Merp™ Simulator Learning Platform

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1. The Computerized Case Study (MERP™)

The Management Enterprise Resource Planning (MERP™) provides a Virtual World, Serious Game learning environment.

It simulates a semi-complex manufacturing environment with some elements of uncertainty. There are numerous scenarios available within the MERP™ package; running this virtual world, it is up to you to test, retest, think, and rethink.

MERP™ in itself is absolutely neutral to any “theory”. The simulations are dynamic and naturally depend a great deal on the user's input.

1.1. The simulated organization

Each scenario describes a kind of real, reduced-size, Virtual World organization, the type you would like to manage.

Each simulated company has certain common characteristics led by the goal of providing a stimulating, even addictive, means of learning.

1.2. How do you manage The Virtual World Company?

Generally speaking, the company runs itself. You get managerial control of this organization following the unsuccessful management of your predecessor. All company history has been saved, and you only need to start the simulator. From thereon, the Virtual World is activated, and incoming orders and other day-to-day tasks will be carried out. All clerical tasks will be carried out by the simulated, efficient employees, who still behave according to the policies and procedures imposed on them by the previous manager.

Of course, these policies and procedures may not be adequate. We need you, the new manager, to find the policies and procedures that will result in more profit. MERP™ assumes that your employees are disciplined and will obey your policies to the letter. Generally speaking, as the manager, you set the rules. Your employees do the actual work.

1.3. MERP™- background

MERP™ is a teaching aid designed to facilitate the teaching of integrated operations of a business organization, with a focus on corporate performance management.

It is based on the ERP concepts of a model base, a data-base and integrated functions. The model base contains well-known models such as exponential smoothing, MRP, inventory management (re-order point model), rough-cut capacity
planning, scheduling and sequencing. These models can be applied at any time or can be used in an automatic decision making mode.

The simulator operates in the following way: customer orders are generated from a "virtual" market and are registered automatically. They are then transferred to the production department and work orders are generated. These permit the automatic release of appropriate materials to the shop floor and assign the relevant machines to work on them. In parallel, the purchasing department has to maintain the inventory levels of the required materials. The machines or work centers process the orders; and on completion, orders are stored until the due delivery date. The orders are then shipped automatically to the customers who pay upon receipt.

Unlike the usual static, written case studies, MBE Simulations provides students with a Serious Game product named: Dynamic Case Studies Scenarios (DCSS™), reflecting a live business environment, and computerized scenarios that they must manage and thereby control the destiny of their own business operations. Students participate in a virtual organization made real and dynamic as minute-by-minute business events and conditions unfold. They must respond and make complex managerial decisions in real time based on understanding the big picture view.

While traditional strategic business games deal with results on a periodic basis (i.e. monthly, quarterly or yearly) the MERP™ experience involves real-time execution of strategies and their results, reflected in Corporate Performance Management (CPM).

Students can integrate theory into practice while they learn to test, retest, think and rethink constantly, while dealing with various real-life, dynamic situations.

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1.4. Functional views

The simulated company is driven by five main functions or departments views through which the user can access information and set or change policies and procedures. Each view represents a department within the simulated company and contains information about that department: marketing and sales, production, purchasing, finance and management. Similar to an ERP or IPOM system, all views have to be coordinated in order to obtain the best results.

Each view contains information about that particular department. The menu bar is the same for every view, but the options under "Information," "Actions," and "Policies" are specific for each department, presenting data and information that is relevant to each specific department.

- **Marketing view:** This is where linkage to customers is maintained. The market is usually noted for the critical importance of maintaining an adequate due-date performance and clearly favors faster response time and, of course, reduced prices. Marketing policy is based on the commitment to ship every order within a quoted lead time. Demand is increased when the quoted lead time and/or the
selling price are reduced. Uncertainty is introduced through market demand: the number of orders received is random.

- **Production view:** This incorporates the shop floor, where transformation of raw materials into finished goods takes place. There are four work centers. Production planning and control is provided by an internal information system, which produces work-orders based on the exact order quantities received, and the planning parameters as set by the user. Operations policy is based on make-to-order, without safety stock. Uncertainty is introduced through the exact timing of the production machine operations.
**Purchasing view:** Here raw material control is kept. Usually there is more than a single vendor. The faster vendor is typically more expensive. Purchasing policy is based on purchase-to-stock and managed according to maximum-order levels. Uncertainty is introduced through response time of suppliers.

![Purchasing Department](image)

**Figure 1 (c) the Purchasing functional view**

**Finance view:** This tracks the financial status of the company. It does not incorporate policies or actions. Customers pay upon receipt of goods; suppliers are paid on delivery. Interest is earned on the cash held at the bank. A monthly profit and loss statement informs the user how well (or badly) he/she is doing financially.

![Profit and Loss Statement](image)

**Figure 1 (d) the Finance functional view**
- **Management view:** Here overall performance is displayed through three main KPIs (Key Performance Indicators): reputation, cash and profit. The importance of reputation (percentage of on-time orders) is that customers are unhappy if they receive their orders later than the promised date. When orders are late or missed, the company's reputation declines. When the reputation is low, future market demand declines.

More detailed KPIs in various business processes (Supply Chain Management, Marketing and Management) are dynamically presented in various tabs (see figure 2).

![Figure 2: The Management SCM KPI screen example](image)

Some of the TSC scenarios have a special tab named 'Cockpit', providing a dynamic, online analytical cockpit presentation of the organization's performance status along its internal supply chain. The cockpit analyzes each department's constraints, translates them into a product's unit measures and presents the organizational overall bottleneck.

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1.5. Department's views information

Each view's legend can be reached through the **MERP™ Guide-Student Portal** (description to follow), which can be accessed from each top menu:
More detailed information, regarding the organization’s views as well as the description of all available decisions and supporting information, can be obtained on the MERP™ Guide-Student Portal.

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2. General running nature of the Serious Game

Most of the work is done when the simulation is in the “Pause” mode. We would all like to have a “Pause” mode in real life, where we can think without the pressure of time, as if the world has stopped moving, waiting for us to make up our minds.

The “Pause” mode enables you to switch back and forth between the views; open all the Information, Actions, and Policies option; and think about the best way to run the company. After you have made up your mind and fixed the policies and actions, you can instruct the simulation to run for a week or a month or until you decide to pause it again.

Since you set your policies and procedures in the “Pause” mode, it may seem that you, as a manager, are not needed while the simulation is running. However, as a manager you must always be alert to what's going on. If necessary, you can always stop the simulation run by pressing the “running” box.

The simulation has a ‘Slow’ and ‘Fast' running modes. For your convenience, you are able to control the simulation's speed. You can run faster after you gain some experience or slower in more critical parts of the runs.

The organization’s reputation grade is a reflection on timely delivery of orders. When orders are late, customers are unhappy and the reputation grade might decrease. As a result, future market demand declines. Think about the reputation grade as a generic representation of quality in the sense that customers expect on-time delivery.

The Virtual World Company is simple indeed. The idea is to let you see how things work. Yet, even such a simple scenario emphasizes the need to synchronize and integrate all the parts of the organization. It also shows you the behavior of a simple system in an uncertain environment. The uncertainty exists, first of all, in the market demand. The number of orders received is a random variable. In addition, the actual response time of your suppliers and the exact timing of your production machines vary. That means that you are going to get different results in similar runs. Yet, when your policies and procedures are the right ones, you are going to get good results every time.

You may practice and try to run the Virtual World Company many times.
3. How to start?

The MERP™ solution provides very effective videos and flash tutorials, enabling the student to learn in less than an hour how to run the virtual organization, although the time devoted to learning OM and increasing results will take much, much longer.

For supporting the quick takeoff, it is suggested to first explore the videos. These five demo videos, varying from two to nine minutes each, will demonstrate the flow as well as examples of dynamic management. We highly recommend watching the videos; viewing time is about 24 minutes for all five of them.

The next step available for you is the "MERP™ Essential Flash Tutorial". This tutorial is intended to familiarize you with a glimpse of how to manage a scenario, the structure of a virtual company and how to navigate through it. This tutorial is 13 minutes long and going over the scenarios-specific tutorials that you will need to practice will add about 10 more minutes to each scenario.

The "MERP™ Essential Flash Tutorial" is available for you also through the scenario selection window on opening the simulator. Please check the Run Flash tutorial box below the scenario selection list and Click Open.
The following figure demonstrates a screen from the flash tutorial:

![Screen from the flash tutorial]

**Figure 3: Videos and flash tutorial screen**

The videos and the tutorials can be accessed from within the MERP™-Guide Portal. The following figure represents the MERP™-Guide Student Portal:

![MERP™-Guide Student Portal]

**Figure 4: MERP™-Guide Student Portal**
The MERP™-Guide Student Portal provides a comprehensive help solution and enables you to search for keywords and phrases along all available help topics. This guide, as already explained previously, is available at each menu bar at the simulator.

4. Running the management mission

Each scenario provides you a different simulated company at a given time. Once you select a specific scenario, you are faced with the current state of the company at a certain date. It is common sense that first you would like to study the company in question as well as the features of the software, but the two initial missions, even though they are done at the same time, are not identical. In order to understand what's going on with the simulated company, you'll have to look for the most pressing business problem. Please note that your task as a manager is to improve the performance of the company. That means you have to find out what is preventing the company from earning more and be as effective as possible in execution of the strategy.

So, it is up to: where you start looking?

Last but not least, the MBE Simulations team is always ready to stand by to support you in your mission.

Good luck in your challenging, yet enjoyable mission.

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