# HELPING COMPANIES TO TAKE A LONG-TERM PERSPECTIVE: THE ROLE OF ELEARNING SCENARIOS

*Dr. I. Hamburg, Institut Arbeit und Technik, Wissenschaftszentrum Nordrein-Westfalen, Munscheidstr. 14, Gelsenkirchen, Germany*

*Dr. Z. Puklus, Dr. Z.Horwath, Dr. R. Öttofi, Szechenyi Istvan University, Győr, Hungary*

Abstract: In many countries public vocational training organisations as well as enterprises invest money for professional education projects also in connection with eLearning activities.
But despite imperative figures referring such investments, the actual impact of projects about the use of new learning technologies particularly eLearning for small and medium-sized companies (SMEs) remains limited so far. In this paper we propose the development of eLearning scenarios which provide a tool that helps SMEs to explore complex business environments in which they work and learn and the factors that drive changes and developments in those environments. We give as examples scenarios developed within the European project ARIEL (www.ariel-eu.net).

## 1. INTRODUCTION

In Europe as well as in the United States public vocational training organisations as well as enterprises invest money for professional education projects also in connection with eLearning activities. In this context, the eLearning initiative of the European Commission (http://www.europa.eu.int/comm/education/elearning) would like to mobilise the educational and cultural communities, as well as the economic and social players in Europe, in order to speed up changes in the education and training systems for Europe's shift to a knowledge-based society.

But despite imperative figures referring such investments, it has repeatedly been reported that the actual impact of projects about the use of new learning technologies particularly eLearning for small and medium-sized companies (SMEs) remains limited so far.

Some of the reasons could be the following:

- SMEs had no interest in the project (either because of a lack of incentives or a lack of commitment to the project goals).
- SMEs had no time for the project (due to conflicts with regular work duties, deadlines, or personal schedules).
- The wrong SMEs were selected for the project (they lacked the necessary knowledge or were not star performers).
- SMEs do not believe that such projects could help them to make judgements and take decisions about their business and their future.

Bernier and Buchanan (www.learningcircuits.org/2002/jul2002/elearn.html) propose some steps for avoiding such problems:

- Identify the right SMEs for the task by evaluating skills, knowledge, attitude, and so forth. People should be selected who actually perform the job tasks for which the e-Learning solution is being developed, have time to devote to the project, and have a positive attitude about their work.
- Clarify SME roles and responsibilities, explain, exactly what they will do, such as participate in interviews, be available for observations, describe realistic job scenarios, review eLearning storyboards, and test the e-learning solution. Also describe the importance of their role and how they fit into the project as a whole.
- Explain what is in it for them, the goals of the project and how it will benefit them--for example, it will save time and money, streamline workflow, or boost their department's productivity.
- Make SMEs part of the project team. SMEs often are viewed only as information resources. But by involving them as team members from the very beginning of your project, you will help foster a sense of shared success.
- Communicate process phases and time estimates for SME involvement. Non-developers may not understand what happens in each phase of eLearning needs analysis, design, and development; or time required for each phase.
- Help SMEs describe with the needed detail level. Exemplary performers often have a difficult time describing the specifics of what they do because each step is so internalized that they rarely think about what they are doing.
- Have SMEs review instructional content and initial storyboards. Ask SMEs to review the instructional content while it's still in paper form to ensure its accuracy and clarity. Then, before investing in programming, give SMEs an opportunity to review the initial e-learning storyboards. Ask your SMEs for input on the template layout, navigation controls, and perceived ease of use.
- Have SMEs review content online.

- Ask SMEs to test the e-learning solution. Before trying out the project solution on the target population, ask the selected SMEs to test it. That will help ensure that the program works as intended, all hyperlinks are active, back-end reporting mechanisms are functioning, and so forth.
- Reward your SMEs for success. Close out your project by recognizing the contributions of all your team members, including the corresponding

For the aspect of long-term decisions we propose the development of eLearning scenarios. They are different from forecasts in that they provide a tool that helps SMEs to explore the many complex business environments in which they work and learn and the factors that drive changes and developments in those environments.

Scenarios are "Narrative descriptions of assumptions, risks and environmental factors and how they may affect operations. Scenarios attempt to explore the effect of changing several variables at once with objective analysis and subjective interpretations" (Wikipedia 2005).

"Scenarios are narratives of alternative environments in which today's decisions may be played out. They are not predictions. Nor are they strategies." (Ogilvy 2004)

In the following we present some characteristics of scenarios bringing clarity and simplicity on matters of high complexity.

## 2. SCENARIOS

Each one is trying to look out into the future to make the right decisions. In this process each is confronted with a deeper dilemma: how to strike a balance between prediction – believing that uncertainties could be past when in fact they can not – and paralysis – letting the uncertainties freeze into inactivity.

The managers of organisations face a similar dilemma, but they often carry the additional weight that on their decisions rest the livelihoods of many others. Senior executives have to choose the right thing to do: set a course, steer through the strategic issues that cloud their companies' horizons. They have to ask questions like: Do we buy that competitor? Questions like these are known as "long fuse, big bang" problems and they do not lend themselves to traditional analysis; it is simply impossible to research away the uncertainties on which the success of a key decision will lie (Lawrence Wilkinson – www.wired.com).

One tool that can help make a decision in the midst of uncertainty is scenario planning. A growing number of corporate executives are using scenario planning to make big, hard decisions more effectively. Shell for example has been producing

Global Scenarios for more than 30 years (http://www.shell.com/).

Scenario planning derives from the observation that, given the impossibility of knowing precisely how the future will play out, a good decision or strategy to adopt is one that plays out well across several possible futures. To find that "robust" strategy, scenarios are created in plural, such that each scenario diverges markedly from the others. These sets of scenarios are, essentially, specially constructed stories about the future, each one modelling a distinct, plausible world in which we might someday have to live and work.

Peter Schwartz sayed that "scenario making isn't rocket science"(Schwartz 1991).

He knows because he helped develop the technique back in the 1970s and he is also a rocket scientist.

At Shell, in order to create analytical clarity, the scenarios no longer tell particular "stories", but look at the interplay between essential forces and between the contrasted ways in which different groups can pursue their objectives. While they provide more complex and sometimes technical analyses of business environments, Shell Scenarios are based on a map which provides a simple, unified context which is very powerful to better understand the various conditions under the company has to operate in different circumstances.

Since scenarios are a way of understanding the dynamics shaping the future, we next attempt to identify the primary factors of influence ("driving forces") at work in the present.

In the following we give examples of scenarios developed within an eLearning project.

## 3. EXAMPLE THE ELERNING SCENARIOS WITHIN THE PROJECT ARIEL

ARIEL – Analyzing and Reporting the Implementation of Electronic Learning in Europe – is an international joint project funded by the European Commission in the framework of its eLearning Initiative. The project investigates eLearning supply for SMEs concerning didactic approaches, benefits and fields of application. Another of its themes is the evaluation of the impact of past EU programmes in the field of electronic learning. On this basis ARIEL will build scenarios of the future development of eLearning in Europe particularly referring to SMEs.
The term *eLearning* is used within ARIEL according to the definition in the glossary at www.elearningeuropa.info:

"The use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration."

The "long fuse, big bang" question for the ARIEL scenarios is *Should elearning support European SME´s to be successful and to integrate into the European market?*

With the year 2010 as ARIELs time horizon, the project is in concordance with the time horizon 2010 of the Lisbon strategy.

ARIEL identified as factors of influence organisation of learning, technology, costs, reasons, users, certification and themes of eLearning.

Issues referring to these factors have been grouped by members of the ARIEL consortium into five clusters:

• Vocational system
• Cost-incentive structure
• Technology
• Content
• Business

These issues have been considered as descriptors for the scenarios. They are very complex; some of their constitutive elements – sub descriptors of these descriptors are the following:

• **Vocational system (**synonym to **vocational training system** or **vocational education and training – VET)**: the influence of the national vocational system, the training needs of employees, the learning abilities of employees measured by their basic education, the learning agenda set by individuals and the learning agenda set by SMEs,

• **Cost-incentive structure**: the costs of training, the motivation to participate in training, the obligations and state regulations to participate in training, the relation of eLearning costs towards the costs of "normal" training, the cost-benefit-ratio,

• **Technology**: the accessibility for learners, the ease of use of technology, the spread of broadband technology, the availability of training on demand, the ICT-skills of users,

• **Content**: the availability of customized content, availability of generic content, the choice of eLearning topics for the users, teachers ability to organize training with ICT,

• **Business**: the overall economic development, the export orientation of SMEs, the spread of E-business as a strategy, the degree of cooperation between SMEs.

The ARIEL consortium decided to develop a small set of basic scenarios for Europe which will be evaluated in each ARIEL partner country by a group of experts. In the development we followed Ogilvy

and Schwartz who recommend building the scenario skeleton with the help of a scenario matrix. The first step for building a scenario matrix was to select two or more descriptors which are of the greatest importance for solving our problem and represent the greatest uncertainty for the future of eLearning in Europe's SMEs by combining the descriptors.

The ARIEL team at the IAT in Germany proposes to single out the descriptors "vocational training system" – VET and "business" as being most important for the context of the project.

The factor **VET** is presented here as a complex vector which scores either high or low in two respects: financial investment and trust. The business vector, though presented as a simple parameter, represents multi-layered developments.

For each scenario we made an evaluation of the current situation in 2005. It is supposed that till 2010 the sub descriptors of the scenarios will develop in different ways – positive (increasing) negative (decreasing) or remaining with stationary contributions (stagnation) – to get a satisfactory answer to our question. We used questionnaires in order to analyze the answers of experts in relation to the contributions of different factors in our scenarios in different countries (regions)**.**
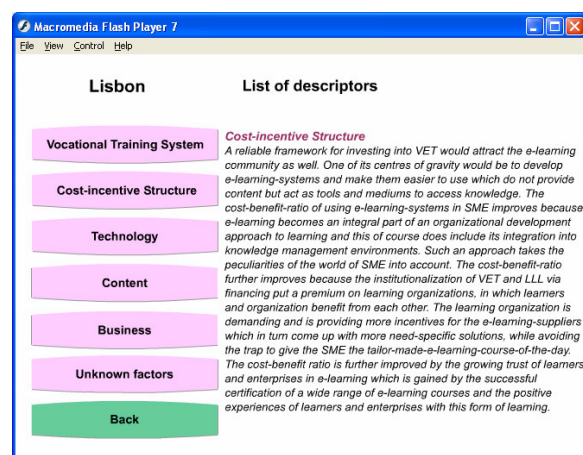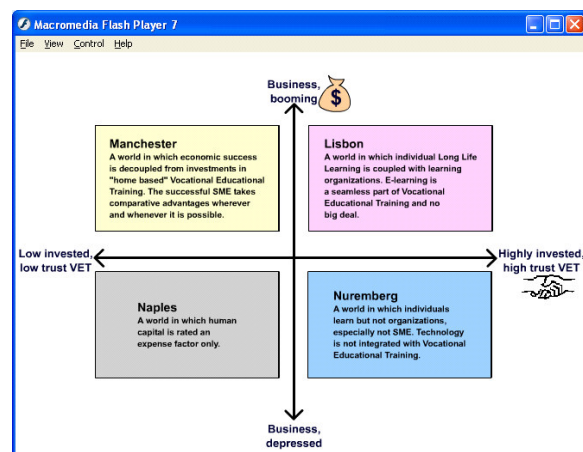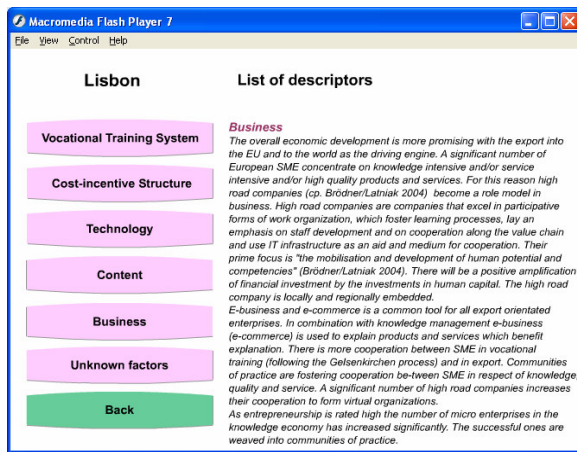
In the following we describe a procedure for the codification of the answers corresponding to the sub descriptors: positive or increasing with 2, stagnation with 1, decreasing or negative with 0. If for example a descriptor contains 15 sub descriptors then we can associate to this descriptor in a scenario a sequence of 15 digits which are 2, 1 or 0.

The number associated to this constellation is

$$J=j_0 3^0 + j_1 3^1 + j_2 3^2 + \ldots + j_i 3^i + \ldots + j_{14} 3^{14} \quad \text{(no 1)}$$

**J** is written in basis 3 and $j_i$ is the codified answer for the i-th sub descriptor and has value within the set $\{2, 1, 0\}$.

**J** is a number within the set $\{0, 1, 2, \ldots 3^{15}-1\}$.

The values of J could be **„ decoded"** through its **successive division by 3**.

In order to compare two constellations **J** and **K** of the same questionnaire (for two different countries, etc) we can define a distance or a n**orm ‖ J-K‖**

$$\|J-K\| = |j_0 - k_0| + |j_1 - k_1| + |j_2 - k_2| + \ldots + |j_i - k_i| + \ldots + |j_{14} - k_{14}| \quad \text{(no 2)}$$

$|j_i - k_i|$ is the absolute value of the difference of two answers about the contribution of the **i-1-th** sub descriptor.

As an example the constellation 222222210000000 (7x2+1x1+7x0) means 7 positive answers,

7 negative and 1 stagnation is different from 111111111111111 (0x2+15x1+0x0).

Their distance is 15 referring to the constellation 000000000000000 but the two constellations are different. The distance has been calculated in a space with 15 dimensions (if there are 15 descriptors) that means that the addition is neither a scalar nor a vectorial sum.

If the sub descriptors do not have the same importance (for example the sub descriptor about investments is more important than that about unemployment) then we can introduce „weights" $C_i$

for the sub descriptors and obtain the following formula for the distance.

$$\|J-K\| = C_0 |j_0 - k_0| + C_1 |j_1 - k_1| + C_2 |j_2 - k_2| + \ldots + C_{14} |j_{14} - k_{14}| \quad \text{(no 3)}$$

where $C_0, C_1, C_2, C_{14}$ are the weights of the sub descriptors and

$j_0, k_0, j_1, k_1, j_2, k_2, \ldots j_{14}, k_{14}$ **are** encoded answers with the values in the set $\{0, 1, 2\}$.

We can now ask what we conclude if we add the 15 encoded answers: this number reflects the state of the social phenomena. If the values of the answers for all descriptors are 2 then we have an optimal situation that can not be „reached". It is important for us-o find a „good" solution (with many 2s) and to try to propose measures for the country (region) to „appropriate" the other situations to this.

At the moment we would only like to evaluate the distance of an existing constellation in rapport with constellations taken as „characteristically" (reference constellations).

Each scenario is linked with the name of an European city: the optimistic scenario has the name of Lisbon strategy, Manchester serves as an icon for "Manchester capitalism", the German city Nuremberg represents a highly invested vocational training system as a kind of tradition which is not part of the business success anymore, Naples remember us this city in the 2nd decade of the 20th century. We could obtain o deeper characterisation of the situation in a country (region) if we consider it in report with these four "cardinal points".

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