOTE There is a risk of improper access and misuse of personal and private data. It is the responsibility of the implementer to ensure proper use of this data. These issues are out of scope with respect to this International Standard.⁴²</p>	3
ISO/IEC CD 19787	Information Technology -- Learning, education and training -- Participant Performance Information	2004-02	30.60	<p>This International Standard specifies performance information associated with participants in learning, education, and training. Performance information is data that results from measuring a participant in past, present, and/or future activities. A participant may be an individual or a group. A participant may be human, machine, or both.</p> <p>The purpose of this International Standard is to provide a data model and bindings for specific categories of participant information. The performance information may used, for example, to cause learning, education, and training systems to personalize towards the pedagogic needs of their users.</p> <p>This International Standard is intended for use in scenarios in which participants' performance information is recorded for, say, automatic adaptation to skill and knowledge levels. This International Standard has broad applicability for recording human performance information.</p> <p>NOTE There is a risk of improper access and</p>	3

⁴¹ scope taken from SC36/N0446, dated 2003-02-23

⁴² scope taken from SC36/N0640, dated 2003-11-10

⁴³ scope taken from SC36/N0641, dated 2003-11-10

Number	Title	Date	Stage	Abstract	WG
				misuse of personal and private data. It is the responsibility of the implementer to ensure proper use of this data. These issues are out of scope with respect to this International Standard. ⁴³	
ISO/IEC WD 19788-1	Information technology -- Learning, education, and training -- Metadata for learning resources -- Part 1: Framework	2005-01	20.20 ⁴⁴	None available	4
ISO/IEC AWI 24726	Information technology -- Data model for specifying competencies, impairments and performance metrics	2004-03	20.20	None available	

Table 16 - Work items under development in ISO/IEC JTC 1/SC 36

Number	Title	Abstract	WG
ISO/IEC 19779-1	ITLET -- Collaborative technology -- Agent to agent communication	None available	2
ISO/IEC 19780-1	ITLET -- Collaborative technology -- Learner to learner interaction scheme	None available	2
ISO/IEC 24703-13	Information technology -- Participant identifiers	This Standard specifies the data type of participant identifiers in learning, education and training. Security and protection of personal data associated with the use of a participant identifier is not addressed in this standard. The naming policy, registration, and authentication of participant identifiers are outside the scope of this Standard. Note: There is a risk of improper access and misuse of personal and private data facilitated by the use of a participant identifier. It is the responsibility of the implementer to ensure proper use of a participant identifier. ⁴⁵	3
ISO/IEC 24726	ITLET -- Description of	This International Standard specifies performance information associated with participants in learning, education, and training. Performance	3

⁴⁴ stage 20.20 – Working draft (WD) study initiated

⁴⁵ scope taken from SC36/N0517, dated 2003-07-28

Number	Title	Abstract	WG
	performance metrics	<p>information is data that results from measuring a participant in past, present, and/or future activities. A participant may be an individual or a group. A participant may be human, machine, or both.</p> <p>The purpose of this International Standard is to provide a data model and bindings for specific categories of participant information. The performance information may used, for example, to cause learning, education, and training systems to personalize towards the pedagogic needs of their users.</p> <p>Note: There is a risk of improper access and misuse of personal and private data. It is the responsibility of the implementer to ensure proper use of this data. These issues are out of scope with respect to this International Standard.⁴⁶</p>	
--	ITLET -- Description of language capabilities	None available	3
ISO/IEC 19783	ITLET -- Management and delivery -- Framework for data models and binding	None available	4
ISO/IEC 19788-1	ITLET -- Metadata for Learning Resources -- Part 1: Framework	None available	4
--	ITLET -- Specification and use of extensions and profiles (technical report)	<p>This document presents common requirements, issues, hazards, and solutions concerning the medium-term and long-term development and adoption of data interchange standards. The development of a data interchange standard (or specification) is a complex task involving competing stakeholder needs. Some of these needs can be characterized by several dichotomies, such as: Codify only existing practice vs. develop a complete solution: Existing practice has the advantage that some implementations are feasible and immediately available (but widespread interoperability and implementation might not be confirmed). A complete solution may have better interoperability, feasibility, and adoption (but the complete solution may require significant time/effort to develop). A "partially-baked" specification now vs. a "fully-baked" specification N months/years from now: An immediate solution may satisfy some stakeholders immediate needs (but may be a poor choice for the medium-term and long-term). A fully developed solution will be more completed and coherent (but might miss a "window of opportunity"). More functionality vs. lower implementation cost: Some stakeholders want substantially more functionality (e.g., users), while other stakeholders want to minimize the development cost of the implementation (e.g., vendors). Single phase delivery vs. multiple phase delivery: The delivery of a single specification will be better integrated (but it would prohibit early delivery of stable or independent specification modules). The delivery of multiple specification modules will make components available when ready (but may causes revisions as later modules affect and update earlier-delivered specification modules). Backward compatibility vs. future capability: Prior systems and versions must be supported so that existing systems do not have to change (but old technologies, methodologies, and approaches may limit the ability to satisfy current or future needs). Solutions that</p>	4

⁴⁶ scope taken from [WG3/N0077](#), dated 2003-07-05

Number	Title	Abstract	WG
		address current and future needs may be the most appropriate (but may limit the interoperability with existing or legacy systems). General solution vs. application-specific solution: A general solution is widely applicable (but may require significant analysis, time, and effort to develop). An application-specific solution is closely matched to a particular application's needs (but may be less interoperable and may be less adaptable to current or future needs). Stakeholders continually address these issues, although it is can be a difficult balancing act — and the outcomes are likely to be different for each data interchange standard. This document is intended to be a useful reference for the stakeholders, such as users, vendors, and organizations. ⁴⁷	
--	ITLET -- Descriptive framework for learning, education, and training	This Proposed Standard Draft specifies a format for the characterization of environments for learning, education and training concerning the involved expertise and actors. ⁴⁸	5
	ITLET -- Profiles of standards and specifications	This standard profile will identify existing standards and specifications of learning technology platforms and their content. Several standards profiles will be developed for several operating scenarios, such as "browser platform", "workstation platform", "web media types". The standard profile will not specify the technical details, but limitations and enhancements to these standards and specifications. It is expected that these profiles will be updated and amended often enough to track current technology. ⁴⁹	6

Prior to the constitution of ISO/IEC JTC 1/ SC 36 some international standards and normative documents with reference to training in specific fields were developed. Examples are listed in Table 17. They have a limited scope and are not relevant for training in MYCAREVENT. Quite interestingly, they reflect the state-of-the-art of equipment for educational purposes of their time.

Table 17 - Examples of ISO standards developed by IEC with reference to training

Number	Title	Date	Abstract
IEC/TR 61258	Guidelines for the development and use of medical electrical equipment educational materials (Technical Report IEC 61258:)	1994	The document outlines a generic process for developing materials for education and training of operators of medical electrical equipment. It may be used by standards organizations, manufacturers, regulatory agencies, hospital managers, clinical engineers, physician and nurse educators, and others involved directly or indirectly in education and training of users/operators. In particular, manufacturers may find this process useful in preparing the necessary markings, accompanying documents and other educational materials which will provide necessary information to operators of medical electrical equipment and encourage them to apply safe and effective practices.

⁴⁷ scope taken from SC36/N0646, dated 2003-11-13

⁴⁸ scope taken from SC36/N0077, dated 2001-03-19

⁴⁹ scope taken from SC36/N0549, dated 2003-08-01

Number	Title	Date	Abstract
IEC 574-1	Audio-visual, video and television equipment and systems - Part 1: General	1978-08	Applies to audio-visual, video and television systems and to the parts of which they are composed or which are used as auxiliaries to such systems in the fields of education, training and similar applications. This standard is intended to facilitate the determination of the quality of audio-visual apparatus, the comparison of different types of apparatus and the determination of their proper application, by listing the characteristics which are useful for their specification. ⁵⁰
IEC 60574-21	Audiovisual video and television equipment and systems; part 21: video tape leader and trailer for education and training applications	1992	The document deals with minimum requirements for recording on the leader and trailer of video tapes for education and training applications.

A 1.2.2 Internationally Recognized Standards

The first internationally recognized standards for learning technologies were developed in consortia in the United States; industry became aware of these standards when products and services originating from other market participants began applying them, on one hand to demonstrate quality and on the other hand to prove that they able to follow specific requirements, since some of these standards were developed by large customers of learning technology products and service, such as the aviation industry.⁵¹

Proprietary standards were then developed by an ever larger number of consortia for their specific markets and their market participants, when it became obvious that products and, later on, services, for electronically supported learning entered a highly competitive market where cooperation among parts of the industry was necessary to survive. The standards developed therefore handle topics that are essential for distributing, sharing and combining elements of e-learning. Some of these standards have significant influence on the community, such as the Dublin Core for supporting a broad range of purposes and business models developed by the Dublin Core Metadata Initiative⁵², or SCORM (Sharable Content Object Reference Model) developed by the Advanced Distributed Learning Initiative (ADL) for content aggregation.⁵³ The standard on Learning Object Metadata (LOM) is the most recognized and known one; it was developed by IEEE, and recognized by ANSI as national American standard; a selection of important similar standards – proprietary development and subsequent recognition as national standard – in shown in Table 18. The American standard on LOM was suggested for adoption as ISO standard; due to some differences in the regulations for development and adoption procedure it has not been made into an ISO standard up to this point.

⁵⁰ Abstract taken from Danish data

⁵¹ AICC, the Aviation Industry CBT Committee was one of the first organizations developing minimum requirements

⁵² <http://dublincore.org/index.shtml> , last query 2005-10-25

⁵³ <http://www.adlnet.org/> , last query 2005-10-25

Table 18 - ANSI Standards in the field of Learning Technologies

Number	Title	Date	Abstract
ANSI/IEEE 1484.1	Standard for Learning Technology - Learning Technology Systems Architecture (LTSA)	2003	Specifies a high level architecture for information technology-supported learning, education, and training systems that describes the high-level system design and the components of these systems.
ANSI/IEEE 1484.11.1	Standard for Learning Technology - Data Model for Content Object Communication	2004	Describes a data model to support the interchange of agreed upon data elements and their values between a learning-related content object and a runtime service (RTS) used to support learning management.
ANSI/IEEE 1484.12.1	Standard for Learning Object Metadata	2002	Specifies a conceptual data schema that defines the structure of a metadata instance for a learning object. A learning object is defined as any entity, digital or non-digital, that may be used for learning, education, or training. A metadata instance

A 1.3 Normative Documents Developed in Europe

There are no European standards on training in general, although there are a large number of formal standards on training for specific skills, such as welding, refrigeration systems or scuba diving service providers. There are also no European standards on e-learning or related fields. This is due to the fact, that there is standardization work ongoing at ISO, which on agreement bars any developments on regional levels. Furthermore, standardization in the field should for economic and market related reasons be developed on the global scale.

The global perspective led to a discussion of quality from the different point of view: there is a divide between European and American approaches on how to learn and how to teach. These differences had existed before but only the immediate access to learning and teaching in other cultural frameworks that the worldwide web offers, brought this to the attention of standards developers, as it was the first time that this field was tackled.

It was at this point were activities on the European level developed. The forums for these activities are the workshops allocated to the already mentioned CEN/ISSS.

The first workshop agreement produced in the field of learning, education and training (CWA 14040, refer to table 19), mandated by the European Commission, identified gaps and needs in standardization from a European perspective. This study led to the development of a row of CWA that significantly contributed to the consolidation of industry expectations of standardization, resulting into a European perspective that has impact on ISO activities and significantly supports the European presentation and perspective of quality in learning on the international level.

Table A8 lists all CWA available as of today with relevance for learning, education and training.

Table 19 - Relevant CEN Workshop Agreements

Number	Title	Date	Abstract	WS
CWA 14040	A Standardization Work Program for "Learning and Training Technologies & Educational Multimedia Software"	2001-04	The present document proposes a number of activities related to the standardization of learning technologies. The European Commission Mandate in the field of Standardization of Learning Technologies identifies the need for a wide range of standards, from the content and platform levels to record keeping. (See Annex B). "Although comprehensive standards addressing all the facets of education and training are probably today out of reach, targeted standards could prove extremely valuable and might be the prerequisite for the effective implementation of new trans-European services for life-long learning". ⁵⁴	ISSS
CWA 14590	Description of Language Capabilities ⁵⁵	2002-10	The present document specifies the mandatory and optional data elements that constitute a language capability definition for incorporation into interpersonal communication tools and user models. The document is intended to satisfy the following objectives: <ul style="list-style-type: none"> – Provide a standardised data model for reusable language capability records that can be exchanged or reused in one or more systems; – Provide a controlled vocabulary to express capability types and levels; – Provide a data format and coding minimally required for the purpose of exchange between compliant applications. This document does not cover the quality or accuracy of the data itself. ⁵⁶	LT ⁵⁷
CWA 14643	Internationalization of the IEEE learning object metadata ⁵⁸	2003-01	The purpose of the internationalisation is to investigate and give guidelines about critical factors that could affect LOM to improve search, retrieval, and reuse of learning objects in a multicultural and multilingual scenario. Assuming the international version of LOM is the IEEE LTSC LOM document, its internationalisation starts with a study on the capability of each data element to support different localisations, both in terms of applicability to diverse languages (multilingualism) and to different cultural contexts (multiculturalism). After an analysis of all LOM elements, the PT has identified some of them which need to be improved to fit into multi-cultural and multi-lingual environments. Concrete proposals to solve these problems have been reported, at least as a possible starting point for a potential further elaboration of LOM. Particular attention has been given to the use of restricted vocabularies in element values: the user has to clearly understand such items that must be properly translated bearing in mind a validated mapping between the meanings in the different used languages. The relevance of this aspect has also been recognized during the IEEE LOM	Lt

⁵⁴ Abstract taken from Danish data

⁵⁵ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/cwa14590-00-2002-Oct.pdf> query 2005-10-13

⁵⁶ taken from scope

⁵⁷ CEN/WS LT Learning Technologies

⁵⁸ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/cwa14643-00-2003-Jan.pdf> query 2005-10-13

Number	Title	Date	Abstract	WS
			translation process which is being carried out within the CEN/ISSS Learning Technology Workshop. ⁵⁹	
CWA 14644	Quality Assurance Standards ⁶⁰	2003-01	<p>Process-oriented approaches for quality description and assurance during the lifecycle of a learning resource specify procedures as well as requirements for certain phases of the lifecycle of a learning resource. We analysed different approaches, identifying their scope, methodology, and usability. Although the PT QA focused on the analysis of design and development processes, several representative product-oriented approaches have been taken into account to provide an insight into this class of approaches. From this analysis a second focus emerged: Most approaches do not cover information for the learner. The transparency of learning resources means that the learner receives proper information about a resource to help decision making and to assure the provision of appropriate information. The report shows the variety and diversity of approaches in this field, presenting different approaches being used in the community. The approaches show a representative selection – it was neither the objective to cover every existing approach nor to determine the quality of the approaches. The first section deals with the terminology in the field of quality assurance. It covers definitions for basic concepts and methods, as well as the terms used in this report. The following chapters correspond to the phases of the project schedule:</p> <ul style="list-style-type: none"> – The section on classification schemes deals with approaches to classify and categorize approaches, methods, and concepts of quality assurance. – This classification scheme is the basis for the analysis phase in which existing approaches of QA are classified, analyzed, and evaluated. Additionally, current standards and approaches are analyzed concerning information for learners. – The last part deals with the synthesis which combines existing approaches and identifies requirements and potential approaches for QA in the field of learning technologies. – In the appendices, the terms of reference for the PT are listed. Best-practice approaches are identified and listed in the useful resources section. 	LT
CWA 14645	Availability of alternative language versions of a learning resource in IEEE LOM ⁶¹	2003-01	The present document establishes an application profile of the IEEE LTSC LOM, which supports the indication of the availability of alternative language versions of a learning resource. It gives guidance on standardization actions that permit the identification of alternative versions of resources, in different languages, as well as of the origin of the translation in metadata based on the IEEE LTSC LOM specification. ⁶²	LT
CWA 14871	Controlled vocabularies for	2003-10	This reports deals with controlled vocabularies for Learning Object Metadata. It gives a typology, impact analysis, and	DC ⁶⁵

⁵⁹ taken from scope

⁶⁰ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/cwa14644-00-2003-Jan.pdf> query 2005-10-13

⁶¹ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/cwa14645-00-2003-Jan.pdf> query 2005-10-13

⁶² taken from scope

Number	Title	Date	Abstract	WS
	learning object metadata: Typology, impact analysis, guidelines and a web based vocabularies registry ⁶³		guidelines. ... Learning Objects will only be reused if they can be easily located, evaluated, adapted and adopted by other people. Therefore it is crucial that Learning Objects are correctly classified, described, and indexed. ⁶⁴	
CWA 14926	Guidelines for the production of learner information standards and specifications ⁶⁶	2004-03	This CWA addresses the development of data models, protocols and bindings that are capable of expressing specific European requirements and concerns for learner information. The information specific to the expression of competencies is handled separately in the CWA learner competencies. The work shall serve as input to ISO/IEC JTC 1 SC 36, its Working Group "Learner Information" and its ad-hoc WG "Management and Delivery of Learning, Education, and Training (MDLET)". ⁶⁷	LT
CWA 14927	Recommendations on a model for expressing learner competencies ⁶⁸	2004-03	The development of data models, protocols and bindings that are capable of dealing with specific European requirements and concerns for expressing competencies that at the same time guarantees the secure handling of personal information in open and distributed learning environments. The information relative to the general learner profiles is handled separately in the CWA learner profiles. This work shall serve as input to ISO/IEC JTC 1 SC 36, its Working Group 3 "Participant Information" and WG 4 "Management and Delivery". ⁶⁹ The document deals with issues and recommendations concerning the application of the RDCEO specification for the creation of repositories of competency definitions, to be used within a European context. ⁷⁰	LT
CWA 15453	Harmonisation of vocabularies for eLearning ⁷¹	2005-11	The sharing of education related data and services makes them less costly, increases the supply, enhances the quality through incremental improvements, and allows a shorter time delivery. However, sharing of data, content, tools and services can only be achieved when clear technical agreements are made between all parties concerned. The more global this agreement is, the greater the benefit. On the other hand different communities have their own identity, language, and <i>vocabularies</i> which are important to express exactly what is meant. For instance the educational system in North America is differently structured than in Europe and it uses different terminology. Even in Europe great differences exist between different sectors. For example, a thesaurus applicable for vocational education is different from the one	LT

⁶³ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/cwa14871-00-2003-Oct.pdf> query 2005-10-13

⁶⁴ taken from the introduction to the specification

⁶⁵ CEN/WS MMI-DC Metadata for multimedia information - Dublin Core

⁶⁶ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/CWA14926-00-2004-Mar.pdf> query 2005-10-13

⁶⁷ taken from Dutch data

⁶⁸ <ftp://cenftp1.cenorm.be/PUBLIC/CWAs/e-Europe/WS-LT/CWA14927-00-2004-Mar.pdf> query 2005-10-13

⁶⁹ taken from the scope

⁷⁰ taken from chapter 5 of the document

⁷¹ http://www.ni.din.de/sixcms/media.php/1377/CWA15453.pdf?backend_call=true query 2005-11-25

Number	Title	Date	Abstract	WS
			for schools. These naturally grown differences make the application of standards more complex and often less effective. In addition <i>vocabularies</i> are created again and again sometimes with differences that are not essential but that inhibit interoperability. This report provides concepts, techniques and guidelines for the harmonisation of <i>vocabularies</i> . The term <i>vocabulary</i> is used in this report in the broad sense, referring to value lists, classifications, taxonomies, glossaries, dictionaries, ontology, and thesauri. ⁷²	
CWA 15454	A Simple Query Interface Specification for Learning Repositories ⁷³	2005-11	This paper presents an Application Program Interface (API) for querying learning objects repositories. Since one major design objective is to keep the specification simple and easy to implement, the interface is labelled Simple Query Interface (SQI). ⁷⁴	
CWA 15455	A European Model for Learner Competencies ⁷⁵	2005-11	The scope of this work is the development of data models, protocols and bindings that are capable of dealing with specific European requirements and concerns for expressing competencies, which guarantee the secure handling of personal information in open and distributed learning environments. The information relative to the general learner profiles is handled separately in the CWA learner profiles. This work shall serve as input to ISO/IEC JTC 1 SC 36, its Working Group 3 "Participant Information" and WG 4 "Management and Delivery". ⁷⁶	

⁷² Taken from the introduction to the CWA.

⁷³ http://www.ni.din.de/sixcms/media.php/1377/CWA15454.pdf?backend_call=true query 2005-11-25

⁷⁴ Taken from the introduction to the CWA.

⁷⁵ http://www.ni.din.de/sixcms/media.php/1377/CWA15455.pdf?backend_call=true query 2005-11-25

⁷⁶ Taken from the scope of the CWA.

Appendix 2: Acronyms

Abbreviation	Name
ADL	Advanced Distributed Learning
AFNOR	Association Française de Normalisation
AICC	Aviation Industry CBT Committee
AMD	Amendment
ANSI	American National Standards Institute
BER	Automotive Block Exemption Regulation
BSI	British Standards Institution
CBT	computer based training
CCO	Call Centre Operator
CD	Committee Draft
CEN	European Committee for Standardization
CWA	CEN Workshop Agreement
DC	Dublin Core
DIN	Deutsches Institut für Normung e. V.
DIS	Draft International Standard
DL	Deliverable
DRM	Digital Rights Management
EC	European Commission
ELMY	<u>E</u> - <u>L</u> earning for <u>MYCAREVENT</u>
FAQ	Frequently Asked Questions
FDIS	Final Draft International Standard
FPDISP	Final proposed Draft International Standardized Profile
GUI	Graphical User Interface
IACD	Interactive Circuit Diagram
IEC	International Electrotechnical Committee
IEEE	Institute of Electrical and Electronics Engineers
ISD	Instructional Systems Design
ISO	International Standard Organization
IST	Information Society Technology
IT	Information Technology
ITLET	Information Technology – Learning, Education and Training
IWA	International Workshop Agreement

Abbreviation	Name
JTC	Joint Technical Committee
LMS	Learning management system
LOM	Learning Object Metadata
LT	Learning Technology
LTSC	IEEE Learning Technology Standards Committee
MMRM	Multi Media Repair Manuals
MYCAREVENT	MobilitY and CollAboRative Work in European Vehicle Emergency NeTworks
OBD	On-Board Diagnostic
OEM	(Original Equipment) Manufacturer
PAS	Publicly Available Specification
PC	Personal Computer
PDA	personal digital assistant
PM	Project Month
SC	Sub-Committee
SCORM	Sharable Content Object Reference Model
tbd	To be defined
TC	Technical committee
TMS	Training management system
VDT	visual display terminal
WBT	web-based training
WG	Working Group
WP	Work Package

Appendix 3: References

DL 2.1 User Survey Report
 DL 1.2 General Exploitation Plan and Guidelines
 DL 5.3 Definition of Service, Workflow and Information World
 DL 9.2 Documentation Dissemination Strategy
 DL 9.4 Workplan and Guidelines for Demonstration Activities

WP 8 – Description of Work, PM 13-30

Meeting Minutes, 1st Review Meeting, Brussels, 15./16.12.2005 (to be issued)

Appendix 4: Training analysis questionnaire

1. General questions

- 1.1. What do you think when talking about “MYCAREVENT” and “training”?
What are your expectations regarding training in the context of MYCAREVENT?
- 1.2. Does your organisation plan to deliver training in the context of MYCAREVENT?
What might be the target groups? What might be the topics (new services, products ...)?

2. Training target groups (workshop mechanics (WM), roadside assistants (RA))

- 2.1. How will trainees “interact” with MYCAREVENT? What is the benefit of MYCAREVENT for trainees?
- 2.2. What could be the motivation of trainees to participate in MYCAREVENT training? Why should they attend the training?

3. Training objectives / training content

- 3.1. What have trainees to be trained for from a project perspective? What shall trainees be able to do when they complete the training?
- 3.2. What could trainees be taught when being confronted with your company's exploitation of MYCAREVENT knowledge?
- 3.3. What skills / knowledge / attitude / goals should be reached by MYCAREVENT training?

4. Training media / methodology

- 4.1. Regarding the overall IT perspective, the primary media probably will be web based training / online training.
Will additional face-to-face training be needed? Why?
- 4.2. What processes, applications or tools do you develop in your work packages that should be considered for training?
- 4.3. Do you know about work instructions, job aids, work place descriptions that could serve as an input to MYCAREVENT training? Which MYCAREVENT relevant textbooks, publications, etc. exist?
- 4.4. Shall student performance be measured? Shall data be fed back to a central database to evaluate training delivery and trainer / system performance?

5. Training framework

- 5.1. The delivery of training is planned to be supported by software applications (“learning management system”). Trainees may (shall?) learn on their own (self-study) and / or in virtual classrooms.
If trainers are needed: Will staff from your organisation teach?
- 5.2. Where will training take place (training centres, body shop, patrol car, office ...)?
- 5.3. Which standards, corporate (design) requirements, etc. must be followed? What are the quality standards for this training? Are there templates / procedures that must be followed?

6. Training Business Model

- 6.1. Will training potentially be transferred to other target groups? Which?
- 6.2. Will training programmes be offered free of cost to trainees (= funded by?) or will it be charged to the trainees?
- 6.3. Who has overall responsibility for training programmes? Who has the responsibility regarding the content?

7. Other

- 7.1. If you now think about “MYCAREVENT” and “training”, what do you want to add / comment?

---- END OF QUESTIONNAIRE ----