

STRATEGIC BUSINESS SIMULATION

TECHNICAL FIELD

This invention relates generally to a method and system for simulating a business environment to enable participants to interact with the simulated
5 environment to gain a better understanding of those environments. More particularly, the invention relates to a computer assisted simulation of a business environment where participants take turns to make business decisions and observe the result of those decisions.

BACKGROUND OF THE INVENTION

10 Despite the prevalence of education, training and books relating to the theory of business, many companies continue to fail. According to some surveys, almost 50% of companies will fail within their first two years, more than 75% of companies will fail in the third to fifth year and only 3% of companies can survive after the first 7 years of operation.

15 The cost of business failure is very high. Beside the fiscal burden placed upon creditors, there is also a human and social cost.

The complexity of a business and the environment in which it operates requires a successful business owner to be very skillful and equipped with substantial knowledge in order for the business to survive and prosper. For
20 these same reasons, it is difficult and costly to provide effective training for business education. The conventional class room teaching or case study technique is only partially effective in providing sufficient knowledge and skill to business students.

There have been previous attempts to provide learning systems that
25 include simulated businesses and business environments in an attempt to assist business students gain the understanding and knowledge they require in order to avoid business failure. These previous attempts can be classified generally as either:

- Manual card/board game;
- 30 • Board game with paper and pen;
- Board game with computer-aided input to replace the paper and pen; and

- Computer assisted game with or without the use of an expert system on a Local Area Network or conducted over the Internet.

MANUAL BOARD GAMES

- Examples of this approach include games such as Monopoly and risk type games. These games are generally simple to play and easily affordable. However, they are generally considered to lack sufficient scope to accurately reflect the real business world.

MANUAL BOARD GAME INCLUDING RECORDING OF RESULTS

- Examples of these types of games include "Rat Race", the "Trucking Business" simulation game and finance board games generally. These games primarily teach financial management principles and allow for more complex scenarios requiring the participants to learn the relevant financial management principles in order to succeed at the game.

- However, it is generally considered quite time consuming to record and manually calculate results for each participant's turn. Additionally, the requirement to record and calculate results for each turn is error prone.

- These types of games are considered to narrowly focus upon the principles of financial management and cause the participants to focus a great deal of their attention on the recordal and calculation of results at the expense of analysing the effect of each participants turn and how the participant's decisions could have been improved to produce a better result.

PERSONAL COMPUTER SYSTEM GAMES

- Some business simulation games use a personal computer or laptop computer with a customised spreadsheet template such as Lotus 123 or Microsoft Excel for data entry and to maintain a record of transactions. In these instances, the operation of the game lacks the input of other participants which introduces the "random" effect of other participants actions in the simulated business environment.

- Further, the use of a spreadsheet requires the participants to become knowledgeable of these types of computer applications and may require the participant to purchase a copy of the computer application in order to play the game. In any event, the use of a personal computer significantly increases the

cost to a participant wishing to increase their business knowledge and understanding.

INTERCONNECTED PERSONAL COMPUTER SYSTEM GAMES

LAN server or Web server based computer games primarily represent
5 the board based game on the visual display of the personal computer of each participant and provide for data communications with other machines enabling each visual display to display the position and moves of all the interconnected participants.

In any event, these types of games are usually intended to enable
10 participants to participate in a game without being in close proximity to one another. Accordingly, during play, it is not usual for all the participants to be able to see each other and to communicate personally with each other by a means other than their personal computer.

Computer based systems incorporating an expert system or some form
15 of artificial intelligence have been proposed in order to more accurately reflect the nature of business environments. However, these system continue to be considered to lack reality and as a result, it is difficult to justify the cost of such systems.

These previous systems are generally considered to be either too
20 complex to operate, too difficult to play or too restricted in the learning path they provide generally affording students one correct approach which can become very predictable and not accurately reflecting the true nature of business.

Accordingly, it is an object of the present invention to provide a learning
25 system that includes a computer simulated business environment enabling participants of the system to increase their knowledge and understanding of businesses and the business environment generally whilst retaining personal interaction between the participants.

Any discussion of documents, act, materials, devices, articles or the like
30 which has been included in the present specification is solely for the purpose of providing a context for the present invention. It is not to be taken as an admission that any or all of these matters form part of the prior art base or

were common general knowledge in the field relevant to the present invention as it existed before the priority date of each claim of this application.

SUMMARY OF THE INVENTION

In one aspect, the present invention provides a learning system
5 including a computer assisted simulation of a business environment having at least one virtual marketplace common to all participants in which participants can simulate the trading of processed goods and/or raw materials, each participant having access to a computing means for maintaining a record of their simulated organisation and each participant being able to communicate
10 with other participants, the system further including:

items representing raw materials, manpower and production facilities;

means for participants to review the actions executed in operating their simulated organisation; and

communication means enabling the individual actions of each
15 participant in operating their simulated organisations to be compared and analysed.

In an embodiment of the invention, the actions of each participant in operating their simulated organisations is communicated to an instructor as well as other participants thus enabling the participant to understand the result
20 of their actions and decisions and how their decisions could have been modified to produce a better result.

In a preferred embodiment, each participant is able to communicate physically and directly with other participants.

In another aspect, the present invention provides a method of business
25 learning including computer assisted simulation of a business environment having a virtual marketplace common to all participants in which participants can simulate the trading of processed goods and/or raw materials, each participant having access to a computing means where each participant maintains a record of their simulated organisation and each participant being
30 able to communicate with other participants, the method including the steps of:

simulating the business environment in cycles where each participant takes a turn, and, at the commencement of a cycle, information relevant to the business environment is communicated to each of the participants and each

participant takes individual turns to effect actions in an attempt to optimise the value of their simulated organisation for that cycle;

recording each participant's action in the computing means; and
communicating the actions of each participant with all other computing means,

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such that the actions of each participant may be analysed and compared with the actions of other participants.

Preferably, at the completion of a round (about 12 to 15 cycles or an hour of simulation that equates to a Fiscal Year), the system and method
10 provides to each participant a report of the status of the business environment and the result of the participants actions during the previous round. In a particularly preferred embodiment, an experienced business person or instructor assists the participants to understand the result of their decisions during the previous round and how their decisions could have been modified to
15 produce a better result. It is particularly useful if participants are able to communicate with one another directly. However, it is possible that communication between participants could be effected by video conferencing, telecommunications or electronic mail. Communication between participants and the instructor could also be effected by similar means.

20 Of course, the system preferably represents a competitive market place that reflects present day trading conditions and constraints. The learning system may also include diagrammatic displays that assist participants to track their simulated organisations such as a stylized map of the world to enable participants to monitor the location of assets owned by their simulated
25 organisation. In a preferred embodiment of the invention, physical items representing different types of assets are placed onto a stylized map of the world to represent the acquisition and location of an asset in the world.

Each participant would usually take it in turns to make a business decision. Preferably, the current market conditions for each cycle are indicated
30 to all of the participants to enable them to make business decisions in the full knowledge of the market risk present during that round. Each simulated organisation will generally purchase raw materials from the market and process those materials through a planning and design stage followed by a

processing and packing stage. Subsequent to these stages, the raw materials are then viewed as finished goods and may be sold to the market as a product for consumers. The production and processing stages are dependent upon the processing facilities and manpower available to the simulated organisation and
5 these must also be acquired along with the required raw materials.

In the preferred embodiment of the learning system, the finished goods sold to the market are recycled into raw materials. The success or failure of the simulated organisation will depend upon many factors that must be taken into account by each participant. For a sale of finished goods to the market place,
10 only the lowest bidder is usually considered to be successful in order to achieve that particular sale. In a particularly preferred embodiment, an item is also provided to represent services.

Preferably, during simulation, participants can invest in core competencies of the organisation and outsource extraneous aspects of the
15 organisations operation. Once the pre-determined number of cycles have been completed, the data from the participants computing means may be uploaded to a central computing means or to an Internet Server operated by a third party which is used to analyse the uploaded data and to compare the actions of each participant. In particular, the uploaded data may be analysed by the
20 instructor to determine which actions led to particularly good or bad results. These actions may then be explained to the participant, or to the group, and discussed to determine why the action was particularly good or bad and how the action could have been modified to produce a different result.

In a preferred embodiment the learning system provides participants
25 with different sized markets with different sets of minimum buying costs for raw materials and maximum selling prices for finished goods. In this embodiment, there are also different prices for land and set-up costs for external branch offices and participants may purchase each for purposes of using these assets to increase the overall value of the simulated organisation. Of course, as
30 occurs in real life, the assets owned by each participant's simulated organisation may be subject to risks that are beyond the control of each participant.

In a particularly preferred embodiment, the computing means used by each participant is a Pocket PC 2002 or latest Microsoft Windows CE operating system which is operable to display various types of information relevant to the learning system and receive instructions from each participant with respect to actions in accordance with business decision taken by each participant.

The computing means preferably monitors all resource and activities of the simulated organisation and actions taken by the participant.

Each participant may use a stylized map of the world to track their simulated organisations resources and assets such as Research and Design facilities, processing equipment, available raw materials, stored finished goods. Preferably, each participant is able to take steps to implement security procedures such that these types of resources and assets are hidden from other participants. Each participant may also outsource elements of an organisations operations and invest in fixed assets, these types of assets and arrangements preferably not capable of hiding from other participants.

In a preferred embodiment, each participant may obtain a loan from a central bank using electronic money which may be controlled by the instructor. Credit limits placed upon each participant may be associated with the performance of the participant during a previous round.

Preferably, upon completion of a round, data is exported from the participants computing means and communicated to a central computing means operated by a third party. In a particularly preferred embodiment, the central computing means is an Internet Server which enables the instructor to analyse the data by generating reports which may include:

- a) Individual report for current or past fiscal term;
- b) Individual report comparing year on year performance of a participant;
- c) Individual year comparing participant's performance and market share;
- d) Charting capability based on any selected factor.

Any individual report may include:

- a) Borrowing Capacity;
- b) Opening Payments;
- c) Performance analysis;
- d) Finance ratios;
- 5 e) Transaction summary;
- f) Unit values;
- g) Income statement (Profit and Loss);
- h) Balance sheet;
- i) Resource status at the close of the fiscal period;
- 10 j) Ranking of participant based on a selected factor as compared with other participants.

Preferably, each participant receives a comprehensive debrief from the instructor with respect to the performance of their simulated organisation.

“Comprises/comprising” when used in this specification is taken to
15 specify the presence of stated features, integers, steps or components but does not preclude the presence or addition of one or more other features, integers, steps, components or groups thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

One embodiment of the invention will now be described with reference
20 to the accompanying drawings in which:

Figure 1 is a diagrammatic representation of a typical learning environment for six participants and an instructor;

Figure 2 is a diagram representing the learning stages for a session lasting for the equivalent of five fiscal years;

25 Figures 3A and 3B show two example market rings;

Figures 4A and 4B show an example Front-End System introductory screen in two different languages respectively;

Figures 4C show an example Front-End System Menu screen;

Figures 4D and 4E show an example Front-End System Participant
30 level selection screen;

Figure 5A is a Front-End screen displaying participant “Actions” for “Capital from Saving/Inheritance”;

Figure 5B is a Front-End screen displaying participant “resources”;

Figure 6A and 6B Front-End screen displaying available participant "actions";

Figure 7A, 7B, 7C, 7D and 7E show Front-End screen displaying participant "decisions" in "Business Time", "Bad Time", "Good Time", Harvest
5 Time" and "Turbulence Time";

Figure 8A and 8B is a Front-End screen displaying to a participant the state of the market representing the level of "risk" prevalent in market conditions;

Figures 9, 10 and 11 are example Front-End screens displaying a
10 message to a participant, the cost associated with the message, and the result of that message and cost respectively;

Figure 12 is an example introductory screen in the Back-End system;

Figure 13 is a registration screen in the Back-End system enabling the instructor to register relevant details for a session;

15 Figure 14 is a display screen in the Back-End system including selectable functions that the instructor may invoke;

Figure 15 is a screen in the Back-End system that is displayed after the instructor selects the "auto-loading" function;

Figure 16 is a screen in the Back-End system enabling the instructor to
20 import data files from Front-End systems;

Figure 17 is a screen in the Back-End system enabling the instructor to select reporting functions;

Figure 18 is a screen in the Back-End system displayed to an instructor summarizing reports for different participants for the same fiscal period;

25 Figure 19 is a screen in the Back-End system displayed to an instructor summarizing reports for the same participant for different fiscal periods;

Figure 20 is a graphical representation of a Break-Even Point graph;

Figure 21 is a graphical representation of a bar chart displaying the results for different participants for the same fiscal period;

30 Figure 22 is a graphical representation of a pie chart displaying the results for different participants for the same fiscal period;

Figure 23 is a graphical representation of a bar chart displaying the results for the same participant for different fiscal periods;

Figure 24 is a graphical representation of an area chart displaying the results for the same participant for different fiscal periods;

Figure 25 is a graphical representation of a step chart displaying the results for the same participant for different fiscal periods;

5 Figure 26 is a graphical representation of a line chart displaying the results for the same participant for different fiscal periods;

Figure 27 is a screen display that may be used by participants to keep track of the time remaining for a session; and

10 Figure 28 is a screen that is displayed to enable a participant to clear all selected data contained in the database;

Figure 29 is a "World of Resources" chart indicating the types of resources available to each participant;

Figure 30 is a "World of Resources" chart as depicted in Figure 29 annotated with text providing additional information relating to the resources;

15 Figure 31 is a drawing representing the core business model of an embodiment of the learning system;

Figures 32 and 33 are reference charts of a preferred embodiment summarising the resources, actions, decisions and incidents; and

20 Figure 34 is a list of the fundamental rules of a preferred embodiment of a business learning system according to the present invention.

Figure 35 is a list of the tie breaker rules of a preferred embodiment of a business learning system according to the present invention.

25 Figure 36 is a common agreement make between all participants of a preferred embodiment of a business learning system according to the present invention.

Figure 37 is a list of participant name tag of a preferred embodiment of a business learning system according to the present invention.

30 Figure 38 is a participant worksheet for making their company plan of a preferred embodiment of a business learning system according to the present invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

The following provides a detailed description of a method according to the present invention.

LEARNING PROCESS

- 5 When the Learning System is installed and ready to start, the normal process consists of the four stages described below:

PLANNING

- 10 The Instructor introduces the participants and familiarises them with respect to basic operation of the learning system. Each participant will have his or her goal and vision. Each participant will generally have some idea in his or her mind as to how they intend to participate and may have a formal plan before any action take place.

DEPLOYMENT

- 15 Just like an entrepreneur, when starting up a new company from scratch, the participant must interact with the business environment and make decisions. Every business environment presents risks as well opportunities and depending upon each of the participant's experience, knowledge and vision, they will generally make different decisions during each round of the simulation. The participant enters any decision into the Front-End System on
20 an individual Pocket PC. The consequence of all the actions of the participants is accumulated into the results of the simulated business environment.

MONITORING

- 25 When a predetermined period of time expires or the maximum number of cycles for that round is reached, participants export the data in their Pocket PC relating to their activities during that round to the learning system Back-End for processing and analysing. A Participant Performance Analysis (PPA) report is then generated to provide the participants with an indication of the success or otherwise of their decisions in that round. In a particularly preferred embodiment, the period of time for a round represents one fiscal year with
30 respect to the simulated business environment.

ANALYSING

The instructor guides the participants in interpreting the participant Performance Analysis Report. The report includes an Accounting Statement

and the instructor may provide explanations of the meaning of each Accounting Ratios in the PPA report. Based on the results in the PPA report and through observation, the instructor should be able to determine good and bad decisions made by the participants in the previous round. By comparing
5 the results and analysing the actions taken by each participant, and advising the participant how to make better decisions, the participants learn to make better business decisions.

The simulation continues for a full session until the expiration of a previously agreed period of time or number of cycles. Learning opportunities
10 are available throughout the session whether by coaching from the instructor, peer-to-peer sharing of experiences amongst the participants or other methods. A list of some of the learning methods by which participants improve their business knowledge and skill is set out below:

LEARNING METHODS

15 Direct communication between the participants provides active interaction and helps to maintain interest in learning. The learning system may accommodate 4 to 12 participants on a meeting table in a small group environment. The learning system may also promote personal networking amongst the participants.

20 Traditional coaching by a mentor to pass on or share knowledge. The learning system benefits from an experienced consultant, lecturer or business leader acting in the role of the instructor. However, expert participants could effectively learn from one another.

Learning from a peer through observation of their success and failure is
25 a common method to improve oneself. The learning system provides an environment for competition and challenge between participants. It is by careful observation of people, their facial expressions, eye and body movements that provide a better insight to a person and their character.

Learning is an active process, with "hands-on" experiences participants
30 will learn and retain those experiences more effectively than reading or studying principles. Participants are actively involved with mental and physical activities to learn. The learning system allows each participant to manage a company, make their own decisions in response to simulated business

situations and monitor the outcome during the process. Beside the recommended 3 cycles/years of exercise, participants can partake in sessions of the learning system over and over again.

5 A fair system for competition is an environment that will encourage participants to progress and advance. The learning systems rules and regulations require participants to adopt a correct attitude to compete in an open market without seeking government protection or engage in illegal practices. Even though many immoral business practices may be common in the real business world, it is not encouraged in the learning system.

10 To encourage learning, it must be interesting and should be fun. Learning through operating a simulated business helps to retain participants enthusiasm whilst learning business skills. In the preferred embodiment, the learning system uses physical items to represent resources needed in the business world. These items provide a better visual impact of ownership and
15 the progress of the business and adds to the excitement and interest of the participants and helps them to enjoy the learning process.

Using a computer as a tool to learn has been proven to be effective and efficient. In the preferred embodiment, the learning system uses Pocket PC's to computerise participant activities. The participant Pocket PC's Front-End
20 Systems are interlinked with an Internet Server Central Computing Back-End System for consolidation of all participant transactions and data to provide reports and provide comparison charts for result sharing and analysis. Participants may focus on their business strategy without worry about the recording and calculating transaction data manually.

25 **WORLD OF RESOURCES (WOR)**

The World of Resources component of the learning system caters for participants to place their key Resource's chips and Models to represent their business status in a visual way. It also acts as a subconscious education tool for participant to learn and become familiar about the world and develop a
30 global view. In the era of global communications, globalisation and very competitive market environments, it is important for business people to have a global vision.

The northern hemi-sphere is filled with human resource which reflects the world as it is more populated than the south. The most important of all resources is human resources that play the most critical role in business operations today. The core human resource is the worker and salesman that business could not function without. It also includes contracted temporary staff to meet the changing need of the business operation. The cyber human is the information system that has become an integrated part of business today. North of equator is the ring of capital investment that participant must consider carefully before making a commitment.

10 The production process starts with raw material in place at the warehouse on the left side on equator. With machine and manpower in place at the factory in the centre, a process of moving materials from left to right ensues. The finished goods are kept in the store on the right side of equator ready for sales. Cross equator processing symbolises today's manufacturing environment which occurs across many countries and involves many stages as the world economy is mutually dependent on each another.

South of the equator is the ring of short-term investment items such as insurance, purchasing agents, work improvement programs, market survey. These services may be needed prior to making investments as and when required to support business operations. Southern hemi-sphere items include the important investments that support marketing and long term business needs such as Brands, Research and Development and Advertising.

MARKET RINGS (MRS)

25 There are at least seven market rings of similar shape and appearance which are used in the learning system to represent the market place for business. Placing the rings on a given map whether it is a world or local map, the business territory is defined for that session. Each market place has its own character and constraints that are reflected as figures on the Market Ring. Such as the product Price Range, Market Size, Land Value and Branch Office setup cost. Basically, the market can be divided into places from the highest to the lowest end of markets and may be ranked by the number of stars on each market ring to reflect the different segments. Each market ring uses a ring to surround and limit the market, the city / state / location name on the map will

be appear dynamically in a market ring such Singapore, United Kingdom, United States of America or China for example. Participants need to identify and announce the name of the market place for buy or sell actions so that other participants can react accordingly.

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PARTICIPANT PERFORMANCE ANALYSIS REPORT

At the end of each round, or one fiscal year, the transactions data from the participants Pocket PC's are uploaded to an Internet Server Central Computing Back-End System. The Back-End program merges all participants' data into a database and generates a comprehensive Participant Performance Analysis (PPA) Report for each participant. The report provides a summary of results for the participant to review their performance of the year of operations. The PPA Report includes the following information:

BORROWING CAPACITY

This section allows a participant to understand their coming year line of credit to the bank based on their current year performance.

OPENING PAYMENTS

This section reflects the financial commitments and payments that must be made at the beginning of a new financial year in addition to other operating costs.

PERFORMANCE ANALYSIS

The break-even point of the business.

RATIOS

This includes all the accounting ratios commonly used by finance analysts, shareholders and business owner's to make a quick comparison between companies' performance and their potential.

TRANSACTION SUMMARY

The total input and output.

UNIT VALUE

The average price/cost base on accumulated pre year transactions.

INCOME STATEMENT (PROFIT AND LOSS)

A simplified Profit and Loss statement based on the transactions occurring during one round or fiscal year, a ranking and best result among all

the participants is also provided. A brief analysis of this aspect of the report enables a participant to determine their strengths and weaknesses and to determine their current position at the commencement of the next fiscal year.

BALANCE SHEET

- 5 A statement of assets and liabilities. At the end of the day, business owner must consider their bottom line which is reflected in their Balance Sheet.

YEAR END COMPANY RESOURCE STATUS

- Keeping historical record of the year end closing, allows participants to
10 review and analyse their yearly performance.

DISPLAY SCREENS

FRONT-END SYSTEM ON POCKET PC

- The Front-End System program provides data collection tools aimed to be simple and easy for participants to use without any prior computer training
15 or knowledge. The Pocket PC Front-End Program is capable of displaying multiple languages allowing participants to choose their preferred language.

- A primary function of this program is to provide for simple selection of business actions and allow simple data entry for transactions needed in simulated business operations during a session. The Front-End program
20 supports up to five multiple participants and multiple skill levels for sharing one common device for group of participants.

- The Front-End program performs two major functions. Firstly, the Operations area provides all the functions needed to simulate a business environment during a session. Secondly, the Support area provides utility
25 functions such as "exporting" data collected during sessions, "deleting" existing records on participants' Pocket PC's "summary reports" and others.

- The simulated business operations include four major components, namely, Resource, Action, Decision and Risk. These are presented to each participant in a visually distinctive manner to enable the participants to clearly
30 recognise which component they are operating within. In the preferred embodiment, these components are presented in separate panes with each pane capable of being selected for display by a tab. A different colour interface is also used for each component to assist participant recognition.

\$ RESOURCE

Resources are logically listed for easy reference. Regular updates to the status of company resources after each transaction are displayed. This function simulates a Simplified Company Computerised System and the balance shown should tally with the Physical unit count appearing on the World of Resources Board (WOR) for each Participant. Since cash is one of the most important items among all the Company Resources, it is displayed on the top of the list. The learning system does not use real currency. Regular updates of the cash balance are also displayed after each transaction takes place.

@ ACTION

This component categorises normal business actions such as:

(S?)-Supplement Actions, (O?)-Optional Move Actions, (A?)-Actions to settle normal transactions, (B?)-Beginning Year business opening Actions, (C?)-Combine or acquisition Actions, (D?)-Duty or obligation Actions, (E?)-End of Year Closing Actions and others. Participants are given the freedom to choose what Actions they are going to take and are limited to one for each cycle except for commencing a business and End of Year Actions for Closing Business Accounting.

Depending upon each type of Action, participants may need to enter the Quantity and / or Value using a keypad provided. The Program will carry out computation and provide real time verification upon confirmation by the participant. Transactions are recorded and related resources are updated immediately.

? DECISION

Each Participant is given an opportunity to select the Decision tab once in each cycle. The front-end program provides programmable control to simulate different business environment such as Good Time, Bad Time, Business Time, Harvest Time and Turbulent Time indicating current market conditions. For each market condition, different sets of options are presented to the participant to select from the list of business decisions.

The program provides real time checking to verify whether a participant has the basic required Resources to perform the desired Action. Standard

Business rules and conditions are used in the program to minimise human errors and at the same time to educate the participant for what must be done or required before taking each type of Action.

Similar to the Action function, the particular Decision function to chose
5 is a major issue that a Company owner needs to decide from time to time. After a decision has been made, the participant selects the action and the transaction details are recorded and updated.

Some decisions made by a participant, such as buy or sell, could increase competition in the market and may be challenged by other
10 participants. Accordingly, other participants may forward a better offer and the participant who eventually makes the best offer is able to input the transaction.

! RISK

Risks arise when selecting the Decision Tab during Turbulent Time market conditions. Each participant is provided four different types of risk to
15 choose from, which are Low Risk, High Risk, Government and Investment Risk.

Unlike the options provided in relation to the Decision tab, participants will not be given any choice under the selected type of Risk function. Messages are presented to participants depending upon their current status
20 and participants may be forced to take certain actions. Transactions will be updated accordingly.

In a particularly preferred embodiment, text to speech technology is incorporated in the front end system which is used to convert messages presented to the participant to audible speech. This gives other participants
25 the opportunity to hear the messages presented to a particular participant thus affording them an opportunity to learn the types of common risks that can arise in business which may or may not occur during their own operation of their simulated business.

BACK-END SYSTEM

30 The Back-End System program is used for data consolidation for all participants and in the preferred embodiment is executed on an Internet Server Central Computing Back-End System.

SPLASH WINDOW

This is the first window that a user will see when the program is launched. By clicking anywhere on the splash window or pressing any key on the keyboard will close this window and loads the Main window of the program.

5 REGISTRATION WINDOW

Usually, the user only sees this window once. The Name and Company fields are for entering the registrant information. The Key field is for entering the installation key that must match with the CD-ROM's key. For every single CD-ROM, there is a different key associated with it. The Code field is for the participant to enter the registration code that is given to the participant by the company when the participant registers himself/herself with the company. The correct key and code is compulsory for the registration to be successful. The default "OK" button starts the verification and validation of the registration information. The "Cancel" button is used to quit the registration.

15 MAIN WINDOW

Figure 14 shows the Main Window that provides access to the various functions of this program. Usually it is the second window that the participant will see immediately after the Splash Window. The Main Window consists of 8 functions. The dropdown combination box in the middle is for the instructor to enter or select the session that he wants to be active. The active session is the only session that functions are applicable to and only one session can be set active at a time.

AUTO-LOADING FUNCTION

The Auto-Loading function allows downloading of the raw data files from the participants' Pocket PC's to the Internet Server Central Computing Back-End System. Pocket PC's may be connected with the desktop system by various means such as cable, infra-red or radio frequency links.

IMPORT WINDOW (IMPORT FUNCTION)

The Import function opens a window to provide functions for importing raw data files into the Internet Server Central Computing Back-End System working database. The dropdown list box allows the participant select which Fiscal Term data that the raw data belongs to. This window consists of 3 buttons. They are the "Start", "About" and "Close" buttons. The "Start" button

starts the importing process for the Fiscal Term selected. The progress bar shows the status of the import. The "About" button shows the About dialog box, which contains information about this program and some license information. The "Close" button closes this window and shows the Main
5 window.

REPORT WINDOW (REPORT FUNCTION)

The Report function opens a window to provide functions for generating the report and presentation of the report on screen and/or on paper. This window consists of 5 buttons. They are the "Generate", "Preview", "Print",
10 "About" and "Close" buttons.

The "Generate" button starts the report generation process from the Fiscal Term selected from the list box above the "Generate" button. Normally, a participant is only required to select the latest Fiscal Term for generation as the earlier Fiscal term should had been generated.

15 The "Preview" button allows the participant preview the report in the Personal Report window according to the selections in the "Fiscal Term" and "Name" frames.

The "Print" button allows the participant print out the report according to the selections in the "Fiscal Term" and "Name" frames. The selections in the
20 "Fiscal Term" and "Name" frames act somewhat like a filter for the reports.

The "About" button shows the About dialog box, which contains information about this program and license information.

The "Close" button closes this window and shows the Main window.

SUMMARY WINDOW (SUMMARY FUNCTION)

25 The Summary function opens a window to display a summary of all the reports. It also provides some visual analysis functions.

In the Summary display (Figure 18), the summary report for "Different Participants Same FT" is presented. The background colour, matches the background colour for the drop down list box for selecting the FT to be
30 displayed on the summary table. The summary report for "Different Participants Same FT" displays the summary data of all participants for the specified FT in the table for comparison.

The instructor uses this approach for comparison between participants in the same Fiscal term.

In the Summary window (Figure 19), the summary report for "Different FT Same Name" is presented. The background colour matches the background colour for the drop down list box for selecting the Name to be displayed on the summary table. The summary report for "Different FT Same Name" displays the summary data of a specified participant name for the entire FT in the table for analysis.

The instructor uses this approach for comparison of a particular participant's year-on-year performance.

There are a total of thirty Columns in the table. In the preferred embodiment, only about 12 columns are visible on screen at one time. Therefore the order that the columns are arranged accords with the likely manner the instructor will present information to the participants. "Total in" and "Total Out" indicate the activity of the business. Average price, margin and quantity are generally the next issues to consider. Fixed cost, which appears last on the screen, may be discussed after second Fiscal term and so on. However, the instructor could easily use the scroll bar at the bottom of the screen to move to whatever column for further explanation or discussion.

A selected field on either table could be displayed in chart form for analysis. This visual representation of the data in the form of charts and graphs is especially useful during review and discussion.

When the participant selects a column (except for the Name and FT column), a window containing the chart plotted with respect to that column is displayed. When the participant selects a row of the summary data, a window containing the Break-Even Graph of the participant for that FT will be displayed.

(A) BREAK-EVEN POINT (BEP) GRAPH

Goods sold and revenue to break even (BEP) is displayed on this graph (Figure 20). The participant's name and which FT this graph relates to is also displayed. The BEP graph can be printed out by selecting Print from the File menu.

(B) COMPARISON CHART - "DIFFERENT PARTICIPANT SAME FT"

When a participant selects a column in the "Different Participants Same FT" summary table, a chart window will be displayed.

The participant can also print out the chart by choosing Print from the File Menu. The participant can select the chart type used to represent the data by using the Chart Type menu. The chart types available for the comparison chart are the Bar chart, Pie chart, Area chart, Step chart and Line chart (refer Figures 21 to 26). From the title of the chart, it is possible to determine which Fiscal Term the comparison data relates to.

10 FRONT-END / BACK-END SYSTEM CONNECTIVITY

As previously described in the preferred embodiment, the learning system is divided into two main components, namely, the Front-End and Back-End Systems. The Front-End programs are executed on Windows CE platform Pocket PC's while the Back-End programs are executed on a Windows based Internet Server Central Computing Back-End System platform. Data flow between the two systems can be achieved via direct cable connection when both Systems co-exist in the same location or via the Internet when the systems are in two remote locations.

BUSINESS MODEL

20 The learning system may be leased with revenue being generated from users each time they Play or Use the Front-End System in their training class, workshop or seminar. This approach represents a "Pay As You Use" business model.

In line with the Business Model to market the learning system, International deployment via the Internet has been chosen for distribution. The Back-End System may be located in an Office in Singapore and the Front-End System may be licensed to Channel Partners to operate any place around the world with Internet access. A Channel Partner can be an independent consultant, Company or any Organisation that wishes to use the learning system to compliment their training programs.

As part of the process, selection Channel Partners would need to invest in at least 8 sets of the Front-End Systems with all the necessary components such as training kits manuals, user guides etc. The investment should cover

the cost of training for two staff, system support for the Front-End operations, Licensing and Performance deposit for one year.

Before a Channel Partner or any User to start to use the Front-End System, they will be required to login to a designated web-site using their
5 Pocket PC to make their request as well as payment in order to obtain an EVENT-ID. All the Front-End Systems that are going to be used in each of their Training Classes, Workshop or seminars must auto-synchronise with the Web-site for same EVENT-ID. The EVENT-ID will serve as Front-End System security to turn on the system and is only valid for one day as the date
10 requested.

One the Front-End System preparation is complete, participants will experience a year of business simulation and input transactions. At the end of each Fiscal Year of simulated operations, participants export the data and send it back to the web-site Back-End System via Internet for processing.
15 Upon the last participant submission, the Back-End System will send consolidated information to the last processed Front-End Pocket PC for local printing such as Player Performance Analysis report. Participant additional reports can be obtained at additional cost.

Once the Internet Access Set-Up is completed, Auto-Synchronizing may
20 be performed by selecting a push button on the Front-End System display. A proprietary communications program residing in both the Front-End Pocket PC and the Back_End Web Server will effect this communication process automatically.

The procedure repeats for each Fiscal year during the day of Training
25 Class, Workshop or Seminar.

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to
30 be considered in all respects as illustrative and not restrictive.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A learning system including a computer assisted simulation of a business environment having at least one virtual marketplace common to all participants in which participants can simulate the trading of processed goods and/or raw materials, each participant having access to a computing means for maintaining a record of their simulated organisation and each participant being able to communicate physically and directly with other participants, the system further including:

items representing raw materials, manpower and production facilities;

means for participants to review the actions executed in operating their simulated organisation; and

communication means enabling the individual actions of each participant in operating their simulated organisations to be compared and analysed.

2. A learning system according to claim 1 wherein the actions of each participant in operating their simulated organisations is communicated to an instructor as well as other participants thus enabling the participant to understand the result of their actions and decisions and how their decisions could have been modified to produce a better result.

3. A method of business learning including computer assisted simulation of a business environment having a virtual marketplace common to all participants in which participants can simulate the trading of processed goods and/or raw materials, each participant having access to a computing means where each participant maintains a record of their simulated organisation and each participant being able to communicate with other participants, the method including the steps of:

simulating the business environment in rounds where each participant takes a turn, and, at the commencement of a round, information relevant to the business environment is communicated to each of the participants and each participant takes individual turns to effect actions in an attempt to optimise the value of their simulated organisation for that round;

recording each participant's action in the computing means; and communicating the actions of each participant with all other computing means,

such that the actions of each participant may be analysed and compared with the actions of other participants.

4. A learning system according to claim 1 wherein, the business environment is simulated in rounds where each participant takes a turn and, at the completion of a round, the system provides to each participant a report of the result of the participants actions during the previous round.
5. A learning method according to claim 3 wherein an experienced business person or instructor assists participants to understand the result of their decisions during the previous round and how their decisions could have been modified to produce a better result.
6. A learning system according to any one of claims 1, 2 or 4 wherein the communication means enabling the individual actions of each participant in operating their simulated organisations to be compared and analysed provides such information to the computing means of an instructor.
7. A learning system according to any one of claims 1, 2, 4 or 6 including a stylized map of the world to enable participants to monitor the location of assets owned by their simulated organisation.
8. A learning system according to claim 7 wherein physical items representing different types of assets are placed onto the stylized map of the world to represent the acquisition and location of assets owned by a simulated organisation in the world.
9. A learning method according to claim 3 including the step of:
selecting a market condition for each round and advising each participant of that condition that will prevail for that round.

10.A learning method according to claim 3 including, during participation, the steps of:

participants purchasing raw materials from the virtual common market place;

processing those materials through a planning and design stage to produce finished goods;

processing the finished goods to a packing stage; and

placing those goods into the virtual common market for sale.

11.A learning method according to claim 10 including, during participation the steps of:

purchasing processing facilities, manpower and raw materials to process and produce finished goods.

12.A learning method according to claim 11 wherein finished goods sold to the market are recycled into raw materials which may be subsequently purchased.

13.A learning system according to any one of claims 1, 2, 4 or 6 to 8 wherein an item is also provided to represent services.

14.A learning method according to claim 3 wherein, upon the pre-determined number of cycles being completed, the data from the participants computing means is uploaded to a central computing means operated by the instructor, said central computing means being operable to analyse the uploaded data and compare the actions of each participant in the operation of their respective simulated organisations.

15.A learning system according to claim 1 including a plurality of sized virtual markets with differing sets of minimum buying costs for raw materials and maximum selling prices for finished goods.

16.A learning system according to claim 1 including items representing land and / or external branch offices.

17. A learning system according to claim 16 wherein participants may purchase items representing land and / or external branch offices for purposes of using these assets to increase the overall value of the simulated organisation.

18. A learning system according to any one of claims 1,2,4,6,7,8,13, or 15 to 17, wherein the computing means used by each participant is a Pocket PC 2002, said Pocket PC being operable to display various types of information relevant to the learning system and to receive instructions from each participant with respect to actions in accordance with business decisions taken by each participant.

19. A learning system according to any one of claims 1,2,4,6,7,8,13 or 15 to 18 wherein each participant is able to hide assets owned by the simulated organisation from other participants.

20. A learning system according to any one of claims 1,2,4,6,7,8,13 or 15 to 19 including a simulated central bank using electronic money from which loans may be obtained by participants for the operation of their simulated organisations, said loans being administered by an instructor.

21. A learning system according to claim 4 wherein, upon completion of a round, data is automatically extracted from the participants computing means and communicated to a central computing means operated by the instructor.

22. A learning system according to claim 21 wherein the central computing means is an Internet Server operable by a third party which is operable to enable the instructor to analyze the data by generating reports, the generated reports including any one or more of the following:

- a) Individual report for current or pass fiscal term;
- b) Individual report comparing year on year performance of a participant;
- c) Individual year comparing participant's performance and market share;
- or
- d) Charting capability based on any selected factor.

23. A learning system according to claim 22 wherein the report includes information relating to any one or more of the following:

- a) Borrowing Capacity;
- b) Opening Payments;
- c) Performance analysis;
- d) Finance ratios;
- e) Transaction summary;
- f) Unit values;
- g) Income statement (Profit and Loss);
- h) Balance sheet;
- i) Resource status at the close of the fiscal period; or
- j) Ranking of participant based on a selected factor as compared with other participants.

24. A learning method according to any one of claims 3,5,9 to 12 or 14 wherein each participant receives a comprehensive debrief from the instructor with respect to the performance of their simulated organisation.

ABSTRACT

The present invention provides a learning system including a computer assisted simulation of a business environment having at least one virtual marketplace common to all participants in which participants can simulate the trading of processed goods and/or raw materials, each participant having access to a computer means for maintaining a record of their simulated organisation and each participant being able to communicate with other participants. The system includes items representing raw materials, manpower and production facilities, means for participants to review the actions executed in operating the simulated organisation and communication means enabling the individual actions of each participant in operating the simulated organizations to be compared and analysed.

The actions of each participant in operating the simulated organisation may be communicated to an instructor as well as other participants thus enabling the participant to understand the result of their actions and decisions and how their decisions could have been modified to produce a better result. Each participant is preferably able to communicate physically and directly with other participants.

FIGURE 2