



# Lifelong Learning Programme – LEONARDO

510288-LLP-1-2010-1-GR-LEONARDO-LMP

## MOVE-ON

PROFESIONAL LEARNING FOR ADULTS ON THE MOVE

### Deliverable D2.2

### Pedagogy, Scenarios & Educational Content Design

Document information		
Due date of deliverable	M6 – 30/06/2011	
Actual submission date	30/7/2011	
Organisation name of lead contractor for this deliverable	ALBA	
Revision	Version 1.0	
Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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<b>Versioning</b>	
<b>Version</b>	<b>Summary</b>
1.0	Final version

**This project has been funded with support from the European Commission.**

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## Executive Summary

The Move-On project aims at designing, developing and validating new vocational education possibilities offered in short "episodes" on mobile devices with the goal to increase the overall volume of participation of adults in vocational education. The ultimate end product of the MOVE-ON project will be a multilingual learning platform. To achieve this, research, development, testing and promotion activities will be combined in the most suitable proportions and sequence both online and face to face at local and international events.

This report examines the existing literature and standards to identify best practices in integrating adult continuous learning and vocational training in their everyday life. It includes the design of the most suitable pedagogical approaches and methodologies to enhance active participation of adults and professionals in vocational learning through mobile devices.

The report starts by investigating the current meaning of "m-learning" (mobile learning) and proceed with a review of existing literature on learning theories related to distance, electronic or mobile learning. Best practices and applied M-learning initiatives are also taken into account and examples are provided, in order to identify common aspects applicable to the Move-On model. At the end of the report, use cases of actual learning practices of the Consortium member organisations are provided, as a source of further experience input in the development of the Move-On model.

Finally, the Move-On m-learning model is described, including the learning approach and the characteristics of the courses/ program, as well as aspects in the technology and the personal/ societal characteristics of the participants.

# 1. Introduction

This report, Deliverable 2.2, was prepared by ALBA, with contributions from all partners and is part of the E.U. funded project MOVE ON. MOVE-ON is a research project funded by the Lifelong Learning Programme of the European Commission (Education, Audiovisual, Culture and Training Agency).

The D2.2 “Pedagogy, Scenarios & Educational Content Design” aims at setting the theoretical background for the development of the training program’s philosophy, structure and content. To achieve this, we follow a three-fold approach: first, we examine the existing literature on learning theories and methods with relation to mobile learning; second, we look into already applied endeavours in mobile learning; and third, we try to exploit project partners’ rich experience and expertise in adult learning through brief use cases. These three elements will form the basis for the development of the MOVE ON training model, which will meet project’s main target, i.e., to address modern professionals’ training needs by using mobile technologies’ characteristics and capabilities.

This document is not an academic one. Although we follow all the scientific rules for the development of a scientific document, our approach is an “applied” one, meaning that we are mainly interested on the practical implications of theoretical notions into everyday life, always focusing on modern professionals and mobile learning!

## 2. Definitions

Starting from Wikipedia<sup>1</sup>, the term M-Learning, or "mobile learning", has different meanings for different communities. Although related to e-learning and distance education, it is distinct in its focus on learning across contexts and learning with mobile devices. One definition of mobile learning is: Any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies. In other words mobile learning decreases limitation of learning location with the mobility of general portable devices.

The term covers: learning with portable technologies including but not limited to handheld computers, MP3 players, notebooks and mobile phones. M-learning focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population. There is also a new direction in MLearning that adds mobility of the instructor and includes creation of learning materials "on-the-spot, "in the field" using predominately smartphone with special software such as AHG Cloud Note. Using mobile tools for creating learning aides and materials becomes an important part of informal learning.

M-learning is convenient in that it is accessible from virtually anywhere. M-Learning, like other forms of E-learning, is also collaborative; sharing is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback and tips. M-Learning also brings strong portability by replacing books and notes with small RAMs, filled with tailored learning contents. In addition, it is simple to utilize mobile learning for a more effective and entertaining experience.

According to a report developed by the "Mobilearn" project<sup>2</sup>, mobile learning has been defined as learning that takes place via such wireless devices as mobile phones, PDAs or laptop computers. From the user's point of view, it can be argued however that mobile learning goes on everywhere. So, a widened enough definition of mobile learning could be that it includes any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies.

An interesting definition comes from Tribal organisation (self introduced as a "global thought leader in m-learning"): "Any activity that allows individuals to be more productive when consuming, interacting with, or creating information, mediated through a compact digital portable device that the individual carries on a regular basis, has reliable connectivity, and fits in a pocket or purse"<sup>3</sup>. For MOLE Project "m-learning and m-collaboration mean training, data, or job-specific content that is accessed, viewed or created through a handheld device that connects to a wireless network, but does not have to be a telephone"<sup>4</sup>.

According to Naismith, Lonsdale, Vavoula & Sharples<sup>5</sup>, and with respect to technologies, there are two broad dimensions that characterise mobile learning: personal vs shared and portable vs static. Park<sup>6</sup>

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<sup>1</sup> [en.wikipedia.org/wiki/MLearning](http://en.wikipedia.org/wiki/MLearning)

<sup>2</sup> MOBILEARN, WP4 – Pedagogical Methodologies and Paradigms, Guidelines for learning/ teaching/ tutoring in a Mobile Environment, 29/3/2005

<sup>3</sup> <http://www.m-learning.org/knowledge-centre/whatismllearning>

<sup>4</sup> <http://www.mole-project.net/about-us>

<sup>5</sup> Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples, *Literature Review in Mobile Technologies and Learning*, Nesta Futurelab Series, Report 11

states that mobile learning refers to the use of mobile or wireless devices for the purpose of learning while on the move. However, it has been widely recognized that mobile learning is not just about the use of portable devices but also about learning across contexts.

For Trifonova and Ronchetti<sup>7</sup>, m-learning is often defined as e-learning through mobile computational devices. In general by mobile device we mean PDAs and digital cell phone, but more generally we might think of any device that is small, autonomous and unobtrusive enough to accompany us in every moment in our every-day life, and that can be used for some form of learning. These small tools can be seen as instruments for accessing content, either stored locally on the device or reachable through interconnection. They can also be a tool for interacting with people, via voice and through the exchange of written messages, still and moving images.

Summing up we could say that a MOVE ON definition for mobile learning need to cover two basic parts. Firstly, we need to be clear on the technological part. Mobile learning uses mobile technologies, meaning basically exploring the capabilities of modern mobile phones (smartphones) but without excluding both “older” or “less sophisticated” mobile phones and PC based technology (PDAs and laptops). The second part is obviously the user and the learning characteristics that mobile learning offers to him/ her. We believe that the main advantage of mobile learning lies on its dynamic features, if we could call them this way, namely the opportunity that modern mobile technology offers to its users (a) to use it without space or time limitations (whenever – wherever!) and (b) to interact and create a relationship with other users (in our case a learning relationship with teachers or other students).

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<sup>6</sup>Yeonjeong Park, A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types, The International Rview of Research in Distance and Open Learning, Vol 12, No 2 (Feb 2011)

<sup>7</sup> Anna Trifonova and Marco Ronchetti, *A General Architecture For M-Learning*, November 2003, University Of Trento, Technical Report # DIT-03-081

### 3. Mobile Centred Learning Theories

There is vast existing literature on learning theories related to distance, electronic or mobile learning. In this part, we choose to focus on theories mainly related to adult or professional training, to stay in line with MOVE ON project target group, i.e., working individuals.

Starting from a well supported generic learning theory overview by Naismith, Lonsdale, Vavoula & Sharples<sup>8</sup>, there are six broad learning theory - based categories that fit to the mobile learning example:

1. **Behaviourist:** In the behaviourist paradigm, learning is thought to be best facilitated through the reinforcement of an association between a particular stimulus and a response. Applying this to educational technology, computer-aided learning is the presentation of a problem (stimulus) followed by the contribution on the part of the learner of the solution (response). Feedback from the system then provides the reinforcement. In a mobile learning context, classroom response systems fall in this category, as well as examples of content delivery by text messages to mobile phones.
2. **Constructivist:** In the constructivist approach, learning is an active process in which learners construct new ideas or concepts based on both their current and past knowledge. Learners are encouraged to be active constructors of knowledge, with mobile devices now embedding them in a realistic context at the same time as offering access to supporting tools. The most compelling examples of the implementation of constructivist principles with mobile technologies come from a brand of learning experience termed 'participatory simulations', where the learners themselves act out key parts in an immersive recreation of a dynamic system.
3. **Situated:** Situated learning posits that learning can be enhanced by ensuring that it takes place in an authentic context. Mobile devices are especially well suited to context-aware applications simply because they are available in different contexts, and so can draw on those contexts to enhance the learning activity. The museum and gallery sector has been on the forefront of context-aware mobile computing by providing additional information about exhibits and displays based on the visitor's location within them.
4. **Collaborative:** Collaborative learning has sprung out from research on computer-supported collaborative work and learning and is based on the role of social interactions in the process of learning. Many new approaches to thinking about learning developed in the 1990s, most of which are rooted in Vygotsky's socio-cultural psychology, including activity theory. Though not traditionally linked with collaborative learning, another theory that is particularly relevant is conversation theory (Pask), which describes learning in terms of conversations between different systems of knowledge. Mobile devices can support mobile computer supported collaborative learning by providing another means of coordination without attempting to replace any human-human interactions, as compared to, online discussion boards which substitute for face-to-face discussions.
5. **Informal and lifelong:** Research on informal and lifelong learning recognises that learning happens all of the time and is influenced both by our environment and the particular situations we are faced with. Informal learning may be intentional, for example, through intensive, significant and deliberate learning 'projects', or it may be accidental, by acquiring information through conversations, TV and newspapers, observing the world or even experiencing an accident or embarrassing situation. Such a broad view of learning takes it outside the classroom and, by default, embeds learning in everyday life, thus emphasising the value of mobile technologies in supporting it.
6. **Learning and teaching support:** Education as a process relies on a great deal of coordination of learners and resources. Mobile devices can be used by teachers for attendance reporting, reviewing

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<sup>8</sup> Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples, *Literature Review in Mobile Technologies and Learning*, Nesta Futurelab Series, Report 11

student marks, general access of central school data, and managing their schedules more effectively. In higher education, mobile devices can provide course material to students, including due dates for assignments and information about timetable and room changes.

Obviously, the objectives of this report would be better satisfied if we focused on the Informal and Lifelong category of the above categorisation. According to a report developed by the “Mobilearn” project<sup>9</sup>, a specific “list of precepts for an educational reality oriented towards **Lifelong Learning**” can be developed by assembling the results of scholars that have examined different aspects of an educational system for lifelong learning. Four are the main points of this list:

1. Educating to shape attitudes: Education should help people to adopt a more dynamic and involved approach to life and empower them to change their lives towards a better future and actively contribute to the society. Learning, training, education should be promoted as something pleasant, meaningful and empowering. Learning is the only way to respond and follow the constantly changing conditions of modern life. Finally, individuals should understand that learning has to last for the whole life of each one of us.
2. Accrediting learning: Accreditation is important for both personal and professional lives of the individuals, so an effective and flexible lifelong learning qualification assessment system should be devised.
3. Teaching methods/ models: Education should move from traditional face-to-face model on which most higher education institutions rely today, to a model that relies more heavily on resource-based learning. The perception of learning as knowledge re-construction should be adapted. The “teacher” should act as a facilitator to this process of re-construction, as a coach or mentor who offers guidance to the self-directed learner.
4. Skills and competences that people need to develop: “Basic skills” are changing continuously, having, so, “lesser lifetimes” than before. The main basic skill taught should nowadays be the adaptability and flexibility in dealing with uncertainty, change and distribution of knowledge. Ultimately, lifelong learners should possess the following competencies:
  - a. Problem solving: define and frame problems, analytical and conceptual thinking, search for information, making decisions.
  - b. Team work – collaborative skills: logic and arguments to persuade others, sharing information, understand others’ needs and build positive relationships.
  - c. Creativity and imagination skills: invent new solutions and choices, seek for alternative solutions.
  - d. Communication skills: oral and written skills, ability to express oneself, listening – counselling skills.
  - e. Self awareness: take responsibility for own learning, knowing own mental models, adapt mental models to changing circumstances, being inquisitive.
  - f. Managing skills: achieving objectives, analyzing and synthesizing data and information, using information technology, understand the “big picture”, apply knowledge to practical tasks.
  - g. Learning skills: “learning to learn”, understand own learning style and learning processes.
  - h. Personal mastery: personal vision and values, sense of reality, move from competence to capability.

Educational organizations and teachers should offer to people the opportunities, the means and capabilities for an effective involvement in lifelong learning. Mobile technologies can play a very

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<sup>9</sup> MOBILEARN, WP4 – *Pedagogical Methodologies and Paradigms, Guidelines for learning/ teaching/ tutoring in a Mobile Environment*, 29/3/2005.

important role exactly in the “means” part of this model, by satisfying the need for them to be “flexible” enough to adapt to learners’ needs and lifestyles.

The other part of this important category is the **Informal Learning** theories and how they are connected to mobile learning. Although formal education is nowadays extended into adulthood in the form of continuing/ professional education, learning does go beyond formal education. People continue to learn outside school or university, mainly for their professional or personal development. A promotion, parenthood or a new hobby could all be examples of informal learning in our lives. As a matter of fact, studies show that most of modern adults’ learning happens outside formal education!

Despite that informal training is a reality in modern people’s lives, people tend not to recognize this fact. Usually, their first reaction regarding whether they follow an informal learning project, is negative. The reason of course is that, in modern life, informal training is blended with everyday life. Following this reality one could argue that also the technology used to support this modern informal learning should be “blended” with everyday life in a same fashion: unobtrusively and in a “natural to use” manner – especially when we are referring to “on-the-job” training applications. Obviously, mobile technologies, with their reduced size, proclaimed unobtrusiveness and ease of use, bear the potential of supporting such on-the-job learning.

An important distinction in the informal learning category is between intentional and unintentional (also referred to as accidental or incidental) learning. Studies show that there is a, more or less, 50-50% distribution between certain, defined learning projects on the one hand and general learning that happened accidentally on the other. Furthermore, this accidental learning often happens through means like TV or newspapers, or through personal conversations. Again, the characteristics of modern mobile devices (e.g., internet connectivity) make them very strong tools of supporting these informal forms of learning.

According to Tough<sup>10</sup> and Vavoula<sup>11</sup>, we can set a hierarchical structure in informal learning projects by distinguishing three levels of learning: learning activities, episodes and projects. Learning activities can be defined as the distinct acts that are carried out during learning, like reading, listening, discussing, etc. Learning episodes are groups of learning activities that take place in a specific period of time, share some similarity in intent, activity or place of the thoughts and actions that occur during it, and are not interrupted much by other activities. Learning projects are then defined as groups of learning episodes related in terms of purposes and outcomes. Mobile technologies could here support the carrying out of the learning activities and episodes on the move. Research into mobile learning should have a focus on the identification of learning activities that are appropriate for mobile learners and on supporting those activities.

Very close to the Lifelong and Informal Learning lie also the theories related to **Adult Learning**. A central notion here is this of the experiential learning. Jarvis, Holford & Griffin<sup>12</sup> describe experimental learning as the process of creating and transforming experience into knowledge, skills, attitudes, values, emotions, beliefs and senses. They describe experiential learning process as a circular one, where (a) the individual first encounters a concrete experience, then (b) reflects on it by analyzing what just happened, which reflection leads to (c) the formulation of abstract concepts and generalizations (understanding). This process concludes with (d) the testing of the implications of the newly formulated

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<sup>10</sup> Tough, A., (1971), “The adult’s learning projects: a fresh approach to theory and practice in adult learning”, Toronto: Ontario Institute for Studies in Education.

<sup>11</sup> Vavoula, G., (2004), “KLeOS: a knowledge and learning organization, “KLeOS: a knowledge and learning organization system in support of lifelong learning”, PhD Thesis, University of Birmingham.

<sup>12</sup> Jarvis, P., Holford, J., & Griffin, C. (1998), “The theory and practice of Learning”, London: Kogan Page.

concepts on new situations, creating this way new opportunities for new concrete experience which will allow the process to be re-initiated. Furthermore, they describe the different effects a learning experience might have on a person, namely reflective (or critical) learning, non-reflective (or reproducing) learning, or non-learning at all.

But this all belong to the procedural side. As far as the “construction of meaning” is concerned, Mezirow<sup>13</sup> describes it as a two step process: first perceptions are filtered through the personal frame of reference, shaped by both predispositions and existing knowledge, and then meaning schemes are projected on to the filtered perceptions to produce personal meaning. Learning takes place as a reflection on the filtering mechanisms/ transformation of personal meaning perspectives, and on the creation and elaboration of the meaning schemes.

Schon<sup>14</sup> has further explored the role of reflection in experiential learning. He explains, through the notion of the “reflective practitioner”, how professionals not only apply but also augment and extend their knowledge through reflection relevant to their action and practice. The most common kind of reflection is the one that occurs once an action is completed (reflection on action) while the other kind is the “reflection in action” which occurs while an action is still ongoing.

At another level, **Case-based Learning** theories could add certain value in our discussion. In this category fall all theories that use concrete situations, examples, problems or scenarios as a starting point for learning by analogy and abstraction via reflection. These theories emphasise the active construction of knowledge and meaning through reflection on specific concrete situations.

Another category is the **Problem-based Learning**, which is indeed extensively used in business administration training<sup>15</sup>. This approach is a fine example of a collaborative, case learned and learner directed method of instruction. Its implementation includes a small group of students which, together with a tutor, learn in the process of working through a collection of teaching cases. The case involves an ill-structured problem, requiring students to develop the case from minimal presenting information. Throughout the process of building a case, students generate learning issues – areas of knowledge in which members of the group feel they are not sufficiently prepared for understanding the problem they are studying. These, together with data, hypotheses and plans for future inquiry are collected together by the group in a structured manner, facilitated by shared information resources, to form the basis for problem formulation, problem solution, reflection and abstraction. This method has been developed and refined especially for contexts involving lifelong learning and professional development.

According to Taylor<sup>16</sup>, recent developments in pedagogy, moving away from the transmissive, behavioural models and more toward the constructivist or socio-cognitive models, place the active learner at the heart of activities. The socio-cognitive view would also add that learning takes place in a social context, and the forming and re-forming of concepts need not necessarily take place only at the level of the individual, but that collaborative group work and sharing with peers (and others) can be a powerful way of confronting one’s own conceptions (pre-conceptions), contributing to the need to restructure one’s cognitive schemas. So learning is perceived as being as much about communication as

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<sup>13</sup> Mezirow, J., (1996), Contemporary paradigms of learning, *Adult Education Quarterly*, 46 (3), pp 158-172, in P. Sutherland (Ed.), *Adult learning: a reader* (pp. 2-13), UK: Kogan Page.

<sup>14</sup> Schon, D.A., (1983), *The reflective practitioner*, UK: Maurice Temple Smith Ltd.

<sup>15</sup> Stinson, J., & Milner, R., (1995), *The enabling impact of information technology: the case of the Ohio University MBA*, CSCL’95, Lawrence Erlbaum Associates.

<sup>16</sup> Josie Taylor, *Pedagogy in the mobile learning environment*, The UserLab, Institute of Educational Technology, The Open University

it is about content. In fact some more radical pedagogical approaches would go a step further, and suggest that no content is a useful starting point for courses – the group of learners themselves decide what they are going to learn, and how they are going to learn it, bringing their own material to bear in whatever way they feel appropriate. Of course, communication is not confined to peer-to-peer. It can involve teachers, experts, experienced colleagues, workmates, friends and family. The mobile environment can make a significant contribution to this process. By facilitating the rapid access to other users any time/any place, sharing content, knowledge, experience and gossip, learners can develop ‘communities of practice’ as well as informal discussion groups, as and when needed to optimise their learning processes.

An interesting theory based suggestion for mobile learning applications development is the FRAME Model<sup>17</sup>. This model is structured around three intersected circles representing (a) the device, (b) the learner and (c) the social “aspects”. The intersections where two circles overlap contain attributes that belong to both aspects. The attributes of the device usability (intersection of device and learner aspects) and social technology (intersection of device and social aspects) intersections describe the affordances of mobile technology. The intersection labelled interaction learning (intersection of learner and social aspects) contains instructional and learning theories with an emphasis on social constructivism. All three aspects overlap at the primary intersection. Hypothetically, the primary intersection, a convergence of all three aspects, defines an ideal mobile learning situation. By assessing the degree to which all the areas of the FRAME model are utilized within a mobile learning situation, practitioners may use the model to design more effective mobile learning experiences.

According to Park<sup>18</sup>, the most serious issue faced by mobile learning is the lack of a solid theoretical framework which can guide effective instructional design and evaluate the quality of programs that rely significantly on mobile technologies. He proposes a conceptual and pedagogical framework based on high versus low transactional distance and individualized versus socialized activity. According to this model, the four types of mobile learning generated in the context of distance education include (1) high transactional distance socialized m-learning, (2) high transactional distance individualized m-learning, (3) low transactional distance socialized m-learning, and (4) low transactional distance individualized m-learning.

- High Transactional Distance and Socialized Mobile Learning Activity: A mobile learning activity is classified as this type when 1) the learners have more psychological and communication space with their instructor or institutional support; 2) the learners are involved in group learning or projects where they communicate, negotiate, and collaborate with each other; 3) learning materials or the rules of activity are delivered from the predetermined program through mobile devices; and 4) transactions mainly occur among learners, and the instructor or teacher has minimal involvement in facilitating the group activity. This type might replace the traditional technology-mediated classroom group activity where students in a group or pair conduct given tasks or assignments.
- High Transactional Distance and Individualized Mobile Learning Activity: Mobile learning activities are classified as type 2 when 1) the individual learners have more psychological and communication space with the instructor or instructional support; 2) the individual learners receive tightly structured and well organized content and resources (e.g., recorded lectures, readings) through mobile devices; 3) the individual learners receive the content and control their learning process in

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<sup>17</sup> Marguerite L . Koole, A Model for Framing Mobile Learning, Athabasca University Canada

<sup>18</sup> Yeonjeong Park, A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types, The International Review of Research in Distance and Open Learning, Vol 12, No 2 (Feb 2011)

order to master it; and 4) the interactions mainly occur between the individual learner and the content. This type demonstrates an extension of e-learning which allows greater flexibility and portability. Individual learners fit this flexible learning into their mobile lifestyle. This type is mostly influenced by the context regarding when and where to learn. It also includes mobile learning that makes access to the educational system possible for students in rural areas.

- Low Transactional Distance and Socialized Mobile Learning Activity: In this type, individual learners interact both with the instructor and other learners as they use mobile devices. They have 1) less psychological and communication space with the instructor; and 2) loosely structured instruction; but (3) work together in a group as they solve the given problem and try to achieve a common goal; and (4) engage in social interaction, negotiation, and frequent communication naturally. This type demonstrates the most advanced forms in terms of the versatility of mobile devices and learners' social interactions.
- Low Transactional Distance and Individualized Mobile Learning Activity: This last type of mobile activity refers to 1) less psychological and communication space between instructor and learner and 2) loosely structured and undefined learning content. On this basis, 3) individual learners can interact directly with the instructor, and 4) the instructor leads and controls the learning in an effort to meet individual learners' needs while maintaining their independence. This type shows characteristics unique to mobile learning that support blended or hybrid learning.

Winters<sup>19</sup> categorises current perspectives on mobile learning into four broad categories:

1. Technocentric: This perspective dominates the literature. Here mobile learning is viewed as learning using a mobile device, such as a PDA, mobile phone, iPod, PlayStation Portable etc.
2. Relationship to e-learning: This perspective characterises mobile learning as an extension of e-learning. These definitions are often all-inclusive and do not help in characterising the unique nature of mobile learning. What is needed is clarity: the technocentric/ e-learning based definitions only seek to place "mobile learning somewhere on elearning's spectrum of portability".
3. Augmenting formal education: In the mobile learning literature, formal education is often characterised as face-to-face teaching, or more specifically, as a stereotypical lecture. However, it is not at all clear that this perspective is wholly correct. Forms of distance education (for example, distance correspondence) have existed for over 100 years, leading to questions regarding the place of mobile learning in relation to all forms of "traditional" learning, not only the classroom.
4. Learner-centred: Although in earlier research, the concept of mobile learning was strongly linked to the device and the potential for enabling lifelong learning, it soon became clear that rather than the device, the focus should be on the mobility of the learner. This led to considering mobile learning from the learner's perspective. Current work is exploring the notion of learning in the mobile age, to develop a theory of mobile that focus on mobile learning as communication in context.

According to Sharples, Arnedillo-Sánchez, Milrad and Vavoula<sup>20</sup>, a central task in the design of technology for mobile learning is to promote enriching conversations within and across contexts. This involves understanding how to design technologies, media and interactions to support a seamless flow of learning across contexts, and how to integrate mobile technologies within education to enable innovative practices. Furthermore, the design of mobile learning activities should be driven by specific learning objectives. The use of (mobile) technology is not the target but rather a means to enable

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<sup>19</sup> Niall Winters, "What is mobile learning?" in Mike Sharples (ed.) "Big Issues in Mobile Learning", University of Nottingham, 2006

<sup>20</sup> Mike Sharples, Inmaculada Arnedillo-Sánchez, Marcelo Milrad, and Giasemi Vavoula, Mobile Learning – Small devices, big issues, in S. Ludvigsen, N. Balacheff, T. de Jong, A. Lazonder, and S. Barnes (eds.) Technology-enhanced learning: Principles and products, Dordrecht: Springer.

activities that were otherwise not possible, or to increase the benefits for the learners. Thus, the use of mobile technologies may only be suitable for part of the activity, with other parts being better supported by other technologies, or by no technology at all. Other issues cover things like learner's attention (enhance the learner experience without interfering with it) and the hidden use of technology (technology is not always used for the activities originally intended).

A basic conclusion included in this study is that mobile learning instructional design should:

- Support learners to reach personal understanding through conversation and exploration.
- Support learners' collaboration in order to construct common knowledge.
- Use technology to enrich learners' collaborative knowledge building with other learners and teachers.
- Support learners' transitions across learning contexts.

Moreover, as cited in the above study, Naismith and Corlett<sup>21</sup> identify five critical success factors for mobile learning projects:

1. Access to technology: making mobile technology available where and when needed, either by developing for users' own devices (e.g., phones and media players), or by providing learners with devices they can use at home and on the move.
2. Ownership: owning the technology, or treating it as if it were our own. Using the technology for entertainment and socializing does not appear to reduce its value as a learning tool, but rather helps to bridge the gap between institutional and personal learning.
3. Connectivity: using wireless or mobile phone connectivity, to provide access to learning resources, to link people across contexts, and to allow students to capture material that can be sent to a personal media space and then shared or presented.
4. Integration: integrating mobile learning projects into the curriculum, the student experience, or daily life. Strategies for achieving integration include extending a successful form of learning onto mobile devices (e.g., Frequently Asked Questions, or audio/PowerPoint recordings of lectures) and proving technology that augments the student experience (e.g., 'moblogs' (mobile weblogs) to maintain an electronic portfolio or record of learning).
5. Institutional support: designing relevant resources in mobile format, training staff and providing technical support.

According to Motiwalla<sup>22</sup>, the online learning environment alters the traditional time/space configuration by providing access to learning resources from anywhere and at any time. Information and content delivery is altered by presenting the materials in different media, parallel access paths, and assessments via computer logs and software packages. Similarly, communication and interaction process between the learner and teacher is altered with novel usage of synchronous and asynchronous communication tools that allow sharing of ideas, virtual collaboration and better archival capabilities for reflecting on previous interactions. Finally, ICT alters the roles of students and instructors. Students are empowered with the learning responsibility with their individual learning goals, schedules and assessments.

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<sup>21</sup> Naismith, L., & Corlett, D. (2006). Reflections on success: A retrospective of the mLearn conference series 2002-2005. In *Across generations and cultures, mLearn 2006 book of abstracts* (p. 118-20). Banff, Canada: mLearn 2006. Full paper available online at [http://telearn.noe-kaleidoscope.org/warehouse/Naismith-Corlett-2006\\_\(001486v1\).pdf](http://telearn.noe-kaleidoscope.org/warehouse/Naismith-Corlett-2006_(001486v1).pdf).

<sup>22</sup> Luvai F. Motiwalla, *Mobile learning: A framework and evaluation*, Elsevier, Science Direct, *Computers & Education* 49 (2007) 581–596

Kadirire<sup>23</sup> states that there is some evidence to show that learning using mobile devices reduces the formality of the learning experience, and helps engage reluctant learners and raise their self – confidence. In order for the learning process to be successful in online distance learning, unlike in the traditional face-to-face learning, attention must be paid to developing the participants' sense of community within their particular group. Instant messaging is a natural medium for online community building and asynchronous/ synchronous peer discussions.

Last but not least, according to Naismith, Lonsdale, Vavoula & Sharples<sup>24</sup>, there are five main key issues in mobile learning solutions development:

- Context: the ability to acquire information about the user and his or her environment presents a unique ability to personalise the learning opportunity. There are, however, significant ethical issues. For example, context information needs to be gathered with the consent of users, and must be stored securely to prevent misuse by third parties. This is also related to the issue of coupling between the informatic layer provided by the devices and the existing communication layers of the classroom (or other environment).
- Mobility: the 'anytime, anywhere' capabilities of mobile devices encourage learning experiences outside of a teacher-managed classroom environment. Inside the classroom, mobile devices provide students with the capabilities to link to activities in the outside world that do not correspond with either the teacher's agenda or the curriculum. Both scenarios present significant challenges to conventional teaching practices.
- Learning over time: lifelong learners will need effective tools to record, organise and reflect on their mobile learning experiences.
- Informality: the benefits of the informality of mobile devices may be lost if their use becomes widespread throughout formal education. Students may abandon their use of certain technologies if they perceive their social networks to be under attack.
- Ownership: both personal and group learning are most effectively supported when each student has access to a device. The ownership of the devices is thus a key consideration. Both tangible and intangible benefits can accrue through the use of mobile devices. Intangible benefits include a sense of belonging with the device and personal commitment and comfort. Ownership is stated as a prerequisite for engagement, where students have the potential to go "beyond the necessary and play with it to explore its potential". Personal ownership does, however, present a challenge to the institutional control of the technology.

The brief overview of mobile learning related learning theories presented in this section, provided an introductory point to the design of MOVE ON learning model. It became clear that behaviouristic, constructivist and collaborative paradigms are the dominant ones in the area. The challenge here is to combine bits and parts from the different theories and present a model that better accommodates the needs of modern professionals. In other words, combine the autonomy of the "anytime-anyplace" approach with the richness and depth of the face-to-face/ social interaction example, by using the means of modern mobile technology. Maybe opening new frontiers to the resource-based learning approach would be a valid proposition. An interesting approach would also be to further exploit the informal learning model and see how the mobile device can offer new possibilities of embedding learning into daily life of working executives, reaching the archetype of "unconscious learning" as a life-long attitude. Furthermore, this section discussed important elements that can be used in a mobile

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<sup>23</sup> James Kadirire, "Instant Messaging for Creating Interactive and Collaborative m-Learning Environments", *International Review of Research in Open and Distance Learning*, Volume 8, Number 2, June 2007

<sup>24</sup> Laura Naismith, Peter Lonsdale, Giasemi Vavoula, Mike Sharples, *Literature Review in Mobile Technologies and Learning*, Nesta Futurelab Series, Report 11

learning model, such as the informality that characterises such initiatives, the complementarity with physical training models, the accreditation/ certification such programs should offer. Undoubtedly, the overall conclusion is that the use of mobile technologies is a means that enables activities that were otherwise not possible, increasing this way the benefits for the learners.

## 4. m-Learning Initiatives

In this section, our intention is to present already undertaken initiatives in the broader area of mobile learning, covering individual segments of this theme.

### THE MOTILL PROJECT<sup>25</sup>

The MOTILL constitutes one of the more important projects in pan-European level as far as mobile learning is concerned. This project focused on the use of mobile technologies as a key factor in developing flexible LifeLong Learning (LLL) frameworks for education. The project collected, organized and analyzed pedagogical approaches that exploit mobile technologies for LLL in order to identify and spread good practices in this field. This action could have a positive impact on educational policies, fostering learning communities, promoting LLL initiatives, and facilitating the involvement of groups at risk of exclusion. During the project, the main results obtained were as follows:

- a Scientific Annotated Review Database (SARD) offering reviews papers concerning the use of mobile technologies in LLL
- an Evaluation Grid (EG) used as a methodological framework to analyse and highlight mobile learning experiences. This framework takes into account management, pedagogy, policies and ethical issues
- a Best Practices Collection (BPC), assembling the most relevant mobile learning projects carried out in the partners' countries
- a MOTILL Web Portal (MWP), an open space for public dissemination of the project outcomes dedicated to public and private institutions, research centres, educators, and trainers and emphasizing the impact of Information Society Technologies on the future of LLL.

One of the most important aspects of the MOTILL project is the involvement of policy makers to promote local and national targets for lifelong learning in line with European benchmarks and strategic objectives.

Especially the Best Practices Collection<sup>26</sup> study collects examples from eleven EU projects in mobile learning. Main conclusions of this study are organised in four main categories and include:

#### 1. Management

- a. hardware and internet connection are still onerous and they rapidly become obsolete
- b. educational staff are often lacking in technological skills and it may be expensive to train them
- c. mobile learning activities are not effective if teachers are not comfortable with the technologies being used
- d. digital content rights, policies and privacy rules need to be defined

#### 2. Pedagogy

- a. In relation to learners:
  - i. facilitating access and social inclusion
  - ii. responding to learners' needs (such as collaboration) and their technology use habits
  - iii. enabling students to manage and direct their own learning
- b. In relation to contexts of learning:
  - i. taking learning out of the classroom and into the real world;

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<sup>25</sup> <http://www.motill.eu>

<sup>26</sup> [http://www.motill.eu/images/stories/motillbooklet\\_en.pdf](http://www.motill.eu/images/stories/motillbooklet_en.pdf)

- ii. enabling construction of learning in context;
      - iii. providing learning content based on contextual information about the user
    - c. In relation to curricula and learning content:
      - i. using ontologies to create multidimensional curricula that work at scale and cater to individual needs;
      - ii. enabling mass-customized learning content delivery;
      - iii. helping teachers and instructors to provide personalized content for students
- 3. Policy
  - a. Educational challenges:
    - i. national accreditation and acknowledgment of mobilized courses is still problematic
    - ii. mobile learning addresses problems regarding the organization of educational curricula, which needs to be solved
    - iii. open content initiatives proved to be viable, worth to raise further attention
  - b. Social challenges:
    - i. Learning initiatives are tackling horizontal Lifelong Learning policies, like discrimination based on race, religion, location, health or age
    - ii. through lifelong learning processes mLearning applications act towards the favour of social groups, which are at risk of being marginalized. This experience is transferable across Europe
    - iii. mLearning may have a significant impact on social inclusion of immigrants across Europe
    - iv. mobile technology in education works towards widening participation in educational activities
  - c. Financial challenges:
    - i. there are models and good examples for cheap mobile learning however new forms of funding are necessary, as institutions have great difficulties when integrating the latest technology into their administrative and educational processes
- 4. Ethical considerations
  - a. Accessibility
  - b. Privacy and Security
  - c. Copyright

MOTILL project has been funded from the European Commission (Lifelong Learning Programme – Education and Culture) having partners from four European countries: Italian National Research Council - Italy, The Open University - UK, Trinity College Dublin – Ireland, Corvinus University of Budapest – Hungary.

### **THE MOBILEARN PROJECT<sup>27</sup>**

MOBlearn (2002-2004) was a worldwide European-led research and development project exploring context-sensitive approaches to informal, problem-based and workplace learning by using key advances in mobile technologies. The MOBlearn project consortium involves 24 partners from Europe, Israel, Switzerland, USA and Australia. Their competencies were integrated and extended by a Special Interest Group which includes 250 of the world's leading organisations, active in Information Technology.

The goal of the MOBlearn project was the creation of a virtual network for the diffusion of knowledge and learning via a mobile environment where, through common themes, it is possible to demonstrate the convergence and merging of learning supported by new technology, knowledge management, and

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<sup>27</sup> <http://www.mobilearn.org>

new forms of mobile communication. This created a virtual point of mobile access to content that could be used at a European and International level. A subsidiary goal was to develop deeper understandings of the social processes and interactions that arise when connectivity reaches a critical point, so that we are alert to the possible emergence of "ambient intelligence" equivalents of the widespread take-up by users of SMS.

The scope of the MOBIlearn project was to study mobile learning based conceptual models and methodologies, and pilot implement them. These were evaluated in trial application fields set up and managed by international partners participating within the MOBIlearn project. The project focused on the target markets (individuals or small groups of people spread Europe-wide in many and various sites, willing to access knowledge on demand, just in time and in the field to foster their life long learning and enhance their working experience). The final objective was to improve the knowledge level of individuals through cost and time optimisation of learning processes. This maximised the opportunities of three representative groups:

- Workers, to meet their job requirements and to update their knowledge continually;
- Citizens as members of a culture, to improve the learning experience while visiting a cultural city and its museums;
- Citizens as family members, to have simple medical information for everyday needs.

The MOBIlearn system allowed acquisition of ways to meet user needs and build knowledge spaces. Impacts of the solution on self-learning were explored in three selected and very representative applications for mobile learning (m-learning), namely:

- Master in Business Administration (MBA) schools, where international MBA institutes extended the reach and scope of their current blended-learning offering, by providing learners with personalised and tailored subscriptions to content on mobile networks;
- A European city famous worldwide for its art (Florence), where Firenze Musei, a consortium managing all the European historical and cultural heritage locations of the city, improved its offerings enabling learning citizens to access context sensitive art, historical & cultural knowledge with mobile devices while visiting museums and galleries;
- Access to basic medical knowledge to enable support for anywhere and anytime interventions. The certified knowledge basis was provided by the European Resuscitation Council, which already trained non-specialised citizens in basic medical procedures (such as Basic Life Support), with quick reference, audiovisual procedural guides and VR simulations.

The solution could be applied in many other business sectors and knowledge domains and applications for many kinds of learning and many circumstances and areas. The MOBIlearn project have contributed to breaking traditional barriers to learning for many people, which exist for them now due to their limited access to information, limited time for learning and isolated environment.

The MOBIlearn project proposed the conception, experimentation, population and exploitation of new models of learning and information use, via next generation mobile networks, through:

- creation of pedagogical paradigms to support learning in a mobile environment (such as collaborative learning, organisational learning, dynamic knowledge creation in a group);
- new architectural layouts to support creation, brokerage, delivery and tracking of learning and information contents on the mobile network, which extend existing systems;
- selection and adaptation of existing eLearning contents for mobile devices, enabling automatic multi channel and multi device versioning;
- realization of new business models, based on existing success-cases, for the self sustainability and deployment of the conceived solutions beyond the research timeframe within Europe's Knowledge Society framework for the third Millennium.

The following guidelines for implementing mobile learning were developed through the MOBIlearn project. Each guideline has been based on theory and practice of learning with conventional tools, evidence from desktop e-learning or findings from the available studies of mobile learning. While intended primarily for direct users of mobile learning technologies, these guidelines may also be useful in informing policy initiatives.

1. Investigate a cost model for infrastructure, technology and services. Various costs must be considered when implementing mobile learning. In addition to the significant initial capital expenditure required to purchase devices and networking equipment, there is the ongoing cost of technical support and also various 'hidden' costs. In general, institutions should try and make use of their existing facilities and services in order to keep costs down. It should be noted that it is generally less costly to equip each student with a handheld computer than with a desktop or laptop computer. The personal and collaborative nature of mobile devices can encourage participation and build social capital, which can be used to motivate disengaged or at-risk students. As the education marketplace becomes increasingly competitive, institutions can offer mobile learning opportunities as a competitive edge over other institutions. Finally, there may also be an opportunity to leverage technologies that students already own such as mobile phones for SMS messaging.
2. Study the requirements of all those involved in the use of the technology (learners, teachers, content creators) to ensure that it is usable and acceptable. Usability should account for both the set of users that will be creating the mobile content and those who will be using the mobile applications to learn from or teach with.
3. Assess that the technology is suited to the learning task and examine advantages and disadvantages of each technology before making a decision on which one to use. The effective implementation of mobile learning requires a clear pedagogical approach, identification of specific learning needs/goals and teachers to be directly involved in decisions on planning and curriculum use.
4. Assign the necessary roles for initiating and thereafter supporting mobile learning. The following roles (which may be filled by the same person) are helpful:
  - a. a technical promoter to demonstrate the capabilities of the system
  - b. a promoter in power to make sure the technical promoter's views are heard by those in charge
  - c. once mobile technologies are in place, institutions can also benefit from technical experts to deal with equipment failures and ongoing system improvements.
5. Develop procedures and strategies for the management of equipment when it is provided by the institution. These procedures include the need to develop strategies for assigning equipment to students, restricting students' off-task use (if desired), synchronising hand-held to desktop, tracking, reviewing and collecting students' work, devising and implementing parental agreements for managing loss and theft, hardware management and routine backup procedures.
6. Provide training and (ongoing) technical support to the teachers to enable them to use mobile technologies to enhance current and to enable new instructional activities. Almost all respondents in the hand-held computing pilot were dissatisfied with the amount of training they received. Specialist training and dissemination of good practice is necessary in order for staff to exploit the whole range of capabilities that mobile computing can offer. Both staff and students must have sufficient time to familiarise themselves with new devices.
7. Consider the use of mobile technologies for student administration tasks. Mobile devices can be used to maintain accurate lists of classes which can be used in conjunction with rich information sets about students to help to draw out individual students' needs. Applications that could be supported include truancy control, classroom monitoring and marking with immediate feedback.
8. Consider the use of mobile technologies to support collaborative and group learning.
9. Discover and adopt suitable applications that match the needs of your specific classroom and map directly to your curriculum needs.

10. Ensure security and privacy for the end users. Privacy protection includes both the student's personal data and the student's current location.

## THE MOULE PROJECT<sup>28</sup>

MoULe is an on-line environment for collaborative learning. By integrating smart phones and portable devices, it enables educational activities based on the exploration of a geographical place. The system includes specific functionalities to search and access information spaces, to communicate and to annotate places according to their geographical coordinates.

Data stored in the system (included data uploaded into it by the users) are enriched by the information concerning geographical localization, so that the system provides users with information specific to the place they are visiting. Administrators can use MoULe to design tourist as well as educational paths, monitor users' activities in real time, and evaluate quantity and quality of interactions among users.

MoULe can be used for any learning activity which foresees the association of learning resources to specific geographical sites, and where some part of the work should be done in a collaborative way. Another potential use for the project results is the recreational and/or professional publishing. The system enables the acquisition of multimedia contents (interviews, photos, text notes, and so on) directly on the places of interest, through mobile phones, and the publication of the acquired contents on a Web portal in real time. Last but not least, MoULe exhibits huge potentials as information system to be adopted in different tourist-environmental contexts, by providing customization of information and communication in a transparent way, according to the geographical surrounding.

System's Main functionalities:

- Information search based on the users' geographical position.
- Building of information spaces in a collaborative way (through wiki technologies and conceptual maps).
- Association of an information item to a specific point of interest.
- On-site multimedia annotation (photos, text, audio interviews).
- Synchronous and asynchronous communication tools (chat e forum), adapting themselves to the geographical position of the user.
- Satellite navigator to visualize the position of users and points of interests.
- Automatic recognition of the points of interest.
- Centralized users monitoring.

The MoULe system can be accessed both by PCs and mobile devices (PDAs e Smartphones). A normal Web browser (Internet Explorer, Firefox, and so on) is enough to access to the system through a PC. A specific interface makes the use of the MoULe system extremely easy even by a mobile device. The system was developed at the Italian National Research Council, Institute for Educational Technologies.

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<sup>28</sup> <http://moule.pa.itd.cnr.it/>

## **MOBILE LANGUAGE LEARNING WITH AUDIO ON L120 OUVERTURE<sup>29</sup> – THE OPEN UNIVERSITY**

Based on material available in a French Intermediate course, the L120 mobile project aim was to explore student attitudes to studying with aural material in different ways, and also in responding to oral prompts using mobile technologies. The project targeted students owning a range of mobile devices and registered on the Open University course L120 Ouverture Intermediate French 09B. The aims were to find out if students used the audio resources of the course (currently provided on DVD-ROMs) on mobile devices such as MP3 players or iPods for independent use; where, when and how often they used the audio resources on their mobile device. Existing L120 speaking activities were adapted for use on the tool and students were invited to practise listening and speaking via their mobile phone. The use of iPods and MP3 players was quickly adopted by project participants; but whilst the challenge and the authentic aspect of doing activities on the phone appealed to some learners, other learners need to be helped towards recognizing the specific value of this type of practice as a stepping stone towards authentic communication. This pilot project was part-sponsored by the Learning Innovation Office and aimed to make learning more flexible and attractive.

## **ENABLING REMOTE ACTIVITY (ERA)<sup>30</sup> – THE OPEN UNIVERSITY**

A collaboration between KMi and Earth Sciences, the ERA project has investigated many ways in which mobile technologies can bridge the gap between fieldwork and remote participation. Earth Science students attend residential field trips as part of their undergraduate Geosciences degree. For a number of mobility-impaired students, it is not possible to access some of the field locations. In response to this, ERA has developed a rapidly deployable, lightweight, battery-powered wireless network that can be used to transmit video, audio and high-resolution still images between a field geologist and a nearby student. The students use the wireless network to work remotely with the field geologist. In this way, technology is used as an enabler to facilitate the inclusion of students in field trips without compromising the learning objectives of the course. The project was expanded so that students could participate from home, from a Regional Centre, or anywhere with sufficient internet bandwidth to receive audio and video streams simultaneously.

## **PRACTICING PROBLEM-SOLVING USING MOBILE TECHNOLOGIES<sup>31</sup> – THE OPEN UNIVERSITY**

A course-specific project supporting the study of computer networking - providing students with formative quizzes consisting of a bank of randomly selected questions. The activity provided students with access to some 500 formative, multiple-choice questions. Students downloaded fifty, attempted them offline and then reconnected to get results and more questions. Wrongly-answered questions were re-sent, but correct ones were changed. The tool ran on any phone other than a Blackberry, owing to licensing problems. An earlier application offered support of subnetting with binary to decimal conversions, address classification, etc. but was limited to certain phone models due to the use of Java.

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<sup>29</sup> <http://www8.open.ac.uk/about/teaching-and-learning/mobile/projects/teaching-learning-projects/mobile-language-learning-audio-l120-ouverture>

<sup>30</sup> <http://www8.open.ac.uk/about/teaching-and-learning/mobile/projects/teaching-learning-projects/enabling-remote-activity-era>

<sup>31</sup> <http://www8.open.ac.uk/about/teaching-and-learning/mobile/projects/teaching-learning-projects/practicing-problem-solving-using-mobile-technologies>

## PROFESSIONAL DEVELOPMENT IN MOBILE LEARNING<sup>32</sup> – THE OPEN UNIVERSITY

This project researches semi-formal learning communities for professional development in mobile learning. A major barrier to the uptake and integration of mobile technologies in teaching and learning is the lack of personal experience of mobile learning on the part of those involved in teaching and in the preparation of materials and methods of learner support. This project addressed this by introducing 40 academic and support staff to the use of smartphones to support their own learning, within a semi-formal community structure and with a focus on their personal and professional development. The peer-learning community aspects of the project consisted of workshops, clubs, a buddy system, and online environments. A two-stage process gave to organisers the opportunity to reflect on one group's experience before a second group started.

## MOBILE LIBRARY WEBSITE<sup>33</sup> – THE OPEN UNIVERSITY

The Open University library is working to support mobile learners through provision of mobile access to information management skills tutorials, the library website, and the library helpdesk. In 2007, the Open University library joined hands with Athabasca University Library team to develop the first mobile-friendly version of OU Library website. This version of Library website is a single column design intended to work on basic mobile phones as well on smart phones. However, in the last 2-3 years the website analytics have shown an increase in visits from touch screen phones, which has led to redesign the mobile OU Library website to improve usability, especially on touch screen mobile devices. Recently OU Library has consulted users as part of Arcadia fellowship work to identify their requirements and what services they'd prefer to access through mobile phones. Amongst various recommendations coming out of this user consultation (and from other sources including regular users feedback and by tracking user behaviour through Google Analytics) are to revamp the mobile version of Library website to offer only most used services on the home page, implement SMS (Short Messaging Service) such as loan reminders or library reference service, and to develop a consolidated search to offer results from various sources including Library catalogue and e-journals collection. The work on the design of new version of mobile OU Library website is underway and to develop the mobiles friendly website, OU is adapting MIT's open source Mobile Web project which enables the website design to be optimised for three categories of small screen devices: basic, smart and touch screen phones. The new mobile Library website is planned to be launched with new main Library website in September 2011.

From 2011, the University of Adelaide's Faculty of Science will be moving towards mobile delivery, with all first-year students provided with iPads, and textbooks replaced by digital materials. This is the first step towards an overhaul of their teaching strategies, including moving to fully online delivery of first-year Science courses from 2012. To help ensure that teaching materials and activities are compatible with the iPads, teaching staff will also be receiving the devices<sup>34</sup>.

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<sup>32</sup> <http://www8.open.ac.uk/about/teaching-and-learning/mobile/projects/researchevaluation-projects/professional-development-mobile-learning>

<sup>33</sup> <http://www8.open.ac.uk/about/teaching-and-learning/mobile/projects/service-delivery/mobile-library-website>

<sup>34</sup> <http://mlearning.wordpress.com/2010/09/13/university-of-adelaides-faculty-of-science-going-mobile>

## **FABULA<sup>35</sup> (SEAMLESS NETWORKS FOR TRANSFORMING THE CITY INTO AN ARENA FOR LEARNING) – NORWEGIAN UNIVERSITY OF SCIENCE AND TECHNOLOGY**

The vision of FABULA is a city that, with the help of seamless networks, becomes a learning arena for its students, with services that allow people not only to access learning material anytime and anywhere, but also, and most importantly, to take an active role in collaborative processes of knowledge construction and sharing. The principal objective of FABULA is to develop novel principles and technical solutions for learning enabled by seamless roaming in mobile networks, with focus on services that foster the city learning geographies and ecologies and enable new relationships among learners and communities. In pursuing this objective the following sub-goals were addressed:

- Develop, by combining a theoretical and a user-centered approach, requirements for innovative learning services and a conceptual framework that supports their design and evaluation.
- Create a framework for the rapid and compositional development of learning services with support for end-users participation.
- Create a service oriented delivery platform that supports dynamic deployment, adaptation and seamless delivery of learning services. The platform supports location awareness, seamless roaming, and a range of collaborative learning services, including peer-to-peer type of services.
- Develop and demonstrate to end user communities proof-of-concept applications based on the tools provided by the project.

FABULA is a project of the Norwegian University of Science and Technology, including the Department of Information and Computer Science (IDI), the Department of Telematics, and the Center for Learning with ICT.

## **BLOOM<sup>36</sup> (BITE-SIZED LEARNING OPPORTUNITIES ON MOBILE DEVICES)**

Bloom is a project funded by the eTEN office which was designed to bridge the digital divide within the EU passenger transport and logistics sector. BLOOM is a mature mobile learning technology delivering key skills and lifelong learning, which this project aims to market validate within the passenger transport and logistics sector. The project supported lifelong learning, encouraging excluded groups to upskill and enhance their employment prospects through a programme of blended technologies, in which mobile learning played a critical role. It aimed to deliver basic skills as part of lifelong learning within the passenger transport and logistics sector by contextualising the learning areas to meet the requirements of the sector and the workplace, taking into account the patterns of shift working with irregular and unsociable hours that make traditional programmes of learning unsuitable for employees in this sector. BLOOM aimed to demonstrate that workplace learning via mobile devices is a viable option that can add value to learning, and that such a strategy can be sustained by a commercial rollout of the service through a comprehensive business plan which will identify committed sources of funding for the future.

## **CUTTING IT<sup>37</sup>**

Cutting IT is a European project that seeks to develop and pilot innovative models and approaches for small and medium enterprises and their employees in the apparel, clothing and textile sector in East London by helping them adapt to changing market conditions and the impact that new technologies are having on business competitiveness. The project sought to develop and pilot new flexible learning

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<sup>35</sup> <http://www.fabula.idi.ntnu.no/>

<sup>36</sup> <http://www.bloom-eten.org/>

<sup>37</sup> <http://www.m-learning.org/case-studies/cutting-it->

programmes, progression and career pathways, along with learning centres/ access points at workplace and community levels and a sector-specific virtual learning centre. The project developed two sets of new and innovative m-learning materials as part of their contribution to the project.

The first development was a blended learning package of fliers, m-learning games and challenges. The materials, which were used alongside workshops run for students studying textiles, were closely linked to, and reflected elements of, the textiles syllabus. Colourful and eye-catching fliers supplemented the interactive games and quizzes, which use animation and sound to deliver learning. These proved highly successful in the trials with the target group and with their teachers, who took away a significant amount of the paper-based materials.

A second set of m-learning materials was developed in conjunction with Skillsmart. This sector-specific body was working on an innovative venture for delivering Entry to Employment within the sector, and required a tool to assess an individual's current position or level, that was adapted to reflect sector-specific terminology and real-life sector activities. Two screeners were subsequently developed, which were contextualised using real-life scenarios of activities in the following areas: apparel, textiles, footwear and leather, fashion and textiles design, and laundry and dry cleaning. These provided a one-off initial assessment with a downloadable printable assessment report to a standalone PC.

Partners include: Newham College of Further Education, Tribal, Skillfast UK, London Apparel Resource Centre, Fashion Awareness Direct, Fashion-Enter, East London e-Learning, University of East London, London Borough of Newham, Business Link for London, Central London Partnerships, Ideas Foundation.

### **ESF MOBILE LEARNING PROJECT<sup>38</sup>**

The ESF Mobile Learning Project aimed to develop methods of using mobile technologies to engage learners (employees) in Skills for Life learning in industries where learners find it difficult to access learning because of difficult shift patterns or dispersed patterns of working, primarily in the cleaning and transport industries. Its objectives were to engage learners and support their progress towards Skills for Life qualifications, embedded in vocational competence, using a blend of learning approaches. These approaches included the use of mobile devices such as mobile phones and PPCs. The project involved careful screening, assessment and targeting of learners to help them make progress quickly and efficiently, ideally going on to take the National Qualifications in Adult Literacy and Numeracy. There was also a capacity-building aspect to the project to focus on developing capability for staff who were working to recruit, support or teach the learners. It was envisaged that the project would work with the United Road Transport Union and other unions to identify some of the learners in this cohort.

Partners include: Tribal, Middlesborough College, Newham College, People's College

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<sup>38</sup> <http://www.m-learning.org/case-studies/esf>

## MOLE (MOBILE LEARNING ENVIRONMENT)<sup>39</sup>

The MoLE project is a collaboration between 22 nations, sponsored by the US Government. These partners are working together to build a platform independent set of tools aimed at learning collaboration and information sharing on mobile devices. It is about using a global cellular network and mobile devices to deliver and share learning between U.S. and multi-national partners.

Initially, the project focuses on the reconstruction of healthcare and associated services in areas of conflict or natural disaster (known as 'medical stability operations', or MSOs). It is based on a requirement to operate effectively in the largest maritime area of operations (AOR), where one of the most difficult challenges is the ability to train and communicate. It will help overcome long-standing problems of delivering training via mobile devices in areas of limited internet connectivity and limited infrastructure. The project provides the foundation for a proof of concept evaluating the provision of a mobile learning (m-learning) and mobile collaboration (m-collaboration) capability using the U.S. Joint Forces Command (JFCOM) Joint Knowledge Development and Distribution Capability (JKDDC) Internet Public (IP).

This section offered a comprehensive overview of mobile learning projects, describing the way in which such projects contribute in developing the current reality in mobile learning. We examined initiatives ranging from very narrow course-specific projects to generic projects aiming at developing mobile learning spaces. Other examples include virtual libraries, content or space specific applications, even collaboration visual networks between mobile devices that allow experience and knowledge sharing and new knowledge creation. MOVE ON project aims at using experience gained by already existing initiatives, built on this expertise and go beyond state of the art in mobile learning by proposing a mobile training model which addresses modern business professionals' training and development needs by combining latest theoretical and technological breakthroughs.

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<sup>39</sup> <http://www.mole-project.net/about-us>

## 5. Consortium cases in professional training

In this part we'll explore project partners' rich experience in adult and distance training programs organisation. From these "use cases" we intend to draw useful conclusions on the users/ participants' needs, regarding, e.g., covered topics, modes of delivery, timing, etc.

### FIRST USE CASE

	Description
<b>Use Case Number</b>	MOVE ON 1 – ALBA
<b>Application</b>	Business Seminar organized by the Executive Development Department of a Graduate Business School.
<b>Use Case Name</b>	How business seminars are organized in ALBA Graduate Business School.
<b>Use Case Description</b>	Apart from its academic programs (MBAs and MScs) ALBA Graduate Business School has a long tradition in organizing business seminars for business executives in different management fields. With its experienced resident and visiting faculty, ALBA covers all fields of modern management science. During the last few years ALBA has delivered business seminars in numerous distinct fields as financial management, leadership, strategy, change management, creativity etc. ALBA business seminars are divided in two main categories: the "in-house programs" (short – two days long at most cases – seminars and longer, multidisciplinary programs – "corporate diplomas"), and the "open seminars" (two days programs in specific fields open to participation, at a specific fee, from business individuals). This use case describes the procedure of developing, organizing, executing and evaluating such an "open seminar" from the organizer's point of view.
<b>Primary Actor</b>	The organizer: ALBA executive development office (budget holder), who "owns" all seminars organized by the school.
<b>Other Actors</b>	<ol style="list-style-type: none"> <li>1. The instructor: the individual (ALBA resident or visiting faculty member) who delivers the actual training in the seminar.</li> <li>2. The administrator: the ALBA employee responsible for the administrative organization &amp; support of the seminar.</li> <li>3. The executive development organizer - coordinator: the ALBA employee responsible for the relationship with the client(s)</li> <li>4. The participant: the individual that pays the fees and participates in the seminar.</li> <li>5. The participant's company: participant's employee organization that may sponsor the seminar fees.</li> </ol>
<b>Precondition</b>	Two main preconditions: a. the subject of the seminar should be in the range of the school's strategy as this is broken down into yearly programs, and b. a competent instructor should be available to lead the seminar.
<b>Trigger</b>	ALBA's decision, taken at top level (Dean), to approve the yearly executive seminars plan of the school.
<b>Basic Flow</b>	Step 1: The organizer approaches the instructor. They discuss, negotiate and agree on the seminar details (description, outline, content, material, and participants' profiles)

	<p>and the instructor’s fee.</p> <p>Step 2: The organizer defines the seminar costs, the participation fees and the breakeven point for the seminar.</p> <p>Step 3: The organizer gets Dean’s approval for the seminar.</p> <p>Step 4: The organizer cooperates with the marketer to set the promotional campaign for the seminar.</p> <p>Step 5: The marketer executes promotional campaign (press and internet advertisements, email campaigns, social media, and internet page).</p> <p>Step 6: The administrator makes necessary organizational arrangements (book room, technical infrastructure and catering).</p> <p>Step 7: The participant submits the participation form and pays his participation fee by depositing the full amount to ALBA bank account.</p> <p>Step 8: The administrator confirms participation to participant.</p> <p>Step 9: The instructor develops the material for the seminar. This can include PPT presentation, accompanying reading material (articles or book chapters), case studies or exercises to be discussed in class.</p> <p>Step 10: The administrator prepares class material as developed by the instructor to be distributed to participants.</p> <p>Step 11: At the day of the seminar the participant goes to the specified place where the seminar will be held, sign for his/her participation and receive the material.</p> <p>Step 12: The instructor delivers the seminar to the participants (“teaching”).</p> <p>Step 13: The participant attends the seminar.</p> <p>Step 14: The administrator supports the execution of the seminar (e.g., by printing notes, arranging catering details, supporting infrastructure, etc.).</p> <p>Step 15: At the end of the seminar the participant evaluates seminar by returning a pre-specified evaluation form.</p> <p>Step 16: The instructor signs the participation certificate for each of the participants.</p> <p>Step 17: The administrator distributes the certificates to the participants.</p>
<p><b>Alternate Flows</b></p>	<p>Step 1: If an appropriate instructor is not available for the seminar, then the seminar is cancelled.</p> <p>Step 7: If not enough participants to make the break-even point, then the seminar is cancelled.</p>

**SECOND USE CASE**

	Description
<b>Use Case Number</b>	MOVE ON 2 – EDEN
<b>Application</b>	Distance learning short cycle course for teachers (Teacher further education)
<b>Use Case Name</b>	Tutoring Skills Course
<b>Use Case Description</b>	Tutoring Skills Course is a short cycle course for secondary school teachers, HE teachers and all academic staff who wants to have an overview on distance learning and e-learning and of the Hungarian state of the art of distance education. The course is developing organisational and written tutoring skills, like moderation and written feedback.
<b>Primary Actor</b>	The organizer: Budapest University of Technology and Economics (BME), Centre for Learning Innovation and Adult Learning, who “owns” the course organized.
<b>Other Actors</b>	<ol style="list-style-type: none"> <li>1. The tutor: the individual who supports the distance course and delivers the one day training in the middle of the course.</li> <li>2. The administrator: the BME employee responsible for the administrative organization &amp; support of the seminar.</li> <li>3. The participant: the individual that pays the fees and participates in the course.</li> <li>4. The participant’s employer: participant’s employer organization that may sponsor the seminar fees.</li> </ol>
<b>Precondition</b>	Two main preconditions: available tutor; learner with teacher or trainer background; internet access and basic IT skills.
<b>Trigger</b>	At least six learners who want to enroll in the Tutor Skills Course
<b>Basic Flow</b>	<p>Step 1: The organizer contracts the tutor following BME guidelines and technology description of the Centre.</p> <p>Step 2: The administrator makes necessary organizational arrangements (book room, technical infrastructure).</p> <p>Step 3: The participant submits the participation form and pays his/her participation fee by depositing the full amount to BME bank account.</p> <p>Step 4: The administrator confirms participation to participant.</p> <p>Step 5: The participant logs in.</p> <p>Step 6: The tutor sends welcome letter to the participant.</p> <p>Step 7: The participant prepares learning schedule and sends tutor assignments.</p> <p>Step 9: The tutor prepares for the actual course by studying the learner profiles.</p> <p>Step 10: At the day of the face to face training (Intensive day) the participant goes to the specified place where the training day will be held, signs for his/her participation and receives the material.</p>

	<p>Step 12: The tutor delivers the training to the participants.</p> <p>Step 13: The participant actively participates the training activities.</p> <p>Step 14: At the end of the training day the participant evaluates training by returning a pre-specified evaluation form.</p> <p>Step 16: The distance learning continues.</p> <p>Step 17. The administrator organises the oral examination.</p> <p>Step 18. The participant sits the oral examination.</p> <p>Step 19. The administrator collects the exam documentation and prepares the certificates.</p> <p>Step 19: The administrator distributes the certificates to the participants.</p>
<b>Alternate Flows</b>	Step 1: If there are not enough applicants, the administrator waits until at least six participants enroll.

### THIRD USE CASE

	Description
Use Case Number	MOVE ON 3 – ITD
Application	Vocational Seminar organized by the Center of Educational Services (CES) at Sofia University.
Use Case Name	E-business course, taking part in the 2-year qualification vocational program of Business management in CES;
Use Case Description	The E-business course is a part of 4-semester long vocational program for professionals who want to develop more business-oriented knowledge and skills. It has 30 lecture hours including lectures and exercises. The center of educational services supports parallel and continuing education, specialization and new qualification of learners from various spheres of social practice.
Primary Actor	The organizer: CES at Sofia University.
Other Actors	<ol style="list-style-type: none"> <li>1. The instructor: the individual who delivers the actual training in the seminar.</li> <li>2. The administrator: the CES employee responsible for the administrative organization &amp; support of the seminar.</li> <li>3. The participant: the individual that participates in the seminar.</li> </ol>
Precondition	Participants should be enrolled in the qualification program of Business management in CES.
Trigger	
Basic Flow	<p>Step 1: The organizer defines the goals, structure and content of the seminar, find instructor;</p> <p>Step 2: The seminar need to be approved by CES advisory board if it is lecture-type – up to 60 hours, or by Sofia University board, if it is long-term program;</p>

	<p>Step 3: The organizer promote the seminar on its web site and in press.</p> <p>Step 4: The participant enroll for the seminar or for the proogram and pays participation fee by depositing the full amount to bank account.</p> <p>Step 5: The administrator confirms participation to participant.</p> <p>Step 6: The instructor develops content materials for the seminar. This can include PPT presentation, accompanying reading material (articles or book chapters), case studies or exercises to be discussed in class.</p> <p>Step 7: The seminars are organized during 1 semester or several months, according to preliminary schedule. Usually it is in non-working time – evenings;</p> <p>Step 8: The instructor delivers the seminar to the participants (“teaching”).</p> <p>Step 9: The participant attends the seminar.</p> <p>Step 10: The instructor organize a written examination - test.</p> <p>Step 11: At the end of the seminar the participant evaluates seminar by returning a pre-specified evaluation form.</p> <p>Step 12: The instructor signs the notes of participants in the official protocol of CES;</p> <p>Step 13: After completing the program, participant get his certificate;</p>
Alternate Flows	<p>Step 1: First the seminar can become 1-or 2 semester course and after that, it can evolve to long-term educational program;</p> <p>Step 2: If not enough participants are enrolled, then the seminar is cancelled.</p>

#### FOURTH USE CASE

	Description
<b>Use Case Number</b>	MOVE ON 4 – COREP
<b>Application</b>	Vocational Learning
<b>Use Case Name</b>	VET Course for professionals (or single module in a postgraduate Master Course).
<b>Use Case Description</b>	VET Courses are short cycle courses for professionals in specific thematic areas such as industrial security, cloud computing, project management, etc. These courses are generally followed by professionals belonging to companies that use to fund those VET courses in highly professionalized areas. The courses normally foresee written tutoring skills and written feedback. They can be organized both in presence or in virtual settings (distance learning) or in a mixed form.
<b>Primary Actor</b>	The organizer: COREP Torino, who “owns” the course organized.
<b>Other Actors</b>	<ol style="list-style-type: none"> <li>1. The trainer: the individual, specialized in the learning area, who supports the course and delivers the training.</li> <li>2. The (project) coordinator: the COREP employee responsible for the organizational aspects and support of the course (calendar, materials in the learning platform, etc.) organization.</li> </ol>

	<p>3. The participant: the individual that pays the fees and participates in the course.</p> <p>4. The company: participant's company that may sponsor the course fees.</p>
<b>Precondition</b>	Trainer available and a minimum number of participants enrolled and basic IT skills.
<b>Trigger</b>	At least six (break-even point) learners who want to enroll in the course.
<b>Basic Flow</b>	<p>Step 1: The coordinator contracts the trainer and makes arrangements for the organization of the course.</p> <p>Step 2: The coordinator promote the course in the COREP website, including details on the program, calendar, fees, etc.</p> <p>Step 3: The coordinator organizes arrangements (book room, technical infrastructure).</p> <p>Step 4: The participants enroll through the participation form and pay the participation fee.</p> <p>Step 5: The coordinator confirms participation to applicants and sends them an initial questionnaire in order to record their background and expectations on the course.</p> <p>Step 6: The data resulting from questionnaires are treated by the coordinator and sent to the trainer to tailor the course accordingly if necessary.</p> <p>Step 7: Participants are invited to attend the course in COREP, where the trainer presents the program, gives guidelines on learning objectives, methodology and instructions on materials, platform and networking tools (learning infrastructure).</p> <p>Step 8: The participants download materials for off-line learning. The participants can connect to the internet for eventual collaboration learning and networking activities (participation into forum and chats).</p> <p>Step 9: The trainer delivers the course (“teaching”) to the participants attending.</p> <p>Step 10: At the end of the course, the coordinator distribute final questionnaires to the participants to record their satisfaction on the course.</p> <p>Step 11: The data resulting from questionnaires are treated by the coordinator and sent to the trainer for future planning and proper revision of the course structure, tools and methodology.</p> <p>Step 12: The coordinator distributes the certificates to the participants.</p>
<b>Alternate Flows</b>	Step 1: If there are not enough applicants, COREP promotes the course in different ways in order to reach the number of six participants.

These four use cases, that depict partner's experience in professional training, offer a wealth of facts in relation to the modern professional training procedures characteristics. We can identify a set of common facts that act as what we could name “burden” for the organizations that organize such programs. Things like the costs and energy needed, from an organizational point, in order to prepare and run a professional seminar (issues like the room that the lecture will take place, the infrastructure needed to be in place, even catering details like coffee breaks or light lunches) are details that every organizer should take under consideration. Another issue is the instructor. Although he/she – in general terms – repeat every time, meaning in every course of the same subject that he/she runs, the same “material”, the organizer has to pay a new fee to the instructor for every new course. E.g., for a seminar in “Human Resources Management” that runs every year with the same, more or less, content, the

organizer has to pay to the instructor a new fee for every new run (although the content is the same!). To sum up this point, we have to have in mind that every new application of a professional training program brings to the organizer a predetermined set of costs that he has to find ways to cover if he wants to have a financial positive outcome out of this program. And this brings us to another main conclusion of the physical training overview, which is that a certain minimum of participants is necessary for the program to be implemented. This is mainly due to cost reasons, but also to ensure the exchange of views and experiences in the class. And we have to keep in mind how difficult it is for modern business professionals to find the time to be at a certain location for a specific period of time. Last but not least, and at another level, it is clear that the participants need to receive a certification for their participation in the course after they have successfully completed it. To sum up we could say that four are the main characteristics of the physical professional training programs: the organizing costs, the central role of the instructor, the minimum number of participants and the certification that participants take after the completion of the course.

## 6. The Move-On Model

What is the added value of our proposed training model that makes it appealing, especially when compared to other forms or types of professional training? Which are the needs that our mobile training model covers better compared to other forms of training? Compared to “physical” training (physical presence of both trainer and trainee is needed in a specific place) the advantages of a mobile learning system are well justified: avoidance of cost (both in money and time) needed for a physical presence somewhere is the main one. Compared to traditional e-learning systems that, although they do not need the presence of the instructor and the student in the same place at the same time, they still do (in general) keep both of them “stuck” in a certain place, mobile learning is a break-through in terms of breaking this time-place burden and fully implementing the anytime-anyplace approach.

By creatively combining positive elements from the behaviouristic, constructivist and collaborative paradigms, the MOVE ON model plans to go even further on the m-learning practise and combine the autonomous, self instructed learning with the advantages of communication and peer contribution. This approach will be supported with innovative, highly motivational mobile learning tools, and will lead to the certification of the knowledge acquired. Building on this approach the MOVE ON model will include all these dynamic features (like videos, animations, mobile technology games, simulation games, etc.), and communication tools (mobile forum platform) that will make learning experience a pleasant and constructive one.

In order to describe our training model, we first have to share a common understanding about specific basic issues. MOVE ON project’s main educational target is to help business professionals acquire new skills that will help them in their professional – career development. At another level, this mobile training program could possibly lead to the preparation for acquisition of certain professional certifications. To do so, and based on the research findings of this report, we have chosen to propose an incremental approach moving gradually from a “stand alone” approach to a more “societal interactive” one.

Into this framework, the basic MOVE ON model will include a number of short (10-15 minutes) episodes per course. This will be a “stand alone” application which the user will be able to download to his mobile device and follow the pre-specified learning path (episode 1, episode 2, episode 3,..., episode 20) at his own discretion (total freedom in choosing the time and place of learning). To move from one episode to the pre-specified next, the user will have to answer to a “test” (e.g., five multiple choice questions). Although the participant will be informed for his performance in this test, it is not complementary to pass a specific “threshold” to move to next episode (i.e., the participant will be able to move to next episode even if he answers all wrong in the five questions, although he will have the opportunity to repeat the test as many times as he feels to). Apart from the “theoretical” part of each episode which will be presented in the form of text and will not cover more than the 1/3 of the total duration of the episode, each episode will include all these innovative and highly interactive features that will efficiently demonstrate the theoretical notions presented but also will keep participants attention and involvement at high levels. The participants will have the option to participate in the “course’s forum”, a mobile space of asynchronous communication between participants which will make possible the exchange of views, posting and answering questions, submitting personal experiences, asking for assistance from peer participants, etc. This platform will also act as a “repository of knowledge”, since all contributions will stay there comprising a database of knowledge assets for future reference by all users. Each course will conclude with a “course exam” (as long as the participant will have answered to all “episode exams”), in which the participant should have a positive performance (exceed a predefined threshold in correct answers) in order to receive his “certificate of successful attendance” to the course. The second level of the MOVE ON model will go further on what previously described, by giving to

participants the opportunity to communicate directly with the instructor, following certain rules and limitations. This second option will not be piloted during the MOVE ON project lifetime.

By implementing this approach the MOVE ON project is planning to go further down the line and beyond current state of the art in mobile learning. The main strategic goal of the MOVE ON mobile learning model is to enhance users' participation in knowledge building during the course, while at the same time keep the user's freedom in terms of place-time dimensions. This will be achieved by using all these engaging, dynamic and interactive learning tools (videos, animations, games, virtual games, cases) in combination with an option of asynchronous personal interaction between the users (mobile forum). This way, the MOVE ON model aspires to combine the positive aspects of the behaviourist, constructivist and collaborative theories, preserving at the same time the basic mobile communication advantage of using it wherever the user wants and whenever he feels like doing it.

## **TECHNOLOGY**

The technological infrastructure needed for the implementation of the MOVE ON learning model, as well as the technical description of the m-learning platform that will be used, will be made in D2.1 of this workpackage. Nevertheless, in this description we must define that the MOVE ON training service has been developed having in mind the modern so-called "smart phones" features, without excluding other forms of current wireless technology like palmtops/PDAs or older technology mobile phones which cover "rich media" technology characteristics (internet connection, videos, instant messaging). More specifically, for the purposes of the piloting phase of MOVE ON project and based on the reliability and usage characteristics of the servers supporting mobile devices, the consortium decided to focus on the iPhone type mobile phones. On the usage part, the application will have the "screen" as its basic elements, making the learning experience a combination of rich content screens. Navigation tools and instructions will allow user to easily move into the application and follow training material unfolding.

## **INDIVIDUALS – PARTICIPANTS**

The target user for the MOVE ON training model is the modern professional, in any business setting or environment. To become more specific, the consortium decided to focus on the business professionals with a relevant to the learning module working experience, rich enough for understanding the issues discussed and productively contributing in the peer contribution part of the course. Of course, the participant must possess an iPhone technology device.

## **INDIVIDUALS – INSTRUCTORS**

Although the MOVE ON model does not require heavy involvement for the instructor (at least at the first level of the model's deployment), this does not mean that all teachers have what it takes to lead a MOVE ON course. Firstly, the absence of personal interaction between the instructor and the learner during the course means that the developer of the course's material should be experienced but also highly creative in order to proactively elaborating on possible future participants' questions in a constructive but also "amusing" way. Moving to the second level of the model where a certain load of interaction between the instructor and the participant is required, the instructor should also have the capability to productively lead a technology mediated learning relationship against, not just students, but experienced professionals.

## **SOCIETAL**

The MOVE ON training model is developed based on the individual participation of the students. More than that, there are important differences between the two levels of the MOVE ON model as far as the students' participation is concerned, mainly in terms of personal interactions and students' obligations. In any of the two levels, and probably in combination with other tools and activities, the MOVE ON training model could become an interesting option for intra-organisational settings, i.e., as a "hidden"

tool to promote team work or collaboration between different departments, on top of its core training mission (training in a specific area).

## **CONTENT**

The basic content of the MOVE ON mobile learning model will be text in a format appropriate to be used via a mobile device (“bullet style”). This will be enriched with interactive and innovative tools that will make participant “experience” the theoretical content presented, but will also make training experience “lighter” and more attractive for participants. As a general rule of thumb, each course’s episode will devote the 1/3 of its time to theoretical notions presented in text format and the 2/3s to practise based, interactive tools (games, simulations, animations, videos, exercises).

## **DELIVERY MODE**

This will be a fully mobile learning program, without any reference to or blending with physical, or electronic or other forms of distance learning. The basic component of the MOVE ON mobile training program will be the “course”. Each course will cover one specific and distinct knowledge area. Each course will be divided into “episodes” that each one will cover specific parts of the course, in a manner that all of them together constitute a complete and comprehensive understanding, starting from the introductory level and proceeding to more detailed grounds. Each episode will conclude with a mobile exam session (multiple choice or numerical problems) that participants will have to answer to proceed to the next episode (no threshold for passing to next episode, but participants will be informed for their correct answers). Each course will be made up from a number of episodes that each one will not exceed 10-15 minutes. Participants will download and store all episodes in their devices and enjoy the freedom of proceeding through them at their own discretion. Students will also have the option of participating in a mobile forum where they can exchange views with other participants, submit questions or answer previously submitted questions by other participants. After having “attended” all courses’ episodes, the participant should “sit” to the “course exam” and successfully pass it (accomplishing a predefined “threshold” of successful answers) in order to receive the “certificate of successful attendance” to the course. Participants will have the opportunity to “re-sit” the exam in case of an unsuccessful attempt. The second level of the MOVE ON model gives to participants the opportunity of direct communication with the instructor, following certain rules and limitations. This second option will not be piloted during the MOVE ON project lifetime.