Decentralized Business Training: Case Interactive Networked Business Game

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1. INTRODUCTION

The competitive environment around most businesses and companies is changing with accelerating speed. For example, competition is becoming world-wide, new products are developed faster, new producing technologies are emerging, and new delivery channels are available. Organizations are in the midst of whole new challenges and are seeking for better competitive position and productivity.

There is a demand for the training methods to be able to describe the characteristic of the recent and future environment and to train the employees to be able to operate effectively and productively in this turbulent environment. Regardless of the level of productivity improvement desired, people as decision-makers and as responsible for task execution need to understand thoroughly what they are part of in order to be able to cope with every day tasks. While the world around businesses is changing with growing speed the business game processing methods are still quite the same as 25 years ago.

In the future the use of management games in learning will probably be at least as common as today (Elgood, 1996): *Technological development will certainly not slow down, and one will be able to simulate more situations with greater realism and greater ease. …work will be seen as an activity that should be rewarding in itself, and enjoyable, and therefore something to which game-playing can reasonable be linked.*

Considering the recent developments there is a distinct demand for new training tools which enable distributed, interactive, real-time learning. What is suggested here is that – compared to more traditional business training – decentralized business game training and the use of Internet tools could be in many ways a better practise in business training. While writing this paper the author is on the final phase of constructing such an interactive learning tool which will be used in decentralized business training.

2. THE NEED FOR DISTANCE BUSINESS EDUCATION

As organisations have converted to an information age economy, they have also decentralized their organisational power and authority (Hesse, 1995). This has lead to a situation where decision-making power is as near the front line of operations as possible. And this - together with the advances is communication technologies - has allowed organisations to decentralise themselves geographically. By decentralizing activities organisations aim to reduce complexity, increase flexibility, improve efficiency, and create new strategic opportunities (Jackson and van der Wielen, 1998). These dispersed organisations are called virtual organisations and are designed to overcome time-and-place constraints associated with rigid bureaucratic structures. What has emerged is a new type of organisation that often relies on telework.

For people as employees in this new environment, the change has been a rapid one. It is obvious that technologies develop so fast that people have serious problems in trying to adapt to all changes. Teleworking involves several changes in the working practise compared to a non-teleworking environment. These changes may concern, for example (Jackson and van der Wielen, 1998):

- Self-management by the workers themselves
- Reduced input control
- Output-oriented management and supervision
- Skills involved in managing the psychological and social boundaries between work and non-work
- A need for better knowledge management and organisational learning
- Issues of commitment, loyalty and organisational identity
- Better team-building skills and trust between the parties

If the change is so obvious and the areas of change are so many, it is distinct that also the business training should be adjusted to correspond to this development. Compared to more traditional business training, tele-training could be in many ways a better practise in training virtual business.

Distant learning is a category of training, which is technology-based, and where the instructor and students are separated geographically (Whalen and Wright, 1998). The decentralized tailored business game could be one answer on how to:

- train the employees to understand the company modes of action
- visualize the holistic structure and goal of the company
- make the employees become acquainted with each other through the organisation
- make the employees learn distant co-operation with each other
- make the employees learn to cope with new communication technology
- orientate new tele-working employees to organisational issues

While it is often difficult to gather the employees of a company simultaneously in same room for training, a decentralized tailored business game could be a medium to train these abilities needed. Whalen and Wright (1998) mention five reasons for organising distance learning instead of traditional classroom style training:

1. ability to take courses at a convenient location
2. access to expert instructors regardless of geographical location
3. interactivity of technology-assisted instruction that adds value to the learning experience
4. reduction of costs for the employer
5. increased employee access to training because of reduced costs

In case of decentralized business game training, an addition to this list could be the benefit of learning to use realistic tele-working tools in a virtual tele-working environment. If it really is so that the real-world environment similitude of the business game enhances the learning process, then the decentralized business game should enable more effective learning of virtual working.

3.   ADVANCED BUSINESS GAME TECHNIQUES

This paper will describe a solution for implementing a business game where several groups of participants each make up companies which compete against each other. It is essential that the business game environment is constructed in a similar way to the real world environment. This means that the connection between the players, the supply market, the customers and the capital market needs to be interactively (real time) processed. What is essential is the role of time in decision making and the communication between the companies and different stakeholders. If the participants of the game are decentrally located, the business game training situation can be made to resemble the actual virtual business environment and teleworking.

So far the computer based business games have worked in batch-process mode which means that the model can not illustrate the actual functioning of real world decision making. The batch-processing model works in a linear order in which (figure 1):

1 the participants first enter their decisions for the first business term or season,
2 the decisions are given to a game model which includes the game rules and operates with the decisions,
3 the game model gives the results for the participants from the first term
4 this iteration is continued from 1 as many iterations as needed in order to meet the goals given for the learning program
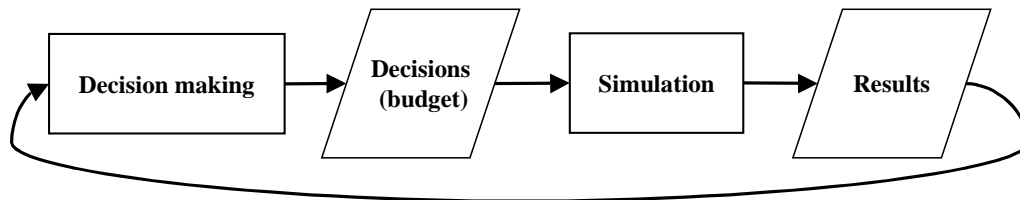

Figure 1: *Batch-processed business game.*

A batch-processed business game works in a way where all the decisions from all the competing companies are first made for the whole season to be simulated. Then the simulation phase takes place and all the decisions are processed as a batch, all decisions being equal in the process.

The problem with the batch-processing method is that world very rarely works in such a sequential order. There are hardly no business areas where the decision makers first enter all their decisions for the next budgeting term, then rest during all the actual term, and enter again the business in the end of the term to analyze the term results executed and to prepare the next budget.

What is suggested here is that decisions making and having results from the decisions made should be in interactive real-time mode as they are in the real-world environment. Interactive mode means that decisions are made continuously when in the game model and game market situations occur which need to be reacted to by the participants. In the interactive model decisions are made as soon as they are needed or at least as soon as the decision-maker notices that the market situation needs actions from him.

To sufficiently realistically represent the turbulent business decision environment the significance of time must be included. This is accomplished by building a business game, which includes internal time - a game which works as a normal business environment so that different business events and decisions are processed, executed, and decided on in virtual real-time. The only exception is that the internal simulation time is accelerated compared to the real world.
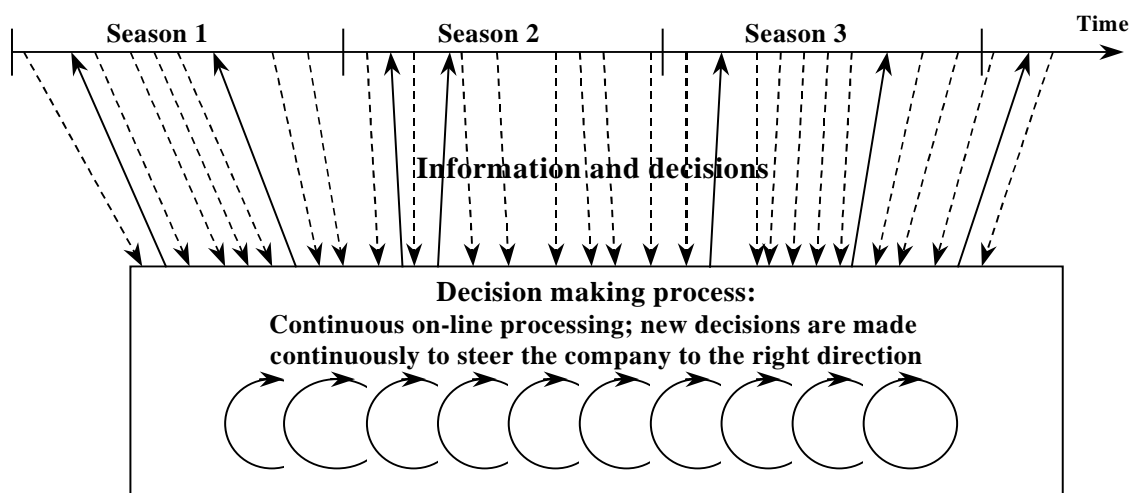
Figure 2: *The real-time processed business game environment.*

In a real-time processed business game all the events and processes take place continuously. If not necessary, the simulation processing does not stop at all. The participants who steer the company see all the market events and internal processes on-line. What ever happens can be seen instantly and reactions also can be carried out instantly. The game works exactly as in real world business environment with the exception that the internal simulation time is exhilarated compared to the real world (figure 2).

Real-time processing demands a platform, which offers on-line connections between the different parties in the business game. This means a network environment. With the use of a computer network the technical solution of the game becomes decentralized. With present network technology the participating computers (i.e. competing companies) can be geographically decentralized. The distances between the parties can be considerable without any disadvantages for any of them, because the data transfer times are insignificant compared to duration in human decision making.

With this structure based on a network the different entities (companies, suppliers, customers and funding organisations) are distributed. But with the network environment the entire functional decision making inside the company can also be decentralized. In this form the company transaction data bases are maintained in the network server and can thus be shared with several workstations, all working on the account of one company (figure 3). Because the company databases are shared, the different company workstations can also be geographically distributed. In this structure the collaboration between the company branch offices and remote members is vital and it is possible only with teamwork between the offices.
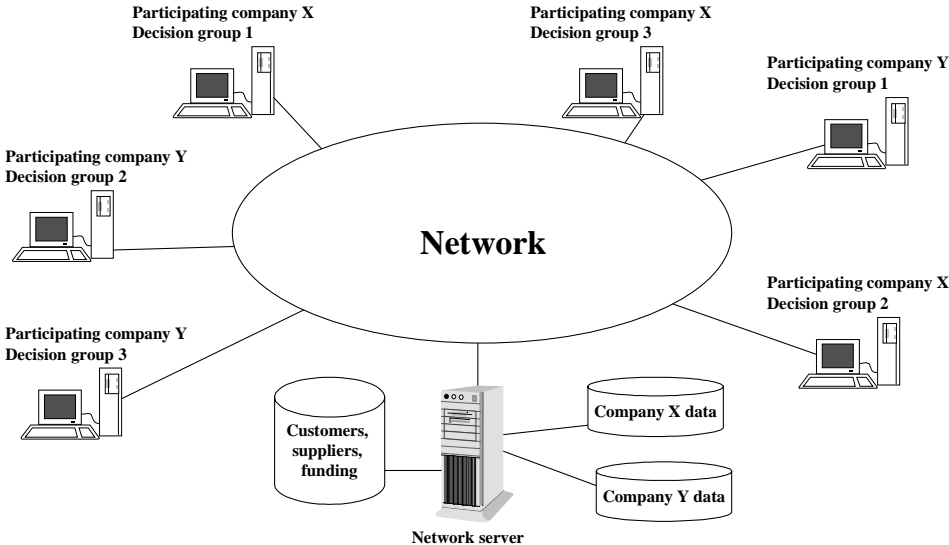

Figure 3 *Distributed business game based on a network*

Besides of functional decentralization the business game can be further developed to describe the present state of telework technology. In the case of figure 3 the branch offices need to have methods of communicating with each other. This can of course be realized with conventional financial indexes and accounts. These lay the ground for business decision-making, but are insufficient for effective cross-functional collaboration. But there must also be diversified communication about the goals of the business entity and common agreements on these. Fortunately present telecommunication technology serves several instruments to accomplish communication between remote offices. Thus, the new business game could include cross-functional e-mail, voice mail, Internet phone, videophone, and so on, to support the internal company communication.

The impact of time in real-time and batch-processed business games in some company operations and processes is described in table 1. The examples in the table illustrate just some of the deficiencies in batch-processed games compared to real-time processed games.

Operation / Process	Batch-processing mode	Real-time processing mode
Reacting to sudden opportunities in the customer market	The speed in which the opportunities are reacted by does not have any significance, because all the companies deliver their decisions (or at least their decisions are processed) at the same moment. The fastest decision-maker does not benefit from fast decision making. E.g. no company has any advantage of adapting early to customer needs.	The true nature of decision speed is described, because faster decision maker always responds first to any external events. For example, the company that fastest adapts to changing customer needs can gain new market share.
Speed of delivery process	The speed of delivery process has no (or minimal) significance as a competitive advantage.	The time of delivery might have a crucial impact on which company the customer will order from.
Response to misleading production plans	A misleading production plan can not be straighten until the decisions for the next season are being made.	A misleading production plan can be straighten as soon as it is discovered. This means that good observers have advantage of being good observers.
The advantage of faster product development	In some cases the speed of the product development process does not have any significance. E.g., consider two companies (A and B) developing similar novel products. Company A develops the new product during the season in half of the duration of the season. Company B develops the new product during the season but it takes all the length of the season. In this case the company A has minimal - or none - advantage of being faster in the development process.	The company being faster in development processes earns all the benefit it deserves from being faster. E.g., it can benefit from being the only provider of the novel product by demanding higher price from the product.

Table 1: *The impact of time in real-time and batch-processed business games in different company operations and processes.*

4.   STATE OF THE RESEARCH

While writing this paper the author is on the final phase of constructing an interactive real-time processed decentralized business game. This game will be used in co-operation with two industrial partners for which the game will be configured. In January 1999 the game has been played twice with small test groups of participants. The following screen copies demonstrate the

functioning of the game model. These very screen copies illustrate a configured game interface for the other of the industrial partners. The process of a delivery is simulated.
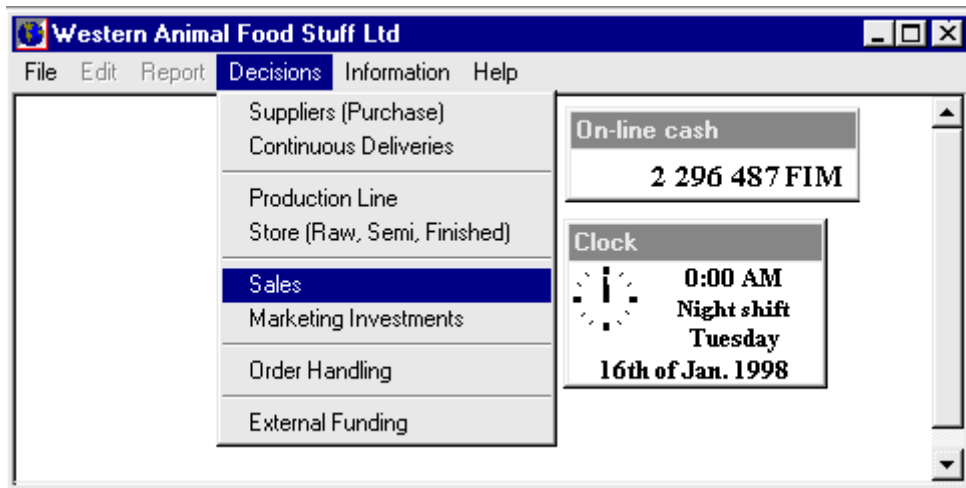

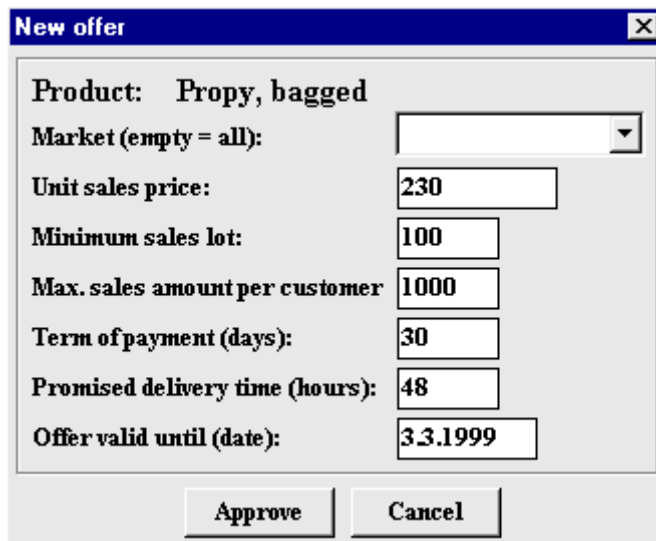**Figure 4**: *The user interface of the real-time processed business game.*

Figure 5: *The creation of an offer. Here the product bagged Propy is offered to all markets.*

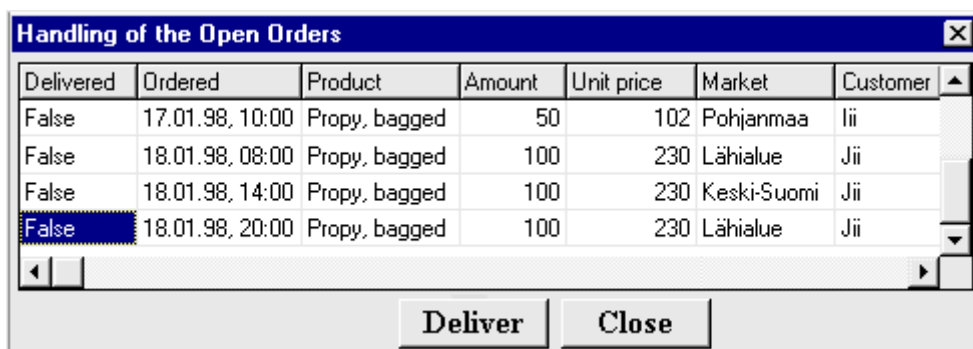**Figure 6**: *The company has received a bulletin informing about an order from a customer / several customers.*

Figure 7: *The decision makers can browse through all received orders and deliver them one by one.*

Figure 8: *The company creates a delivery on the basis of the received order. The transport mode for the delivery is selected. During all these decisions and events, more than two days of the internal game time has been elapsed.*

The first pilot game event is planned to be held in December, 1998, and the game model will be in productive use beginning about April 1999. After the completion of the game construction, the aim is to study the use of this business game on training and to survey the possibilities, benefits, and disadvantages of the game compared to conventional business game training. Because of the decentralized nature of the game the distance learning aspects are the very focus of this future research.

By May 1999 the researcher will have some preliminary experience on the suitability of the game training in the field of distance business training.

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