

## USING E-LEARNING SCENARIOS FOR MAKING DECISIONS IN ORGANISATIONS

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### **Abstract**

The use of the Internet and Web technologies lead to E-Learning activities and public vocational training organisations as well as enterprises invest money for professional education projects in connection with E-Learning activities. But despite imperative figures referring such investments, the actual impact of projects about the use of new learning technologies particularly E-Learning for small and medium-sized companies (SMEs) remains limited so far. In this paper we propose the development of E-Learning scenarios which provide a tool that helps SMEs to make decisions when using E-Learning. We give as examples scenarios developed within the European project ARIEL ([www.ariel-eu.net](http://www.ariel-eu.net)).

### **1. E-LEARNING**

It is known that Information and Communication Technologies (ICT) have undergone dramatic changes in the last years facilitating new forms of education. For example the use of the Internet and Web technologies lead to E-Learning activities and public vocational training organisations as well as enterprises invest money for professional education projects in connection with E-Learning 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.

Unfortunately the performance and reputation of E-Learning have not lived up to the lofty expectations set by the early realization of the enormous potential benefits of this marriage of learning and technology (Beer et al., 2003). One problem could be the (non) human factor. Initially, E-Learning was seen not from the student's point of view, but from the administrator's – an opportunity to cut costs by automating the learning process, cutting out teachers and staff by going directly to the learner, reducing inventories of books and libraries, and reducing classroom and building requirements. Another aspect is that rather than using the dynamic and distributed nature of the technology to re-engineer the learning process, the most common strategy employed by educational institutions to date has been to replicate existing classroom and course design practices. In the absence of any consistent vision of what an E-Learning platform should be or do, the inherited paradigms also led to the patching together of existing technologies and systems, such as email, whiteboard and video streaming, to deliver the same kinds of functionalities as seen in the classroom. The user got left with multiple systems, each with their own passwords, interfaces, and navigation, increasing their frustration (E-LEARNING FRAMEWORK, 2003).

The results of a monitoring of projects funded by Leonardo da Vinci Programme show a shift in the orientation of the E-Learning projects: "During the first years of using the internet and ICT, most of the E-Learning projects, even those aiming to design learning processes, were focused on technical innovation to create technology based learning environments. There would appear to have been a change in thinking on E-Learning in the past three to four years, with a new focus in the discussions on E-Learning. Rather than the emphasis on technology, the new focus of thinking on E-Learning is increasingly on the learner him/herself and on methodologies and didactics. This is seen as more important in developing the quality of E-Learning provision and ensuring the success of ICT supported learning processes" (Attwell et al. 2003).

As mentioned above the present spread of E-Learning is far away from meeting the enthusiastic expectations made by experts only a few years ago. A predicted "revolution in learning" is still missing (Michel 2004). In fact there is an uneven distribution in the use of E-Learning. In university education and big companies it is not uncommon to be used

or is at least a known topic meanwhile E-Learning for small and medium-sized companies (SMEs) remains limited so far (Mill et al. 2004, Hamburg et al. 2005). It is one point of interest of the authors' observatory project "ARIEL" ([www.ariel-eu.net](http://www.ariel-eu.net)) to identify the reasons. Some of these reasons could be that SMEs have no interest in the project (either because of a lack of incentives or a lack of commitment to the project goals), have 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) or they do not believe that such projects could help them to make judgements and take decisions about their business and their future.

For the aspect of long-term decisions we propose the development of E-Learning 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 described as "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).

Ogilvy (2004) said:

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

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

## 2. SCENARIOS

Scenario technique has its origin in the use of military planning of WW II. Its civil breakthrough came with a study produced by the Royal Dutch/Shell Oil Company under the guidance of Pierre Wack at the beginning of the 1970s. (<http://www.shell.com/>).

Scenario planning is nowadays used in two ways: As an interactive teaching tool in education and as a method to prepare decisions in politics, military, science or business. In spite of the fact that there is only a slight difference between these two kinds of applications except the goals they are aiming at. In this work we refer to scenario building for decision preparation. It is essential for decision makers to gain knowledge about the possible impacts of their decisions or not taking a decision. For this reason several methods are used to get information about the future. The sources of information range from the consultation of an astrologist (e.g. by the former presidents Reagan and Mitterrand) to the use of highly sophisticated computer simulations. But if there is a problem about future development because it can not be predicted by a simulation due to its complexity or simulation costs - and there is no trust in astrology-, it is a good idea to try the application of scenario planning. The other important motivation for the use of scenario technique is to draw a vivid picture of a situation or development. It is quite often more persuasive to get a holistic view by reading a story or to look at graphic interpretations than reading columns of numbers.

Scenario planning is a tool that can help making a decision in the midst of uncertainty and supplements traditional prognosis methods. A growing number of corporate executives are using scenario planning to make big, hard decisions more effectively.

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.

There is no legal definition about what scenarios exactly are (as revealed by the citations above) nor how they have to be constructed but a few attributes can be often found

- scenarios should contain all relevant key factors of the problem sphere
- scenarios are political and normative, that means they are modelling desired and undesired social developments dependent from the values of the author
- scenarios are creative-intuitive, e.g. a combination of single data and factors has to be condensed to a plastic picture of the future
- scenarios are transparent, all steps, information and hypotheses leading to the scenario must be shown and explained
- scenarios are practical, they are a call to achieve a positive future by active participation
- scenarios are complex, they can not be reduced to a simple set of "if-then" relations
- scenarios don't need to be of high probability, but at least they must be possible.

It can be found commonly in literature that the use of the scenario technique is divided into different phases. The different phase models differ only in a marginal way, therefore a simple phase model will be introduced as an example, which consist only of four phases (some models use a division of up to 13 phases).

### ***1. Phase: Analysing task and problem***

The first phase consists of defining and describing the object of examination. Thereafter the factors/descriptors that describe this object and its future development have to be found.

Output of this phase is a detailed description of the problem and the task of the scenario and also a list of factors.

### ***2. Phase: Analysing the influences***

In this phase the aim is to examine how the different factors interact. It is common for this kind of analysis to use a table to describe the influence of the different descriptors. In direct opposition the influence of one factor to another has to be described (no impact, weak impact, strong impact). Finally the impacts of the factors can be accumulated and compared in matrix.

Output of this phase is a table that describes the impacts of the different factors.

### ***3. Phase: Scenario building***

Now the different possibilities in development of the descriptors must be characterised. Then the different developments of the factors can be combined in a mathematical way to build up scenarios. It has to be noticed that not all combinations of factors make sense and similar combinations can be seen as one. After all, a few scenarios must be selected for further examinations. It is typical to choose at least a trend scenario -a linear projection of current development- and a "best case" as well as a "worst case" scenario.

As an output of this phase scenarios and the development of the factors leading to these scenarios are found.

### ***4. Phase: Evaluation and interpretation***

A closer look at the selected scenarios will be taken in this phase.

The selected scenarios will be opposed to each other with their chances and risks and also with their estimated probability of realisation. After all, measures and recommendations for the different scenarios must be found. Output of this phase is the evaluation and opposition of the selected alternatives.

The presented method is only one possible way to design a scenario. It is introduced to demonstrate how a scenario can be designed. The task for the author of a scenario is to find or invent an adequate approach to obtain a satisfactory result.

For the qualitative rating of a scenario the following criteria can be used.

1. Scenarios must be free of contradiction, i.e. different developments in the scenario must not cancel each other
2. Stability of the scenario, i.e. small changes in a few factors should not result in a break down of the whole scenario
3. A high rate of difference between the different scenarios
4. Transparency of the used design steps, at least for the scenarios' authors

Someone could ask for the difference between a well done scenario and a science fiction story and in fact they seem to be similar. If we take a look to an excellent science fiction story like George Orwell's "1984" it is quite close to the construct called "scenario", therefore the distinctions have to be pointed out. Scenarios for prognosis are made by scientific methods, even if they are subjective. In scenario planning all factors (descriptors) leading to a scenario must be explicitly named and proofed at least for the developers. To gain credibility for the scenarios this "source code" of a scenario should be open to all groups interested.

The proposed scenario story telling system is only one way to edit scenarios.

Shell studies, 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 which 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 E-Learning projects.

### 3. EXAMPLES OF E-LEARNING SCENARIOS

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 E-Learning supply for SMEs concerning didactic approaches, benefits and fields of application. Another of its topics is the evaluation of the impact of previous EU programmes in the field of electronic learning. On this basis ARIEL will build scenarios of the future development of E-Learning in Europe particularly referring to SMEs (Hamburg et al. 2005)

The term *E-Learning* is used within ARIEL according to the definition in the glossary at [www.E-Learningeuropa.info](http://www.E-Learningeuropa.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 “*Can E-Learning 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 E-Learning.

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

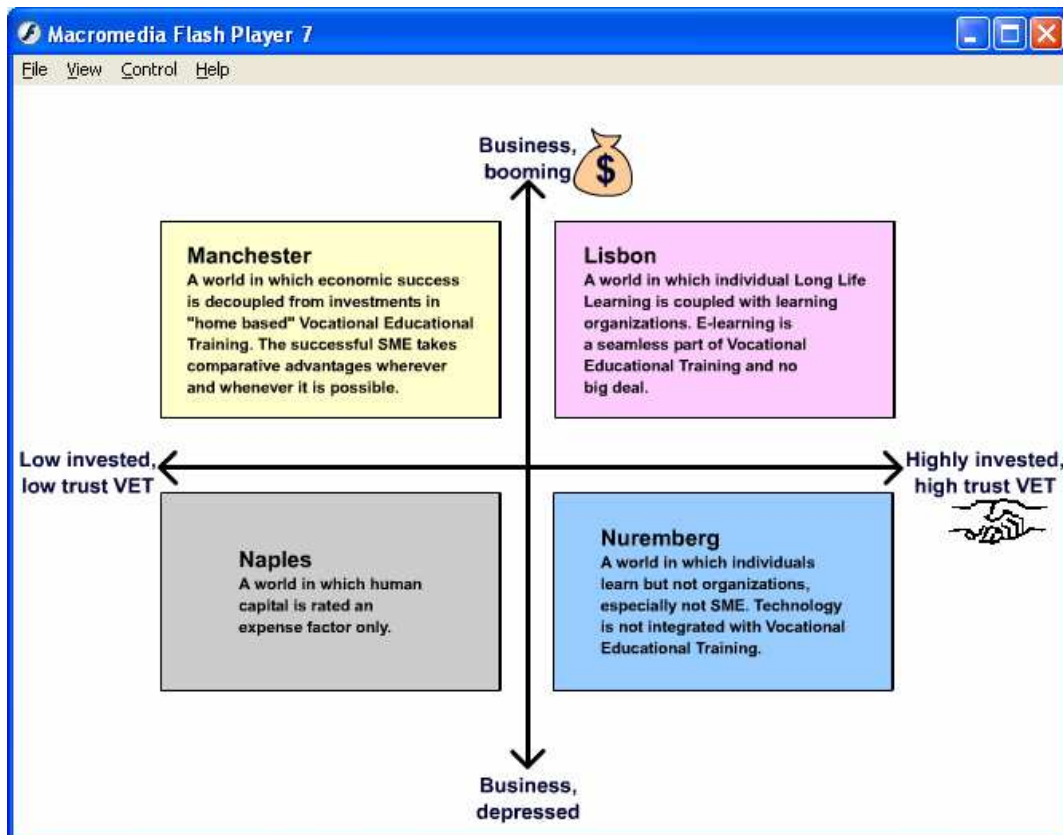
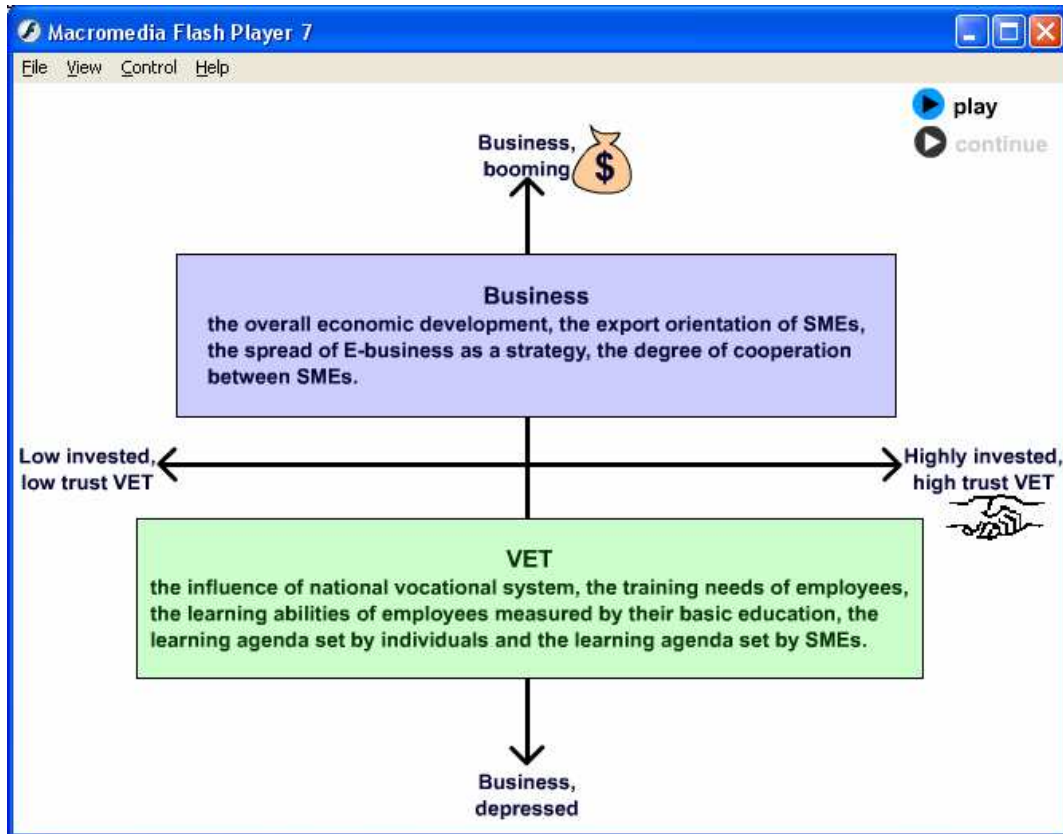
These issues have been considered as descriptors for the scenarios. They are very complex; some of their constitutive elements – sub descriptors of these descriptors are the following:

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.

The ARIEL consortium decided to develop a small set of four basic scenarios for Europe. At the moment each scenario is linked with the name of a European city: the optimistic scenario has the name of the 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 remembers us this city in the 2nd decade of the 20th century.

For each of the four scenarios we made an evaluation of the current situation in 2005. It is supposed that until 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).



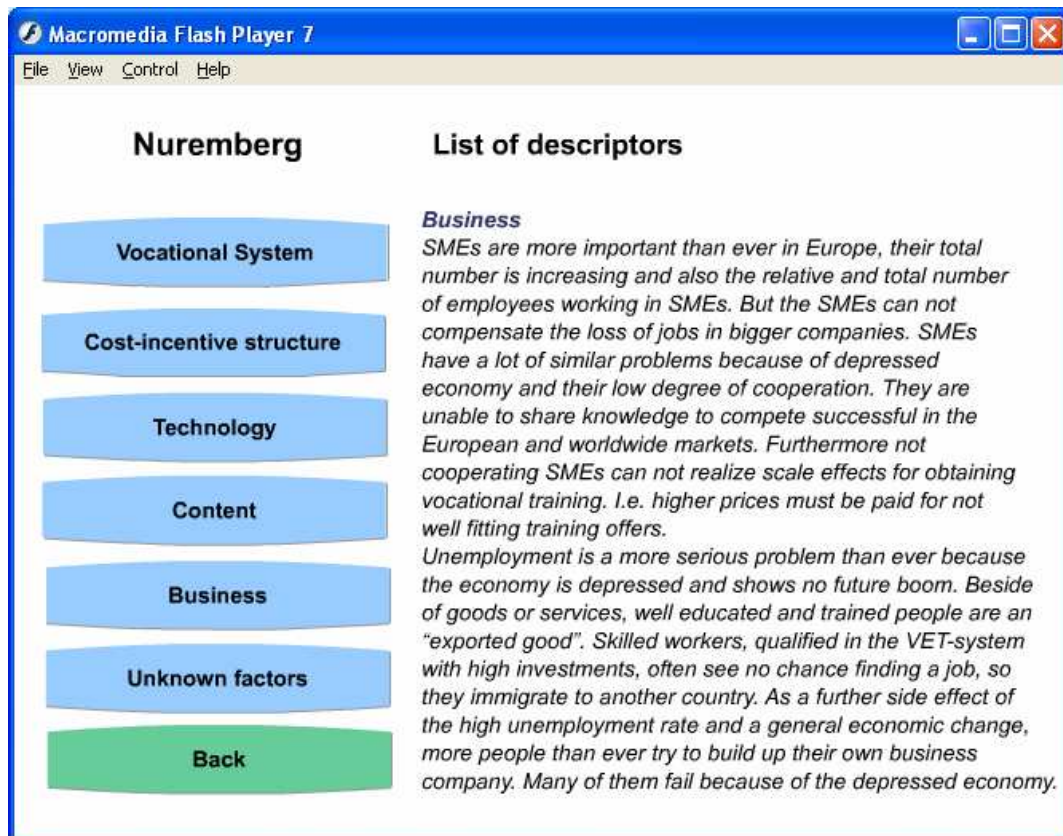


Figure 1: The ARIEL-Scensrios

Another example of a contribution of scenarios to help companies from early socialist countries like Romania to be successful and to integrate into the European market is given within a DAAD cooperation between Germany and Romania.

In Romania the situation of SMEs is very precarious because most of them do not correspond to European needs. It is expected that within the process of integration of Romania into the European Union 80% of them will be lost.

Within this DAAD cooperation the ARIEL-Scenarios will be adapted for the concret situation in Romania and presented within a Forum that will be organized in Turnu Severin in cooperation with the institute IMME of SMEs from Romania.

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