Project no. FP6-028038

PALETTE

Pedagogically sustained Adaptive LEarning Through the exploitation of Tacit and Explicit knowledge

Instrument: Integrated Project

Thematic Priority: Technology-enhanced learning

D.TRA.02 – Concept and design for PALETTE awareness learning sequences

Due date of deliverable: 30 July 2007
Actual submission date: 8th September 2007

Start date of project: 1 February 2006 Duration: 36 months

Organisation name of lead contractor for this deliverable: AESCRA-EM-LYON

Project co-funded by the European Commission within the Sixth Framework Programme		
Dissemination Level		
Nature : R	PUBLIC	**PU**

Keyword List: Awareness, learning resource, learning process, learning resource design, pedagogical scenario, learning assessment, learning assessment design, ISO norm for teaching and learning, SCORM, LOM

Responsible Partner: AESCRA - EM LYON

MODIFICATION CONTROL			
Version	Date	Status	Modifications made by
1.0	28-5-2007	Draft	Liliane Esnault
1.0		Draft	Christian Martin
1.0	28-06-07	Draft	LE-LVA-JK-CM (Lausanne WP8 meeting)
1.1	20-07-07	Draft	LE
1.2	23-07-07	Draft	JK-CM – MLW - LVA
1.3	31-07-07	Version for internal review	LE
1.4	31-08-07		Liliane Esnault
2.0	05-09-07	Final	LE – JK- RP-CM- AR- LVA

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Summary

This document presents a framework to develop and assess awareness learning resources and processes for PALETTE. The development of learning activities within PALETTE is necessary, due to the diversity of cultures and background among PALETTE researchers, to efficiently promote and implement the Participatory design philosophy, the corner stone of PALETTE Methodology. Moreover, the contents created within PALETTE are valuable learning resources that are also made available to external partners of the project as well as to the general public through PALETTE Web site. It is thus important to ensure a consistency of these learning resources with PALETTE philosophy, and to recognise learning principles. It is the aim of this deliverable to settle the grounds for such consistency.

Firstly, it explains why we now speak about "learning resources and processes" rather than "training". Secondly, the document presents the different categories of audiences, content and format addressed by the awareness learning resources and processes. It presents a definition of what awareness means within PALETTE learning context.

Thirdly, the document presents a coherent framework in order to design learning resources according to the PALETTE philosophy and methodological principles. This framework is derived from the findings of a previous European Project called Recre@sup. Evaluation is embedded within the

framework and thus designed in a coherent way. The framework enables the designers to take into account the different learning situations, format and audiences relevant within PALETTE context.

Finally, the document presents guidelines for producing and implementing the learning resources, according to the framework and, the relevant standards (ISO norms), and the recommendations of other WP of PALETTE (especially WP1, WP5 and WP6).

Acknowledgment of recommendations from First Annual Review

In order to take into account the recommendations of the First Annual Review, we propose a strategy for developing learning resources and processes within PALETTE according to the following principles:

- focus on learning;
- adapt learning activities and learning processes to different situations (delivery format, type of audience) starting from a common set of learning resources developed according to pedagogical principals compatible with the general philosophy and methodology of PALETTE: constructivist approach, participatory activities, boundary objects reifying "knowledge in construction";
- enable the homogenisation of the concerns of all possible audiences and mutualise the resources developed;
- build upon the richness of non-formal learning through participatory activities, and transform tacit knowledge into explicit reified learning resources, together with more formal contents issued from previous work or current state-of-the-art knowledge;
- develop learning resources and processes according to criteria similar to those required for other elements in PALETTE: sound research background, compliance to standards, usefulness, usability, accessibility, adaptability.

This is done accordingly to PALETTE orientations, in order to achieve the main goals of learning activities, e.g.:

- to foster and sustain the implementation of Participatory Design Methodology (PDM);
- to foster and sustain the development of Communities of Practice following the lines suggested by the scenarios developed with them;
- to foster and sustain the development of CoPs in general by disseminating and diffusing the "knowledge in construction" and the reified knowledge through learning resources available on-line from the PALETTE Web site.

Table of Content

1. Introduction

Purpose of the deliverable

This document presents a framework to develop and assess awareness learning resources and processes for PALETTE.

We now speak about "learning resources and processes" rather than "training". It seems more suitable within the context of CoPs development and knowledge management as they are intended in PALETTE to put the stress on learning - the processes through which learners acquire new knowledge, whatever the means – rather than training – activities that are more centred on the delivery process of information to potential learners. According to the literature about CoPs and to the findings about learning processes in CoPs (WP1 and WP5, and as expressed in scenarios, for example), the philosophy of PALETTE about learning is that it can occur through a wide set of activities and situations, only some of them being "training" situations.

Learning resources may be articulated into learning processes depending on the audience, the delivery format and the content of the resources included. It is thus important to understand the necessary coherence that must be installed when designing learning resources. This coherence is at several levels: an internal – pedagogical - coherence, between the content, the learners' needs, the learning activity required for the learner to acquire the new knowledge, etc.; and a systemic coherence between the resources and the context of PALETTE: the CoPs' needs and objectives, the partners' needs and objectives, the project philosophy, methodology and evaluation process.

Content of the deliverable

We decided to introduce a coherent framework in order to design learning resources according to the PALETTE philosophy and methodological principles. This framework is derived from the findings of a previous European Project called Recre@sup. Evaluation is embedded within the framework and thus designed in a coherent way. The framework enables the designers to take into account the different learning situations, format and audiences relevant within PALETTE context.

The design framework is accompanied by guidelines for producing and implementing the learning resources, according to the framework and, the relevant standards (ISO norms), and the recommendations of other WP of PALETTE (especially WP1, WP5 and WP6).

The method and tools developed for the design and implementation of awareness learning resources leads to the development of learning resources which may fruitfully be reused in different contexts: Institutions (development of learning modules in partners' institutions and programs), CoPs (use of learning resources to foster and sustain knowledge development within CoPs already involved with PALETTE of newcomers), non-PALETTE contexts (dissemination of learning resources through the learning platform and PALETTE website for example).

Relation with other deliverables and productions within PALETTE

This document builds upon the IP2 description of work for WP8.
It takes into account the recommendations and findings of WP1 deliverables D.PAR.01 and report on instrumentation methodology (draft); WP5 deliverable D.IMP.03; WP6 deliverable D.EVA.03 (draft).
It builds upon the principles outlined in D.TRA.01.

Deliverable Follow Up

This deliverable is presented according to the IP2 document. It will be updated on a regular basis with the development of learning resources, with a last version due in M30.

2. Awareness Learning Resources

2.1. Purpose

As was said in D.TRA.01, we have decided to shift the concern of WP8 from a training perspective to a learning perspective, according also to the way things were rephrased in the IP2 presentation of WP8, renaming the so-called "trainings" as "learning resources and processes". Thus we will first speak here about "awareness learning resources", not withstanding the delivery possibilities ("7" being more a reference to the mode of delivery). The awareness learning resources developed within PALETTE aim at developing the knowledge, skills, abilities and competencies of the different targeted audiences.

Vocabulary clarification

- **a learning resource** refers to a coherent "unit of learning": it comprises a learning objective, a content, a support for this content, a description of the resource and of its pedagogical scenario, and possible recommendations on how, when and for which audience this resource could be used within a learning process. The notion of learning resource being a recursive one, there might be different granularity for learning resources. A learning resource may as well be a book, part of a PALETTE deliverable, a set of Powerpoint slides delivered in a face-to-face session, an on-line sequence available through self training from a platform, for example. According to ANT, learning resources as developed in PALETTE are also boundary objects, as they reify knowledge either produced by one community for another (by "Ps" for "Ts" or vice versa), or from PALETTE towards the "rest of the world";

- **a learning activity** is a set of actions undertaken by a learner in order to process a learning resource and achieve its pedagogical goal;

- **a learning module**, or **sequence**, is the articulation of several learning resources and learning activities;

- **a learning process** is the articulation of several learning activities in a coherent way.

Qualification of "awareness" within PALETTE

The notion of awareness comes from human sciences and neurosciences and refers to the ability of beings to perceive and cognitively react to elements of their environment. Here we use "awareness" in the sense of developing knowledge about subjects or issues which may have an importance, a value, an impact on people's behaviour, activity, and efficiency.

The idea of awareness thus refers to the nature, level of content and purpose of the learning rather than the kind of audience (internal or external to the project). Classically, there are five levels the human learning process: (1) novice, (2) advanced beginners, (3) competent performer, (4) proficient performer, and (5) expert (Dreyfus and Dreyfus quoted in (Flyvberg 2001)). Awareness learning resources traditionally enable learners shifting from levels (1) or (2) to achieve reaching level (3). We

have to keep in mind that part of our audience might be "novice" in questions dealing with some content of PALETTE even if they may be experts in their own field of expertise.

2.2. Audience

The awareness learning processes address mainly two kinds of public: the members of Communities of Practice, existing or future, and participants in programmes within the partners' institutions. Nevertheless, as was said in the D.TRA.01, the awareness learning resources developed may also be successfully used for PALETTE members as well, or for external participants.

CoPs' members

For CoPs' members, the awareness learning resources deal primarily with three main aspects:

- the CoP level: enabling the reflexion of CoPs' members about the functioning of their community, the possibility of having new communities of practice emerge, the animation of the CoP, the integration of newcomers, etc.; being more aware about the knowledge reification and knowledge capitalization processes, and the formal and informal learning processes within the CoP; being able to promote the CoP kind of organisation among their institution, company or organisation, or in general life. The learning resources of this kind are merely based upon the knowledge about CoPs available in the literature and developed within the WP1.

- the services level: making the CoPs' members aware of the concept of services (Web-services and PALETTE services), the context of up-to-date standards (as presented in D.IMP.01); having the CoPs' member able to use the PALETTE services, understand how such services may help them achieve their goals within their communities, and promote the use of such services within their own context.

- the methodology level: having the CoPs' members aware of the capabilities of Participatory Design, so that they could be able to use it for further developments; having them understand the power and possibilities of Actor-Network Theory in innovation contexts like CoPs.

External participants

Most the awareness learning resources that already are or will be developed for CoPs' members use could fruitfully be integrated into either existing programs or newly developed sequences for the benefit of participants external to PALETTE (whether within partners institutions or even for a larger public).

Internal Participants

Though some learning resources might be developed specifically for external participants, most of the time, the contents of awareness trainings could be used for internal purposes as well. It is mostly the delivery process which may differ: for internal uses, learning resources are mainly delivered either face-to-face or as blended learning, whereas for CoPs' members the blended solution might probably be privileged, and for external public the self training could be the main channel of diffusion.

2.3. Content

The needs for developing contents come first from the findings identified within the different audiences and listed in D.TRA.01. The contents themselves come mainly from PALETTE findings and outcomes and from the distinctive expertises of PALETTE members.

For example, the tutorials linked to the use of software applications (services) are closely integrated to the products themselves (PALETTE outcome); they also present examples of situations of use derived from the PALETTE scenarios (PALETTE outcome), and they integrate the presentation of specific features specially devoted to CoPs situations and activities (PALETTE outcomes and specific expertise about Cops and tools). The learning resources more devoted to understanding Participatory Design implement knowledge coming both from previous expertise of PALETTE members and some findings of the implementation of Participatory Design within the PALETTE context.

Content issues:

The contents of the learning resources may be regrouped into four main themes. These themes represent the main threads of developments of PALETTE at the research level: general functioning of CoPs, learning processes in CoPs, methodology and development of services. We do not intend to cover exhaustively all the aspects mentioned below. The materials used for building learning resources are those made available by the different actors in the different WPs of the project; it may also happen that one particular module is related to more than one theme. Nevertheless, the classification is also interesting to help potential learners find their way on the web site.

- Issues about Communities of Practice:
    - general knowledge about CoPs: what is a CoP, different kinds of CoPs, activities, actors and roles in CoPs, the key elements in a CoP: practice, domain, identity building, knowledge reification, negotiation of meaning, learning, etc.
    - how to foster CoPs development: in which context and situation could it be interesting to start a CoP? How and why transforming a community of interest in a CoP? Moving from learners' communities towards CoPs, etc.
    - how to sustain, animate and develop a CoP: different stages in a CoP's life; specific roles and activities of the CoP's animator; how should the CoP interact and communicate with its environment; relations between the CoP and its surrounding organisation: questions of power and authority; etc.

  These contents come both from existing knowledge (previous research development, literature, key authors in the domain) and from PALETTE outcomes.

- Issues about learning processes in relation with CoPs:
    - what are the specific learning processes involved within a CoP and/or among CoPs members?
    - how to characterise the competencies dictionary which participates in the identity building of a CoP? how to develop competence assessment and specific learning resources in order to enable CoPs members to gain expertise in their domain?
    - to what extent do CoPs enable, foster or sustain learning processes and competences development? How to implement learning processes using existing CoPs?

- how to use CoPs and the reified knowledge produced to develop learning resources?
- how to train professionals with the perspective of being a CoP's member, developer and/or animator?
- etc.

These contents come mainly from distinctive PALETTE outcomes.

- Issues about Participatory Design and Actor-Network Theory
  - what is Participatory Design? For which purpose, in which context is it interesting to consider implanting a Participatory Design Methodology (PDM)? What are the key elements of PDM? What are the conditions for implementing successfully PDM? etc.
  - what is Actor-Network Theory (ANT)? Using ANT in innovation, change management, socio-technical perspectives; examples of successful uses of ANT in complex situations; etc.

These contents come both from existing knowledge (previous research development, literature, key authors in the domain) and from lessons learnt from the successful implementation of PDM and ANT in PALETTE.

- Issues about technical standards and architecture
  - what are the key technical current standards references? What is the impact of such standards on software development?
  - how to understand the concept of software architecture?
  - what are the key current types of architectures and standards? Why did PALETTE choose to stick to Open Source principles (for example)? What is the Open Source Community, what may be the interests for belonging to it?
  - how to develop software components according to a given set of standards and/or to a given architecture framework? What are the constraints? What are the rewards?
  - etc.

These contents come both from existing knowledge (standards, norms, communities of developers, etc.) reinterpreted in the perspective of PALETTE research and findings.

- Issues about tools, services, usability and their impacts on CoPs practice
  - clarification of concepts: tools, services, Web-services, PALETTE services, services repository, etc.
  - what does interoperability mean at the developers' level, at the users' level, at the integrators' level? What is the need for interoperable services?
  - clarification of concepts: usefulness, usability, accessibility, adaptability, etc.; how to take these concerns into account when developing and implementing services: the key role of PDM and ANT;
  - how can a set of interoperable, usable, useful and adaptable services sustain a CoP's development and enable a change in the practice of the CoP?
  - examples of situations based upon PALETTE Scenarios
  - tutorials on tools and services developed; these tutorials will show the "ordinary" user how to use the services features as self taught on-line demos.

These contents come mainly from distinctive PALETTE outcomes.

The modularity of the learning resources will enable these contents to be declined and adapted to the different audiences, to the different formats of delivery and to the different levels of awareness of participants (existing and desired).

Sources of Content

The contents for designing learning resources come both from PALETTE internal knowledge and findings and from knowledge existing before or outside PALETTE (literature, related research fields, related projects, etc.).

As for already existing knowledge, it could nevertheless be interesting that PALETTE could provide with the reification "with a PALETTE view" of such elements. Contents such as the literature on CoPs, or on technical standards might be well known from a part of PALETTE population, but not so well from other parts. CoPs themselves are not always aware of what a CoP is (they often even do not call themselves a community of practice), and how to develop it and animate it, though a lot of information about this can be found in literature. All the notions related to the Open Source World and Web 2.0 standards might as well not be very understandable for non-technical people, though a huge amount of information is available on the Internet; CoPs members, for example, are not always aware of the possibilities offered by the Open Source world. Thus, it is important that PALETTE learning resources developers do not ignore this field of content and be able to propose learning resources in these fields. Such learning resources would probably belong to a more formal learning kind (existing knowledge reified in an accessible way so that a more large audience can get better skilled in the domain, though not at a specialist level).

When it comes to PALETTE findings, the learning mode is most frequently of the non-formal or semi-formal kind. People learn when sharing concerns and experience, participating in activities, confronting their conceptual views, their background "cultures". The richness of the diversity within PALETTE (as quoted in D.PAR.1 for justification of the use of ANT points of view and also in D.EVA.03) is a key opportunity for learning, even if there is no explicit training situation related. But, after experiencing and sharing, PALETTE members should be able to reify, at least to some extent, the new knowledge built in these relationships and blackbox it (as in ANT vocabulary) into learning resources which will be available for further uses or for external dissemination.

WP8 is not the content provider for learning resources. It only provides with a pedagogical framework, guidelines for production and implementation, and recommendations for producing as many on-line learning resources as possible. It can also help content provider to scenarise their learning resources accordingly to PALETTE needs, objectives, methods and tools.

2.4. Format

The term "format" refers to the way the learning resources may be delivered to or accessed by participants. Here we consider the following situations: face-to-face, on-line learning (self learning and/or tutored) and blended learning (a mix of face-to-face and on-line learning activities).

Face-to-face learning activities are used mostly for internal participants training, for example in Summer Schools or in specific training days (such as the mediators' meeting in Liège in March 2007). Some learning supports, like the situated representation and activity simulation used in the mediators' training about scenario playing and development in Liège, require face-to-face activities, because of the materiality of the resources used. In other cases, it is the opportunity of gathering people, like in

CoP's group meeting, which may enable the delivery of face-to-face learning activities. Group work is always simpler and easier in such a context, though collaboration is possible through on-line devices and activities.

On-line learning sustains the diffusion of learning resources in a wider area than the project context. As far as learning resources comply with the standards of the domain (e.g. SCORM and LOM), they can be exploited by any kind of learner in any kind of situation. In PALETTE, the on-line resources will be available from the PALETTE website through an Open Source LMS platform provided by CRP Henri Tudor (cf. 4.2.3).

On-line learning can be self administrated (self training) or tutored on line. Both types of activities may alternate in order to facilitate learning and sustain learners' motivation. Each learning capsule corresponds to an average time of 20-30 minutes of learning. A learning capsule is built of a given number of reusable, standard-interfaced, learning objects.

Blended learning associates face-to-face situations (such as a first and a last on-site seminar or session) and on-line activities.

We will strive to develop e-learning modules, comprising pedagogical material, individual and collaborative work, and tutoring. These modules are designed in such a way that they may also be intertwined with face-to-face sessions (blended learning), or even used as face-to-face delivery material.

2.5 ISO/CEI 19796-1: 2005

When services are based on standards, they can then be more easily reusable in other contexts. Moreover, standards are linked to the notion of quality. Therefore, we wanted to base ourselves on a standard for the training engineering process followed to design trainings in PALETTE.

ISO/CEI 19796 is an international standard on Information Technology – Learning, Education and Training – Quality Management, Assurance and Metrics.

This standard is divided in four parts:
Part 1: General approach
Part 2: Harmonized Quality Model
Part 3: Reference Methods and Metrics
Part 4: Best practice and implementation guide

Part 1 is the only one that has already been published. It provides a common framework to describe, specify and understand critical properties, characteristics and metrics of quality. This standardization work harmonizes existing concepts, specifications, terms, and definitions for learning, education and training.

ISO/IEC 19796-1 describes the processes to follow when designing a training, and more precisely a training that uses ICT. The processes are the following:

Needs analysis: Identification and description of requirements, demands, and constraints of an educational project.

Framework[1] analysis: Identification of the framework and the context of an educational process.

Conception / Design: Conception and design of an educational process.

Development / Production: Realization of concepts.

Implementation: Description of the implementation and testing of technological components.

Learning Process: Realization and use of the learning process.

Evaluation / Optimization: Description of the learning system evaluation methods, principles, and procedures.

This standard is a framework for the training engineering procedure. It gives us the possibility to make sure we are following the right processes, but there is no obligation to use a given tool or to follow precise activities. There is no certification process related to this standard. Everyone is free to implement the standard in its own way.

In D.TRA.01 and D.TRA.02, the way those processes are used in PALETTE is described, as you can see below:

Needs analysis	D.TRA.01
Framework analysis	D.TRA.01
Conception / Design	Point 3 of D.TRA.02
Development / Production	Point 4 of D.TRA.02
Implementation	Point 5 of D.TRA.02
Learning Process	Point 3 of D.TRA.02
Evaluation / Optimization	Point 3.3 of D.TRA.02

ISO/CEI 19796-1 provides a reference framework for PALETTE trainings, and we are now going to see how the design process, which is one of the most important, is implemented in PALETTE.

[1] "Framework", in this ISO standard, refers to the general environment and is not to be confused with the pedagogical framework developed in part 3 of this document.

3. Learning modules design

3.1. Design process

Learning resources must be developed according to principles, concepts and methods which ensure their compliancy to learning needs and learning situations, their efficiency, the consistency of the pedagogical scenario with the learning objectives and the audience.

In a project like PALETTE, where learning is a key issue, we could not have developed learning resources and implemented learning activities without the support of a sound framework and method for designing pedagogical scenarios. The model used here was not developed within PALETTE, but within a previous European project called Recre@sup (Recre@sup, 2002), by a group of researchers including Amaury Daele and Liliane Esnault (Esnault and Daele, 2003; Brassard, Daele and Esnault, 2007a and b). The framework is based upon a pre-existing model developed by Reeves (Reeves, 1996) and expanded to better integrate the practical elements coming from the observation of a number real learning-teaching situations during the Recre@sup project, thus aiming at theorizing existing practices.

3.2. Pedagogical scenario framework

A pedagogical scenario is the global process through which a learning sequence (a learning activity or a set of learning activities) will take place; it is time-scaled, contextualised and its output is the learning sequence. As for a movie, it is made of several small steps. The scenario comprises the learning objectives, a schedule of the learning activities, some resources and tools, the description of participants' tasks, the assessment terms, etc.

Thus, designing a pedagogical scenario starts with answering a series of pedagogical questions related to the increasing complexity of the trainers and learners tasks due to the use of technologies. It means making choices among a set of possibilities, through a reflexive framework, by taking a stand regarding the different pedagogical questions.

With help of the framework, the pedagogical design team is able to draw a kind of "profile" (see Fig.1) of a course (or a lecture, or any kind of pedagogical activity), before, during and after the unrolling of the pedagogical process and to evaluate the consistency of this profile. It provides a support for feedback and improvements. It may also evidence a gap between the desires of the pedagogical team and the constraints or limits due to the environment, the availability of resources, the organizational system, or the characteristics of the learning audience, among others.

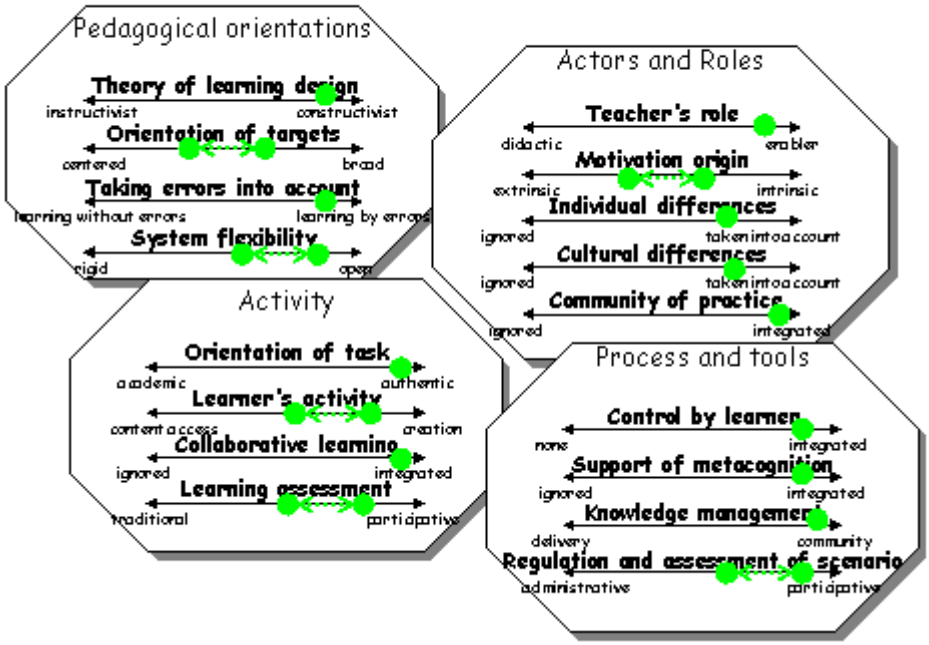

Fig.1 – The design framework – Example of a course profile

Each one of the 17 dimensions refers to a specific aspect of the pedagogical scenario. A dimension is a continuum of possible positions or standpoints. For a given scenario, some dimensions might be more relevant or important than others. It is never a question of taking side with one or the other pole, but to position the answer in the continuum scale, and also to make an in-depth reflection upon the reasons of such a position, according to the objectives, the context and the actors' representations and styles. Then it has to be translated within the scenario.

It is important to notice that the content of a course is deeply dependant of the use of technology based tools and environments. The pedagogy is influenced by the technology. On the other hand, the need for pedagogical requirements may also influence the kind of technological environment which is required for a course. For example, if a learning sequence needs participants to interact with an existing community of practice, a collaborative communication tool, such as SweetWiki, should be provided in order to enable this pedagogical sequence to unroll appropriately. Or if a sequence requires participants to creatively debate about a question, an argumentation tool like CoPe_It! could be of great value. Thus, technology is not represented as a specific dimension; it is rather embedded in every dimension of the framework and the availability or non availability of appropriate technology has to be taken into account in order to position the sequence along each dimension.

We give here briefly the extension of the 17 dimensions, with examples of suggested application within the range of PALETTE awareness learning sequences. Other examples can be found in APPENDIX 1.

Pedagogical orientations

These dimensions question the general orientations, which will frame all the others dimensions of the design process. The problem is not to refer explicitly to one or the other extreme theories or practices, but to ask questions about the desired and actual background of the scenario, in-between the extremes.

It enables also the pedagogical team to express its desires, its choices within the constraints of the Institutional environment and of the pedagogical system context.

For PALETTE awareness learning sequences, we may assume that

- the general orientation is merely on the constructivist side (participants build their own knowledge from learning resources and authentic activities);
- the target is both centred on the content, but relative to the larger context of PALETTE concerns (for example, a learning sequence about a service refers to a scenario of use which replaces the service into the orientation of its use within communities of practice);
- the learning by errors process is allowed, for example by exchanging experience and practice among participants including lessons learnt from mistakes or poorly managed situations;
- there is a rather large flexibility of the scenario, meaning that it may be adapted to different contexts, different learning situations, different kinds of learners and even different delivery systems as presented in this deliverable.

These orientations are consistent with the orientations of Participatory Design Methodology (PDM) as developed in WP1 (Instrumentation Methodology Report), and also with the considerations expressed in WP6 (D.EVA.03) regarding the learning needs. In effect, the kind of pedagogical orientation advised here enables designing learning resources that either reify "knowledge in use" and "knowledge in construction" or simply support semi-formal or even un-formal learning (which was specially a place where "training" was not really appropriate).

Actors and roles

These dimensions help to represent the actors involved in the pedagogical process, with their feelings and beliefs, and how they will interact all along the pedagogical process. Knowing the origin of motivation of the learners as well as their individuality may allow teachers to develop given types of scenarios, where they will act as facilitators, by instance. Knowing that learners belong to professional systems that share some characteristics may enable the building a learning community strongly embedded in a community of practice.

For PALETTE awareness learning sequences, we may advise that:

- the role of trainers are mostly of the enabling type, because neither the "philosophy of learning" among PALETTE members nor the general orientation of the knowledge included in these sequences really "fit" with a didactic approach;
- the origin of motivation should be found in the context of learning and also in the content of the learning resources, because both carry the distinctive innovative aspects of the learning resources designed in PALETTE;
- it is strongly recommended to include in the pedagogical sequences and in the learning resource to build upon individual and cultural differences, which emphasise the richness and diversity of situations in communities of practice, and naturally the link with communities of practice is the key feature of PALETTE learning.

Activity

These dimensions address the building and shaping of the pedagogical process in itself, the steps, the activities, the learning assessments, and also the "atmosphere" which will prevail all along the learning process (more or less participative, more or less collaborative, more or less opened to creativity, etc.).

For PALETTE awareness learning sequences, we may consider that:

- the learning activities will be mostly oriented towards authentic and creative activities (meaning "real-world activities"); for example, for learning sequences about how a CoP functions, learners will be able to build upon information coming from the interviews of CoPs members, and

interaction with CoPs mediators, or possibly to experience within their own CoP; or for learning resources about services, learners will be able to use the services for their own activities;
- collaborative learning is the usual way learning takes place in the learning sequences because of the nature of the content of these learning sequences (CoPs, collaborative tools and services);
- the assessment of learners is not a question of exam and grading, but more of capability to apply knowledge in the real world activities; for example for PALETTE members the success of the learning about Participatory Design is "measured" by the ability of people to achieve the A/B/C teams goals; or, for CoPs members, the success of the learning about how people learn in CoPs could be measured –as an example - by the increase of competence level of the CoPs members; this aspect of learning assessment will be discussed in the chapter about assessment further in this deliverable.

Learning activities are also a key moment to develop a common approach to knowledge and culture. Thus, learning activities may be usefully considered as participative activities in the sense of PDM as developed in WP1.

Process and tools

These dimensions concern something like the meta-pedagogical process, enabling the reflection upon both the scenario and its design. They also provide the first elements in a reflexive and iterative process for the team to re-questions itself about the consistence of all other dimensions.

Palette awareness learning sequences are intended to put learners in a reflexive and creative state-of-mind. These sequences do not aim at providing already made "answers" to academic "questions", but to enable participants draw their own observations, reflections, and lessons from the confrontation with others' situations and knowledge. Thus:
- the learners have a large control upon the unrolling of the learning process; even if some learning sequences might be constrained by the necessity of face-to-face delivery, most of the contents will be available on-line for further use;
- the learning resources will have to strongly support metacognitive elements, in order to have participants build their own "answers" for coping with their own practical situations and context;
- the management of knowledge is obviously more of the community type; again here the knowledge is build within the learning process and learners are each others' teachers as well;
- the pedagogical scenario is flexible and may evolve both under learners' contexts and constraints (through the use of self administrated on-line sequences for example), and by direct advisement or expression of participants concerns, remarks and critiques, which will be taken into account to improve the scenario.

The overall objective of the use of this framework is to ensure coherence between the content, the audience, the learning objective and the unrolling of the learning sequence on one side, and with the orientations and philosophy of PALETTE on the other side.

The next paragraph is emphasizing the way assessment is taken into account in respect with the pedagogical design framework and the nature of awareness learning in PALETTE.

3.3. Learning Assessment Design

Assessment is strongly embedded within the pedagogical scenario. It is not something that is designed out of the pedagogical process, or added independently of the characteristics of the pedagogical scenario.

The general assessment framework, which is recommended for designing learning resources, is based on the well-known Kirkpatrick's model (Kirkpatrick 1994) (see Fig.2).

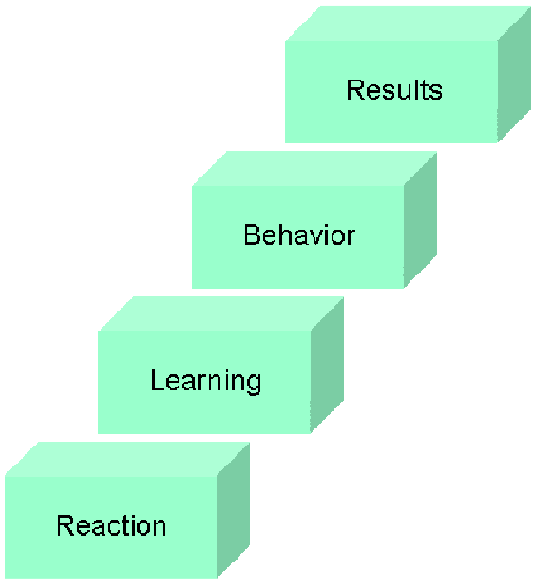

Fig.2 – Kirkpatrick's Model for learning evaluation

Kirkpatrick model features four level of assessment: Reaction, Learning, Behaviour and Results

Reaction level deals with participants' immediate satisfaction level at the end of the learning activity (sequence, course or program).
For face-to-face and/or blended delivery process, the participants are asked to fill an evaluation sheet, which is generated from an evaluation template (see APPENDIX 3). The evaluation template enables the module designer to choose among a pre-selected list of items which ones are relevant for this module. The participant evaluation is expressed in terms of a five levels Likert scale. The evaluation sheets are generated automatically (as for the description files in D.PAR.01).

For pure on-line training, an on-line evaluation sheet might be available with the module content. Nevertheless, one must be careful with i) granularity aspects: the evaluation sheet should be attached to a given "module", course or program, and not to every detailed learning objects or learning sequences, because an overall satisfaction expression sheet is not relevant at this detailed level, and ii) "rehearsal" aspects: an on-line module can be taken as often as the participants needs it, fully or partially, and in the participants own conditions and context; thus the satisfaction measured can only deal with the consistency between content, pedagogical scenario – as it may be viewed by the participant – and pedagogical objectives; all other items (like venue or lecturer are irrelevant). If the on-line activity is tutored, then evaluation of the tutoring can be added.

Learning level deals with the evaluation of what participants have learnt at the end of the learning module. This is what is measured through participants' assessment (quizzes, QCMs, exams, etc.). Such assessment should clearly rely upon defining and making explicit the learning objectives, the level of expectations (competences to be acquired, at least which level is expected according to the Dreyfus scale, for example), the scheduling of the assessment (due date, are there several possible attempts for on-line assessment or only one, is there a limited time to fill the quiz, etc.), the assessment process (individual, collective, written, on-line, oral, etc.), the nature of the work required (number of pages, for example), the grading process (how many points for each question, amount of points required to pass, or is it only a pass or fail process, etc.), the ethical issues (amount of work which has to be personal within a group work for example, issues about plagiarism, etc.).

For the awareness trainings within PALETTE range, most of the time this assessment level will not be relevant, because the awareness trainings are not embedded in graded courses or programs. Nevertheless some self-evaluation exercises may be fruitfully included in the learning module, in order for the participant to be able to evaluate her own progression, or to be able to discuss with the trainers or tutor about misunderstandings or pending questions.

Behaviour level deals with issues regarding the impact of the learning process at the workplace level: to what extent does the participant's work benefit from the learning? Such an evaluation can only result from a mid term observation of the participant at work place. It can be done after a period of several weeks (or even months). The improvement can be self evaluated by the participant, or assessed by a third party (participant's manager, HR responsible, colleagues, etc.). It is generally done through questionnaire filling, or by interviewing the relevant persons.

Results level deals with the impact of the learning at the organisation's level: how does the training impact the organisation, to what extent does it improve the organisation's efficiency, or general quality, or what kind of value does the learning create for the organisation. This level is related to mid to long range observation at a rather global (global regarding the organisation) level. It is assessed by a responsible person (a manager, a department head, etc.), based upon quantitative and qualitative indicators measurement.

It would be a too rapid thought to think that these last two levels may not apply in the context of PALETTE awareness learning sequences. For example: imagine a set of awareness learning sequences which enable the members of a given CoP to better understand what their CoP is, how it could better function and how such and such kind of services could help them sustain their practice or even change it for a better one. Then it could be interesting to go through a "survey" to better understand what has been changed at the participants' level regarding what and how they are doing within the CoP (behaviour level) and what have been the impacts at the CoP level after a while (results level). The problem is that measurement (whether qualitative or quantitative) of such improvements might not be available within PALETTE life cycle.

The designer(s) of the pedagogical scenario will have to precise (last dimension in the "Activity" group and last dimension the "Process and Tools" group) which levels of evaluation are addressed within the pedagogical scenario, and what will be the evaluation modalities for each level.

3.4. Implementation of the design process

We assume that the framework presented here might be a powerful scaffolding tool to enable designing appropriate learning resources and learning sequences in order to fulfil the needs for awareness learning in the PALETTE context.

It is not intended to constraining designers into a straight process of design, but, on the opposite, it aims at supporting a reflexive process and suggesting a collaborative way of designing learning sequences, while reinforcing the exchange, communication and collaboration between the designers, between the designers and the potential learners, between the designers and the researchers, in the continuation of the Participatory Design philosophy of PALETTE.

We suggest that designers of learning sequences may accompany their materials with a sheet describing how they used the design framework, how it supported and enabled their work, and what is expected from the learning sequence. This is the objective of the Scenario Description Sheet presented in APPENDIX 2 (prototype). This material is both oriented towards research targets, towards learning

sequence organisers and towards learners themselves. It enables learning resource designers clarify the orientation, purposes and means of their learning resources. Thus this may help program designers, or training managers, for example, to implement ad-hoc learning sequences for given audiences. It may also help learners find their way among the different learning resources.

4. Production process

4.1. Face to face trainings

The template accompanying the production of training presentations is downloadable on BSCW at the following address PALETTE / Workpackages / WP8 - Training Activities / Learning Resources.

At the same location, there is also a document proposing best practices on the following aspects: structure of a training presentation, slide ergonomics, do's and don'ts, to help trainers to produce their training documents.

4.2. Online trainings

4.2.1. Standards

The learning capsules are designed and developed according to the current state of standardization in the area (SCORM), thus being possibly included in the most current learning environments.

Thus, the contents must be implemented in other open source platforms such as Moodle, which may be used for testing purposes, but the learning objects must be possibly implemented on any kind of standard open source learning platform.

In order to take full benefit of the recent development of the Web 2.0, the course designers and developers are invited to include facilities enabling self appropriation, customization, community building, personalized content management and collaborative space building from the part of participants.

Learning capsule designers are encouraged to use PALETTE Tools to design, develop, and implement the learning capsules and learning content.

4.2.2. Types of tools suitable to produce the learning resources

Learning contents are made of different kind of learning resources, such as presentations, documents, links, videos, animated documents, exercises, case studies, filed studies, hands-on activities, etc. Consequently, different kinds of tools exist to create those contents.
We propose below a list of open source and proprietary tools that can be used to produce training contents (the list is not exhaustive).

4.2.2.1. Tools to create pedagogical contents

- **HTML editors**
    - **Amaya**

Amaya is one of the services developed in PALETTE. It is an open source Web editor. More information at the following address http://www.w3.org/Amaya/

- **Nvu**

Nvu is a WYSIWIG[2] HTML editor. It is open source and free, and can be downloaded at the following address http://nvu.com/

- **Dreamweaver**

Dreamweaver is an HTML editor published by Adobe. You need to buy the licence. More information at the following address http://www.adobe.com/fr/products/dreamweaver/

- **Powerpoint presentations mediatisation**

- **LimSee 3**

LimSee 3 is one of the services developed in PALETTE. It is an authoring tool for multimedia presentations. You can download it at the following address http://opera.inrialpes.fr/LimSee.html

- **Articulate Presenter**

Articulate is a tool that gives the possibility to add narration and interactivity to standard Powerpoint presentations. You need to buy the licence. More information at the following address http://www.articulate.com/

- **Interactive demonstrations**

- **Wink**

Wink is a free tutorial and presentation creation software, primarily aimed at creating tutorials on how to use software. Wink can be downloaded at the following address http://www.debugmode.com/wink/

- **Captivate**

Captivate is a software enabling to create simulations and software demonstrations. It is published by Adobe, and you need to pay for the licence. More information at the following address http://www.adobe.com/products/captivate/

- **Authoring tools**

- **Amaya**

(See above)

- **MOS Solo**

MOS Solo is a SCORM compliant authoring tool edited by MindOnSite. MOS Solo is downloadable free of charge at http://www.mossolo.com

4.2.2.2. Tools to create quizzes

	Netquiz	Hot Potatoes	Eclipse Crossword	Course Builder	Flash Learning Interactions
MCQ	X	X		X	X
True / False	X	X		X	X
Drag & Drop	X	X		X	X
Matching	X	X			X

[2] What You See Is What You Get. It means that you do not need to go on the HTML code to edit the pages. The interface will rather look like a tool such as Microsoft Word for instance.

exercise					
Text area	X	X		X	X
Cloze exercise	X	X			X
Crosswords		X	X		
Dictation	X				
Hot Spots				X	X

- Netquiz is a free software. (http://www.ccdmd.qc.ca/ri/netquiz/)
- Hot Potatoes is a free software. (http://www.halfbakedsoftware.com/hot_pot.php)
- Eclipse Crossword is a free software. (http://www.greeneclipsesoftware.com/eclipsecrossword/)
- Course Builder is a free extension of the software Dreamweaver, for which you need to buy a licence. (http://www.adobe.com/resources/elearning/extensions/dw_ud/coursebuilder/)
- Flash Learning Interactions are templates available in the software Flash, for which you need to buy a licence. (http://www.adobe.com/support/flash/applications/learning_interactions/)

4.2.2.3. Tools to support learning

The previous tools are authoring tools, used to create learning contents. Once those contents have been created, they need to be supported by a system that will give learners the possibility to access courses, and tutors the possibility to follow-up learners in their learning process.

This system is a Learning Management System. As for other tools, proprietary and open source LMS exist. The LMS used for PALETTE trainings is AnaXagora (http://www.anaxagora.lu). It is an open source platform, SCORM compliant, developed by the Public Research Centre Henri Tudor in the framework of previous research projects.
The services the platform proposes are described in 4.2.3.

4.2.3. The Learning Management System AnaXagora

In AnaXagora, users have access to different services, depending on their profile. We are now going to describe the services available for the profiles we have identified for PALETTE (learner, author, administrator), but there are also other profiles available on the platform (tutor for instance).

- **Learner**
    - Access courses
    - Visualise the status of the different pages (incomplete, completed…)
    - View his results to activities of evaluation
    - Access an individualized learning path
    - Visualise what the training objectives are
    - Suggest activities
    - Chat

- Webmail
- Participate to a forum
- Share documents
- Consult news posted in a course
- Take notes that will appear on the different content pages

- **Author**

    - Visualise a course
    - Upload learning contents
    - Write the course homepage
    - Create the questions to define a learning path
    - Create initial and final questionnaires (to evaluate the satisfaction of learners for instance)

- **Administrator**

    - Administrate a forum
    - Add a general event
    - Create, modify and delete seminars[3]
    - Create, modify and delete members
    - Assign rights
    - Visualise the database
    - Visualise the connection statistics
    - Visualise all the courses
    - Modify the platform homepage
    - Manage profiles

The e-learning platform is accessible from the PALETTE website. The graphic charter is the same. The platform can be accessed directly on the website, via the "Learning platform" item of the menu. More details on the platforms functionalities are available in the user guide, which is available on the login page of the platform.

[3] In AnaXagora, a seminar includes one or more courses.

5. Awareness training implementation

5.1. Face to face trainings

In order to have face-to-face trainings available on the e-learning platform, it is envisaged to record the audio comments and publish the presentation online afterwards. The association of the different media (Powerpoint and audio comments) gives the possibility to people who were not there, to see the training as it was provided in face-to-face.

5.2. Online trainings

5.2.1. Becoming an author in the platform

In order to create a course in the platform, you will need to ask for the author access rights to the administrator of the platform. You can do this by sending an e-mail to the following address palette-trainings@tudor.lu

Within two working days, the administrator will send you a confirmation saying that you can now access the services explained in part 4.2.3 of this document.

5.2.2. Creating a course in the platform

Once you access to author services in the platform, you will also access an e-learning course on how to create a course on the platform and on how to design an e-learning course. Here is a description of the overall process to follow:

- Design your learning contents, based on your pedagogical scenario, with the tools of your choice, like the ones that have been described in point 4.2.2 of this document for instance.
- Upload your learning contents in the platform.
- Create the menu of your course in the platform.
- Activate the course. It is then accessible to learners.

6. Conclusion

This deliverable presents the current orientations of PALETTE regarding the development and implementation of learning resources. Taking into account that a great part of the learning within PALETTE members is more operated on informal and semi-formal basis, it was interesting to extend the notion of awareness learning sequences to different kind of audiences, including the internal and external partners, and a larger public.

It is important to ensure the consistency of the learning resources developed within PALETTE with the general orientations of the Project. A framework for designing pedagogical scenarios is thus proposed. It is intended to sustain and facilitate the design of pedagogical resources, activities and sequences, and their use and integration in learning sequences inside or outside PALETTE range.

An implementation system is proposed, involving the access to the learning resources to a learning platform housed in PALETTE website.

The contents themselves will be provided on this platform as soon as they will be made available by PALETTE researchers in the different WPs.

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APPENDICES

APPENDIX 1 - Examples of contextualisation of the design framework for subjects related to PALETTE field

Remark: the examples below are only intended to make the different dimensions clearer and more understandable. There is no assumption that each example will correspond to the development of a real learning sequence

Referencing of the different dimensions in the tables:

	Group of dimensions	Elements of the continuum	
	Pedagogical orientations		
A1	Theory of learning design	Instructivist	Constructivist
A2	Orientation of Targets	Centred	Broad
A3	Taking errors into account	Learning without errors	Learning by errors
A4	System flexibility	Rigid	open
	Actors and roles		
B1	Teacher's role	Didactic	Enabler
B2	Motivation origin	Extrinsic	Intrinsic
B3	Individual differences	Ignored	Taken into account
B4	Cultural differences	Ignored	Taken into account
B5	Community of practice	Ignored	Integrated
	Activity		
C1	Orientation of Task	Academic	Authentic
C2	Learner's activity	Content access	Creation
C3	Collaborative learning	Ignored	Integrated
C4	Learning assessment	Traditional	Participative
	Process and tools		
D1	Control by learner	None	Integrated
D2	Support of metacognition	Ignored	Integrated
D3	Knowledge management	Delivery	Community
D4	Regulation and assessment of scenario	Administrative	Participative

A - Pedagogical orientations

	**Theory of learning design** What is the learning theory behind the course design? Is it instructivist and teacher lead; is it constructivist or socio-constructivist? Is knowledge considered as content (learning matter) delivered by a teacher or something to be constructed (built) by learners (individually or socially? Examples – Learning about CoPs
A1-1	**Instructivist example**: Scenario 1: Expositive – teacher lead ; Definition of a CoP, Examples of CoPs, Life Cycle of a CoP, ... Scenario 2: Expositive - Story telling: "This is the story of the Cost Killers Community. This story takes place a long time ago (at the very beginning of the 21st Century in the western province of New Asia then called Europe). 7 westerners happened to meet by chance, ..."
A1-2	**Constructivist examples** Scenario 1: Problem Based Approach ill structured problem: You are members of a task force working on the subject of CoPs; you are in charge of a 30 minutes presentation to be made during a meeting with "potential" CoPs members and leaders during a conference dedicated to KM; you have access to all documents produced by another task force (WP1 ;-)) Scenario 2 : Case Study (PALETTE CoPs) Members of the WP1 task force have gathered data from interviews (face to face – recorded interviews) + questionnaires sent by mail); a transversal analysis has been made; other sources (links) can be consulted; after consulting the different sources available please answer the following questions: Define a CoP What is the domain of each PALETTE CoP? How would you define the practice of each CoP? Make a synthesis of the learning processes identified in all CoPs Scenario 3: Experiential learning theory, based on Kolb's 4 stages: Concrete experience; Reflective observation; Abstract conceptualisation; Active experimentation simulation and role play; purpose / objectives : to rise awareness of the conditions of emergence of a CoP; strategy: to simulate the creation and life of a CoP over a rather short period of time by using "simulation" as an accelerator of time (shrinking time)

	**Orientation of target** Is what is learned in this activity related to a broader domain, or is it centred on a specific aspect?
A2-1	**Centred** (focused): domain of learning: knowledge and competence transfer in a Wine Tasting Community in South Western France (Bordeaux ...)* analysis of contributions made by wine tasters on a web site (http://www.apero-bordeaux.com/)
A2-2	**Broad** domain of learning: impact of members' learning styles on knowledge diffusion in a community of practice

	**Taking errors into account** What is the possible role played by error (or mistakes) in the learning process? Are errors to be avoided (as in the behaviourist model), are errors used to design a specific learning path (Crowderian model)? Is learning based on error?
A3-1	**Learning without error** Scenario: Complete this definition of a CoP according to Brook Manville, Director of KM at McKinsey and Co: " a group of people who are informally bound by exposure to a common class of [.....]" questions / issues / problem(s): Yes, No, Try again ...
A3-2	**Learning with error** Scenario 1, Learning by doing: playing a use case of service in a real CoP situation Scenario 2, Problem Based Learning model, designed for distance learning: experiencing a new service through the example of providing a solution for a concrete situation in a CoP

	**System flexibility** Is the learning sequence embedded in a system which constrains its unrolling and its evolution, or is it possible for the learning sequence to evolve with time and context, even while it is unrolling?
A4-1	**Rigid**: Scenario: use of learning sequences from PALETTE into an institutional context or program in a face-to-face predetermined sequence
A4-2	**Open**: Scenario: Open Distance Learning; learners have access to a set of available learning resources which they may take at their own pace, with or without tutoring facilities.

B- Actors and Roles

	**Teacher's role** is the teacher at the centre of everything (a sage on the stage), delivering knowledge, or is he an enabler, helping each learner on his/her learning path (a guide on the side)
B1-1	**Didactic** This situation is too common to need an explanation – Any "presentation" based and teacher led course answers that model. A good indicator: % of time during a "lesson" spent by the teacher "talking" to the group, the higher the percentage the more likely the didactic role of the teacher (even though this may cover different teaching techniques, some of them more active/participative than others but always led by the teacher) Goes with an instructivist learning theory
B1-2	**Enabler**: Most of time of is spent with learners doing things individually or in small groups. The teacher spends his time helping each group or individual achieving their goal; stimulating, motivating, refocusing on activities; sharing among all learner "bits of knowledge" discovered / created by individuals or groups, opening ways to deepen that knowledge; lifting "roadblocks" to learning Goes with a constructivist learning theory

	**Origin of motivation** Is the learner motivated by marks, grades, or external requirements rewards or by her own interests and learning will?
B2-1	**Extrinsic** : Motivation to engage in an activity as a means to an end: the course /unit is compulsory, you need to pass it to get the credits; or to get a new position in the company
B2-2	**Intrinsic** Motivation to engage in an activity is the nature of the activity itself: members of a CoP are interested in taking tutorials on some PALETTE web services in order to understand which use they could have for their own activities in the CoP; they organise in sub-groups and, at the end, they share their ideas and findings.

	**Taking individual differences into account** How does the learning / training scenario take individual differences into account: level of entry, learning style, learning speed, motivations, cognitive backgrounds?
B3-1	**Ignoring** (one size fits all) Same learning path for everybody; single set of activities; Limited number of media – learning materials (non adaptive); same speed for everybody (you either follow or drop out)
B3-2	**Taking individual differences into account** Taking initial level into account (remedial path for those who don't have the prerequisite knowledge); different learning paths available according to learning styles and media; variety of media and learning material; different media / learning resources to reach the same learning goal; different intensity / speed according to initial level and learning capacity (linked to path and choice of activities)

	**Taking cultural differences into account** How does the learning / training scenario take cultural differences into account? are cultural differences used as a learning resources?
B4-1	**Ignoring cultural differences** learning resources in English, general purpose orientations, non-specific examples.
B4-2	**Taking cultural differences into account** The learning resource takes into account the cultural specificities within a CoP. Cultural habits and behaviours are used to illustrate knowledge creation and competence building within this CoP.

	**Communities of Practice** Are communities of practice used either as a source of valuable knowledge, or as a teaching/tutoring resource, or as a mean for learners to better integrate the workplace?
B5-1	**Ignored** It would be surprising that pedagogical scenarios designed within the PALETTE context would ignore at least a reference to CoPs.
B5-1	**Integrated** CoPs may be included in a learning sequence in many ways: they may be the object of the learning sequence (what is a CoP? How to animate a CoP?); they may be the place for authentic activities (how to use semantic tagging to better organise the knowledge shared between this specific CoP?); they may provide with teaching/tutoring resources (a CoP member tutors the learning activities of her colleagues when learning services possibilities and uses), etc. Scenario 1 – Community of practice as a learning environment: The learning activities (of learners) are embedded in the activity of the community of practice who welcomes learners and give them a status (apprentices) in the community. Learners participate in "real life" activities of the community. Moreover, the community of practice could provide "individual" mentors or tutors who could answer the needs for individual tutoring aside from "Group" tutoring provided by the official tutor or teacher. Scenario 2 – Community of practice as a resource for learners: The community of practice communication tools (internet / discussions / productions) is used as a source of information by learners without their direct involvement in the activities of community of practice.

C - Activity

	**Orientation of tasks** Are learning activities are oriented toward academic exercises, in order to simply apply the content, or are they related to real life situations?
C1-1	**Academic** Learners are asked to solve problems which are not contextualised, or not related to practical situation (how to create a page in a wiki?)
C1-2	**Authentic** Learners are asked to create a scenario of use which would enable collaborative creation of a document (collaborative knowledge reification) in a given CoP.

	**Learner activity** Is the learner activity mainly related to accessing content already produced by the trainer or is the learning activity oriented towards creation of new elements of knowledge?
C2-1	**Content Access** scenario: the learner is given access to Data Banks, information websites or learning resources which have be designed to optimise the learning process, in order to fulfil an exercise probably more of the "academic" type.
C2-2	**Content Creation** scenario: giving the example of the scenario of use described in PALETTE for Cops X, Y Z, the learners are asked to derive some representations of activities in these CoPs, and provide with insights about the appropriateness of such or such services within these CoPs.

	**Collaborative Learning** Is learning merely based on an individual process, or is collaborative learning actively encourage and supported?
C3-1	**Ignored** In such a scenario, the learning is considered as an individual / personal activity. No provision is made for group work. Self administrated on-line modules are mainly of this type, though they could be a necessary passing point for future collaborative activities.
C3-2	**Integrated** In such a scenario, the group or team is the learning unit. Group work is an essential part of the learning design. Collaboration is a means and an end to learning. Learning about a CoP, and inside a CoP involves interaction with others, negotiation of meaning, collaboration or cooperation. "Such activities as "Brainstorming" are deeply collaborative. Definition of the Charter of a CoP (Objectives, Rules, etc.) is typically a collaborative activity. Integrated Collaborative Learning is in line with a "Constructivist" or "socio-constructivist" Theory of learning design. – Problem Based Learning or project based learning rely on an integration of collaborative learning. This parameter value is in line with "Authentic Task Orientation" value.

	**Learning Assessment** Is the assessment of learning done through "classical" means such as quizzes or exams graded by a teacher, or is this evaluation done though activities which imply the participant themselves?
C4-1	**Traditional** Such assessments are mostly summative.
C4-2	**Participative** Assessment activities are ongoing and involve all participants; interactive resources provide “formative” assessments with immediate feedback; the learners are asked to reflect on their progress.

D - Process and tools

	**Control by learner** Does the learner have some control over: the definition of the learning objectives, the choice and scheduling of learning activities, the retrieval of learning content, the organisation of learning path and the pace of learning?
D1-1	**None** The learning sequence is unrolling as designed by the trainer. in line with the instructionist approach and academic tasks.
D1-2	**Integrated** On a course on Communities of Practice, integration of control by learners could include the following features: collective definition of the context of the course; negotiation of the global purpose of the course; negotiation of overall learning time; provision for individual differences in time allocation; definition and negotiation of common or group learning objectives; negotiation of individual learning objectives / learning path; negotiation of collaborative activities (What? Who? When? Where? Why? How?), etc. in line with constructivist approach, authentic tasks, taking errors into account, collaborative learning.

	**Support of metacognition** Does the scenario include higher order thinking activities(thinking about thinking) such as: reflecting upon the learning process, monitoring comprehension, evaluating progress toward the completion of a task?
D2-1	**None** In such a scenario, meta-cognitive activities are not included. Something is to be learnt, a problem is to be solved, a solution is to be found, but no attention is paid to the process by which the problem is solved, the solution is found.
D2-2	**Integrated** In such a scenario, there is a constant to and fro movement between cognitive and meta cognitive activities. scenario: A course on CoPs, could include the following "meta" cognitive and communication activities: Planning: what do we already know about CoPs? What are the aspects of CoPs that we need / want to know more about? How are we to organize ourselves, as a group or individually to go about the learning tasks? Monitoring comprehension: what have we learnt so far? What is the "new" definition of a CoP we could give now? Do we all agree upon this new definition? Is there a shift in our representations? Evaluating progress: what have we done so far? What remains to be done? Do you feel we are going in the right direction? Is a change of pace / method needed? Where could we have made a better decision? What are the benefits of the errors we made?

	**Knowledge management** How is the knowledge managed along the learning process? Is the knowledge supposed to be delivered by the trainer, or is there a possibility that learners activity could lead to reifying new knowledge?
D3-1	**Delivery** Knowledge (content matter) is delivered: from the trainer to the learners (in line with the instructivist theory of learning design)
D3-2	**Community** Knowledge is created by individual learners and the learning community (including the trainer) as they get involved in action. Explicit knowledge about CoPs is discovered through active participation in the life of a CoP. Underlying knowledge models are made explicit during "meta-cognitive" moments of the learning process. Tacit knowledge is acquired through observation (focused or global) of the way the CoP evolves through time. When ever applicable, simulations are organized to "speed up" the learning process. CoPs evolve over time – evolutions may take a long time, weak signals may go unobserved, by "crushing" time, analyzing data collected over a long period, shifts in roles, values, activities can be identified. Using case studies, the life cycle stages of a CoP (according to E. Wenger) could be positioned and identified through analysis of activities or absence of activities: Potential, Coalescing, Active, Dispersed, Memorable.

	**Regulation and assessment of scenario** How is the pedagogical scenario supposed to evolve in time, and under which conditions?
D4-1	**Administrative** The learning sequence is embedded into an institutional learning system which regulates the schedule, format, number of participants, etc. For example: the course is part of a Master program and takes place between January and June; it is made of 14 lectures of 1h1/2 and group-work tutored during 5 sessions of 1h1/2 each; the assignment is to produce a collective report for the group plus fulfil an individual quiz, etc.
D4-2	**Participatory** The pedagogical scenario is allowed to evolve under the influence of participants, trainers, tutors, etc. At the minimum, the evaluation (reaction level) of participants may include questions about "how do you think we should improve the sequence?" But it can also be a continuous improvement process, paralleling a continuous quality improvement process in other domains.

APPENDIX 2 – Prototype of a Scenario Description Sheet

This kind of description sheet could be added to each learning resource (or to a learning sequence) by its developers. It could be useful both for the designers to explicit their intentions and orientations in designing the resource/sequence and for the learners in organising their learning activities and learning path.

Title of the learning sequence		Reference in the catalogue
Learning objectives	Audience(s)	Format(s)
Brief description of the Learning Sequence		
Explain how the design framework was taken into account		
What were the most important dimensions you took into account for designing this sequence		
If relevant, how do you intend to evaluate the achievements of the learning objectives for the participants (dimension 13)?		
What are the assessment levels addressed in the sequence according to Kirkpatrick model? Why? How do you intend to organise the possible evaluation for these levels?		
How do you intend to manage the evolvement of the scenario along time (dimension 17)?		
How could the scenario evolve according to different audiences and different delivery formats (face-to-face, on-line, blended) (dimension 17)		

APPENDIX 3 - Prototype of evaluation template (reaction level)

A sheet for evaluating the reaction level for a face-to-face learning sequence may be automatically generated together with the description sheet of the learning resource.
The designer will only have to answer a few questions in order fro the software application to generate the valuation sheets.

What are the items evaluated at reaction level?

- ❑ Venue
- ❑ Organisation
- ❑ Relevance (of content)
- ❑ Training environment
- ❑ Seeing (visuals)
- ❑ Hearing (trainer)
- ❑ Presentation
- ❑ Keeping to subject
- ❑ Pace
- ❑ Handouts
- ❑ Course materials
- ❑ Other

(Check boxes, multiple choice)

The designer picks up the relevant elements.

The evaluation sheets are generated automatically on the form of a list accompanied with a 5 levels Likert Scale, with the tool already used to generate the description sheets in D.PAR.01. The designers choose the levels of the scale they want to use (1= very poor to 5=very good, or 1=unacceptable to 5 = excellent, for example).