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INTERNATIONAL MANAGEMENT GAME – AN INTEGRATED TOOL FOR TEACHING STRATEGIC MANAGEMENT INTERNATIONALLY

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ABSTRACT

This paper gives an overview of the International Management Game – a computer-based business simulation of corporate strategic management that is used as a core for strategic management classes for different audiences. The game was initially developed at the Carnegie-Mellon University to be used as a part of business school curriculum. Because of the growing importance of globalization and international relations in the last years, the emphasis in the simulation was on teaching international strategy implementation and international competition. To make it more realistic, involvement of students from various countries as participants of the simulation was encouraged. The paper gives an overview of a strategic management MBA class organized at the Carnegie-Mellon's Tepper School of Business, a class that is also open to students from other universities worldwide. In recent years, several attempts were made to localize and use the game in other countries. The overview of modification to the simulation itself and the teaching process made by a team from team from Academy of National Economy under the Government of the Russian Federation in Russia is discussed in details.

INTRODUCTION

Most complex business simulations are dedicated to corporate management topics, or to what it are also called general management or business policy and strategy topics. Since the middle of 1970's, and until recent time, a large number of papers published in Developments in Business Simulation & Experiential Exercises have been dedicated to various aspects of using business policy and strategy simulations (e.g., Green, 2004). Most of business simulations used in management classes deal with a single domestic market; and a small number of products.

This paper gives an overview of the International Management Game – a complex computer-based business simulation of corporate strategic management. Because of growing importance of globalization and international relations, as well as many efforts of companies to enter new markets in the last years, the emphasis in the simulation described below was put on teaching international strategy implementation and international competition.

To make the international competition in the game more realistic, in addition to the majority of American students, there were several teams from various countries involved in the semester-long MBA class. Recently, an attempt was made to localize and use the game in Russia, and some results and conclusions of these activities are also described below.

THE TEACHING PROCESS BASED ON THE SIMULATION

The International Management Game (IMG) is a complex computer simulation of a consumer products industry designed to engage students in teamwork, decision-making, negotiation and communication. The IMG is based on the same principles as many other business simulations. Participants, organized in teams of four to five people, manage on a quarterly basis, a corporation that produces and sells two types of products internationally.

In the simulation, teams act as senior managers who make strategic decisions involving marketing, finance, production, research and development. There is no dominant

strategy designed into the software environment. Instead, success is driven by 4 factors:

1. The ability of the managers to discover and satisfy customer wants which vary widely across the 13 markets in which they compete.
2. The ability of the managers to effectively execute their chosen strategy; with emphasis placed on implementation and strategic control systems created by the students.
3. The ability of the managers to adapt to a changing environment where the major source of uncertainty comes from competitors.
4. The ability of the managers to form an effective team decision-making unit.

The most unique feature of the IMG are the events external to the simulation. The simulation provides a realistic competitive framework but much of the value comes from human interaction activities which are external to the simulation. Each team meets with a volunteer board of directors, comprised of executives who are drawn from major corporations. The student managers are held accountable for their actions by their outside board of directors. The student managers participate in several realistic exercises such as hammering out labor contracts with current representatives from labor unions. These external experiences make the simulation more relevant and give external validity to the learning experience. Students frequently report that the class feels more like a job than an academic exercise.

In the last several years, a new Global version of IMG was launched and a special web-environment was designed to make it possible for teams from all over the world to participate in the simulation. The Global version of the MBA class is a truly a global exercise. It includes more than 500 students and about 350 board members distributed across 100 teams from business schools in cities around the world including Buenos Aires, Argentina; Kiev, Ukraine; Moscow, Russia; Pittsburgh, USA; Santiago, Chile; Shenyang, China and Tokyo, Japan.

There are 5 high-level learning objectives within IMG:

1. Give participants the opportunity to apply all of the content of a typical MBA curriculum in an integrated competitive environment with limited structure. The lack of structure is critical in teaching participants how to approach complex unstructured problems in the future.
2. Teach participants how to communicate their plans to representatives of the owners in a persuasive and effective manner. This shareholders' perspective is critical to the development of their thinking.
3. Teach participants the need to adapt to a rapidly changing environment. Teams which are successful initially but stop adapting are quickly out performed by more nimble competitors.
4. Teach participants the critical need for cooperative team work. The ability to manage small groups of high potential people will be key to their future career success.
5. Teach participants the critical need to balance both analysis and intuition when making complex decisions.

THE STRUCTURE OF THE SIMULATION

The overall design of the competitive environment is a slow growth, oligopic manufacturing environment. This basic competitive design is ideal for illustrating the impact of competitor decisions on one's own company's performance. This basic competitive structure is also ideal for creating a competition with no dominant strategic outcome. The general overview of possible game participants' decisions and the game environment are provided below (Figure 1).

Factory Design

When the Management Game begins, each team has two factories located in different countries. It is the instructor's choice to give the competitors identical initial positions, similar positions or very different positions. There are pros and cons to each. Identical starting positions make evaluation easier, while very different initial positions will decrease the intensity of competition and remove the incentive for radical actions at the beginning of the simulation. Generally if the time available is limited or the students are not sophisticated, then equal starting positions make more sense. However, if there is enough time to play 10 or 12 cycles (periods) and the players are highly skilled, then non-equal starting positions tend to work better. The starting characteristics of each factory are as follows: each factory makes only one product, that means a factory can either make Product 1 or Product 2, but not both products. This keeps the cost structure transparent to the participants so that they can better understand profitability market-by-market. The participants can choose to locate their factories in any one of six countries: Japan, China, Mexico, United Kingdom, Germany, and the United States. Initially, both factories are of approximately equal size and participants can make them larger or smaller after the game begins. There is no dominant location for factories. The best location depends on the team's intended strategy. Each location has advantages and disadvantages so the key is to select a factory location consistent and supportive of the team's intended strategy. A factory reflects the available labor and material costs typical of the country in which it is located. Both factories can be located in the same country but can not be consolidated. The quality and cost of a product produced in any factory will differ depending on the country in which is it located. Some locations will result in higher quality products than others, while some locations will result in lower cost. The relative advantages of each location are published and fixed and, therefore, represent potential permanent competitive advantages.

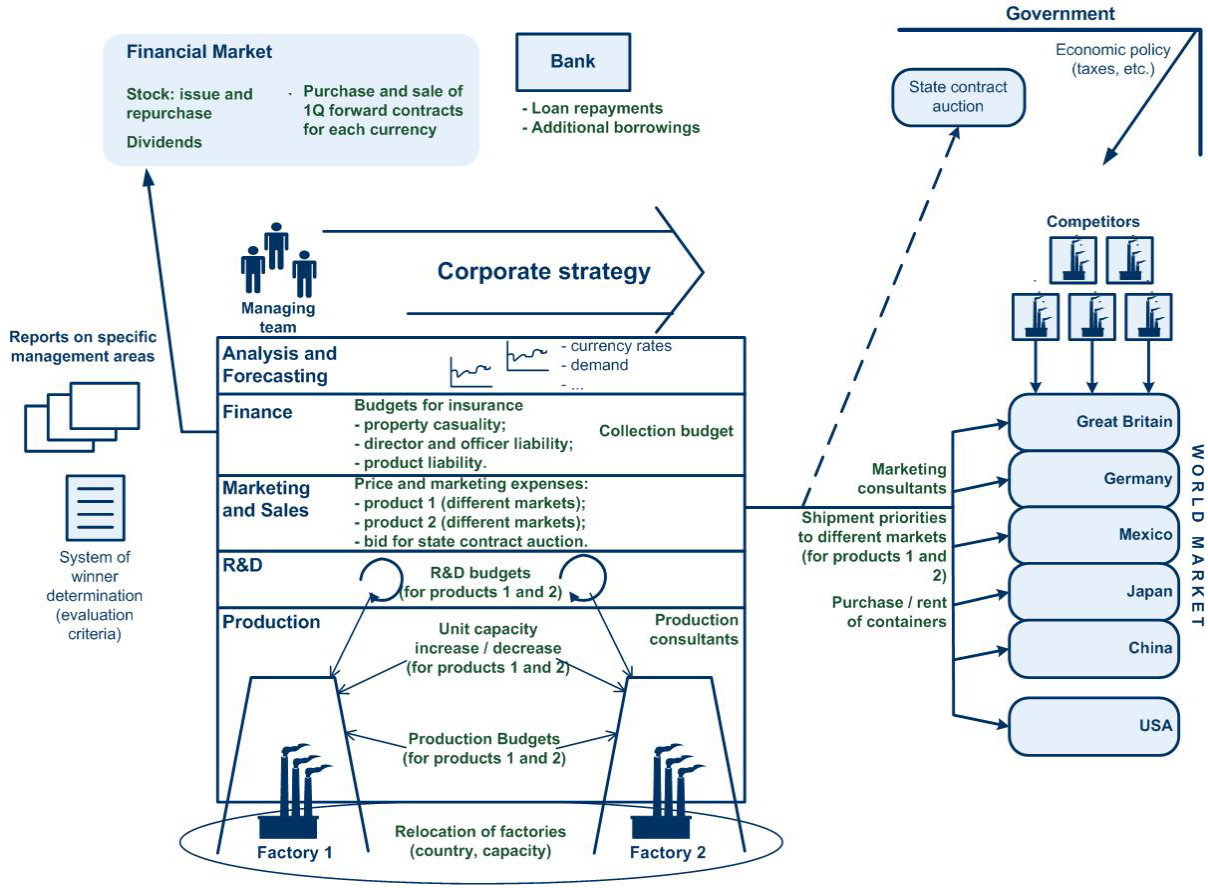

Figure 1. The structure of simulations – decisions and game environment

Product Design

Each company can make no more than two different products, but some teams may decide to specialize and produce and market only one product. Products are positioned initially in the market as described below. Participants may disagree with this initial positioning of the products and can change the positioning as the game progresses:

- Product 1 is at the more price-sensitive end of the market, customers of this product show less product loyalty and will switch to a competitor company if the company they wanted to buy from "stock out";
- Product 2 is a more premium product. Product 2 customers show more brand loyalty and are generally more sensitive to the quality and brand image of the product.

Customers in both the product 1 and product 2 markets are completely independent of each other. Nothing which happens in the product 1 market will have any impact at all on product 2 customers. The reverse will be true also. This requires participants to view their company as a portfolio of 13 (12 markets and state contracts) different and independent businesses which they must coordinate and control for the benefit of their owners.

Customer preferences are complex and vary considerably from country to country. It is not correct to conclude that price is irrelevant in any market or that quality will always dominate the purchase decision for product 2 markets. It is also not possible to position only 2 products to perfectly satisfy the demands of customers in 12 retail markets and one government auction market. Therefore, participants are forced to segment markets and make strategic choices which they determine to be most attractive. Good decisions are therefore predicated on a balance between analysis and intuition.

Market Design

At the start of the exercise, each team is typically marketing two products in all six countries: Japan, China, Mexico, the United Kingdom, Germany, and the United States. The markets are approximately the same relative size as those of the actual countries, and the behaviour of these markets mimics their real-world counterparts in terms of market demand, cost structure, growth rates, and other macroeconomic parameters. In addition, any transactions that occur in a country's local currency are consolidated into US dollars for financial reporting purposes. Customers make choices among products offered based on price, quality and brand image. The buyer behaviour is modelled

as a non-linear switching function based on distances from the averages offered in the market place. There are groupings of customer segments within each market but there are no absolute ideal points for customer preferences. The lack of any absolute ideal points is critical to the behaviour of the model. Customers react to the relative positioning of products with memory of past position. The memory of past quality and brand image are important to make the customers act brand loyal. The combination of relative ideal preferences and memory of past product attributes creates path dependent market share outcomes and makes the market behave much like real markets that never reach a long-run equilibrium.

- The pre-formatted output reports available to Management Game teams include the following:
- The Market Report provides summary information about the company's place and performance within the world market and explains how the company's pricing compares to other companies in that world.
- The Production Report describes the activity of a company's two factories, including the unit price and capacity at which the factory is operating.
- The Finance Report supplies information about what competitors are doing, including the size of their facilities, the amounts of their loans, and their retained earnings for the period.
- The Cash Flow Report is a simple, single-period cash flow statement that should help each team manage its cash flow.

Figure 2 illustrates what happens during a single period in the IMG.

Administrator Controls

Variables controlled by the simulation administrator can be grouped into two broad areas:

- Attributes of the game which are set once each class (Class attributes).
- Attributes of the game which are set each cycle within the class (Cycle attributes).

The number of these administrator controls is too extensive to describe here, but listed below are a few highlights.

Class Attributes:

The number of teams playing within each competitive environment can be set to 5, 6 or 7. If there are more than 7 teams, then it is best to run independent games so that the market reacts like an oligopic market. Customer preferences, base line market size and growth rates should be set once and fixed for a particular class. Cost structure of manufacturing in each country should be fixed once each class so that students can make long-term factory location decisions in a stable cost environment.

Cycle Attributes:

Interest rates, transportation rates, import tariff rates, and in general, all of the prices for inputs to production can be changed each cycle by the administrator. This permits the introduction of external shocks, like a spike in oil prices or a spike in insurance costs after an earthquake. Currency exchange rates can be changed to illustrate the impact of a devaluation in a particular country. Manufacturing costs can be set as a company specific attribute in order to simulate the impact of a labor contract or a process re-

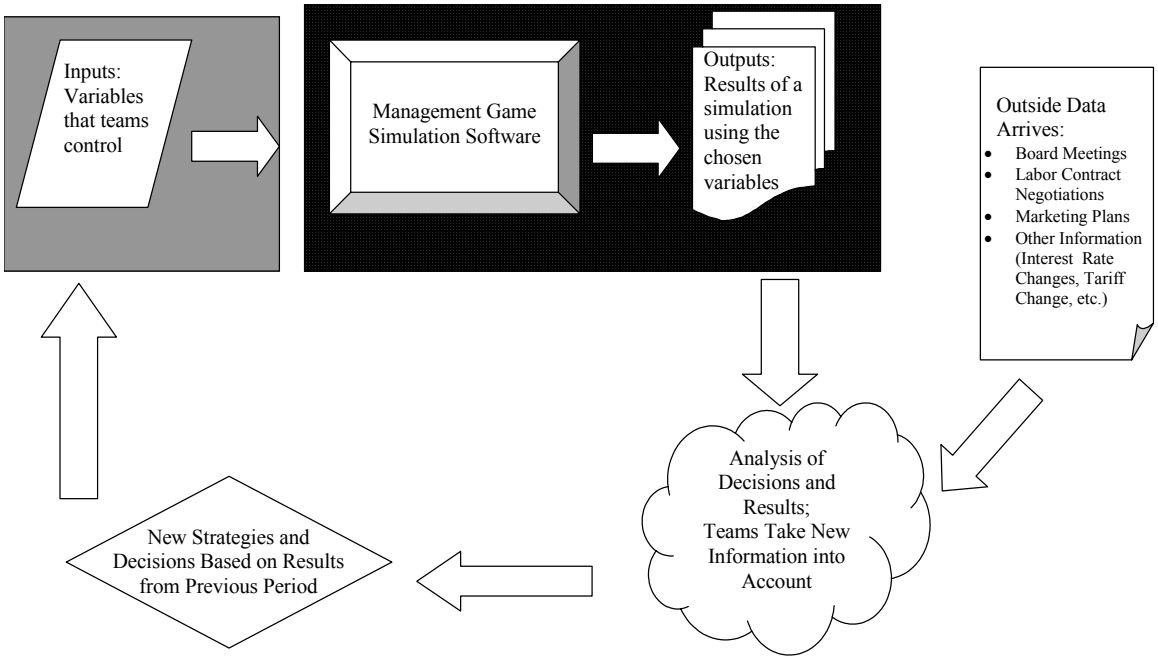

Figure 2. IMG period structure

engineering project. Marketing spending effectiveness can be set as a company specific modifier to simulate the effect of a novel marketing idea or plan. Receivables collection rates can be adjusted to illustrate the need for good cash management.

THE TEACHING PROCESS ORGANIZATION FOR EXECUTIVE EDUCATION IN RUSSIA

In the year 2004, an agreement was reached that IMG should be localized and used as a teaching tool in Russian business school and specifically in executive education.

Business education in Russia is relatively young and by recent time there were almost no simulation-based courses available in business schools. Academy of National Economy under the Government of the Russian Federation is changing its curriculum to make training offered to its clients more intensive and less time-consuming and at the same time providing even better quality than before. That is an action of critical importance, as almost 75% of students at the Academy are acting managers from various Russian regions that take MBA classes as well as short-term executive training.

To make a simulation-based course effective in different "social and cultural environments", the game should be "localized". Localization doesn't mean just the translation of materials into another language, but also many other actions. In the framework of IMG localization for the Russian audience, several important modifications are made to the simulation itself (computer model) and to the teaching process organization.

The team of instructors that are modifying IMG for a Russian audience, have had previous experience in localizing simulations developed in USA (Volkov, Klimov, Shoptenko, 2004) such as BankExec International from American Bankers Association (Haley, 2002).

The main areas of the IMG localization are (Figure 3):

- re-design of supporting educational materials and translation into Russian:
  - new player's manual;
  - PowerPoint slides archive to support lectures/consultations on different topics: operations, finance, marketing, strategy etc.
- new simulation delivery style - re-design of simulation process (schedule, performance evaluation):
  - 4-5 days intensive schedule for executive training;
  - All topics taught in the course of the game, as well as between game periods, should be based on questions directed towards participants to link topics in the game to real business activities.
- Changes in game model (participants' reports, and the development of new economics scenarios
- Administrative functions – the possibility to hand in decisions on paper, using specialized forms (important for groups with older participants that usually don't have good PC-user skills).

All these changes are made to improve the learning value of the simulation and to take into account some special requirements of a Russian audience, such as lack of time, and better retention in intensive programs as compared to semester-long classes. Instructors not only administer the game, but they also play the role of the Government and control and change economic scenarios.

Changes were made to the structure and style of game reports available to participants, as well as to the computer model. New reports are based on the US GAAP standard. This approach helps the Russian participants to get acquainted with international accounting standards, standards which differ significantly from Russian accounting practice, and to learn more about corresponding methods of financial and other reports analyses. The new reports received by the participants every period contain all of the required information about the markets, the competitors, and the company itself, much like what real managers of companies require in their usual business practice (see Figure 4). Such an approach explains why managerial and analytical skills acquired by the participants while managing a virtual corporation can be used in their real business practice in Russia.

Along with a ranking calculated by the simulation software used to evaluate teams' performance, a part of the grade is based on the quality of a final presentation as well as the analysis provided in analytical reports (Figure 5). Each participant ranks all teams except his own (peer evaluation). Usually, people on a given team receive the same grade. Occasionally, grading adjustments are made to individuals (only in outstanding or really poor cases) based on information from instructors who attend teams during their decision-making process. As the experience shows, the schedule shown in Figure 6 is the most adequate for organizing business simulations for audiences consisting of acting middle and top-level executives in Russia. The schedule represents a "responsive" approach to teaching. Different topics are discussed with participants as soon as they face the necessity to use some new instruments and come up with questions.

CONCLUSIONS AND FUTURE PLANS

The IMG simulation has been found to be an effective tool for teaching topics related to various aspects of corporate management. However, there are some plans how the teaching process and the simulation can be improved in the future.

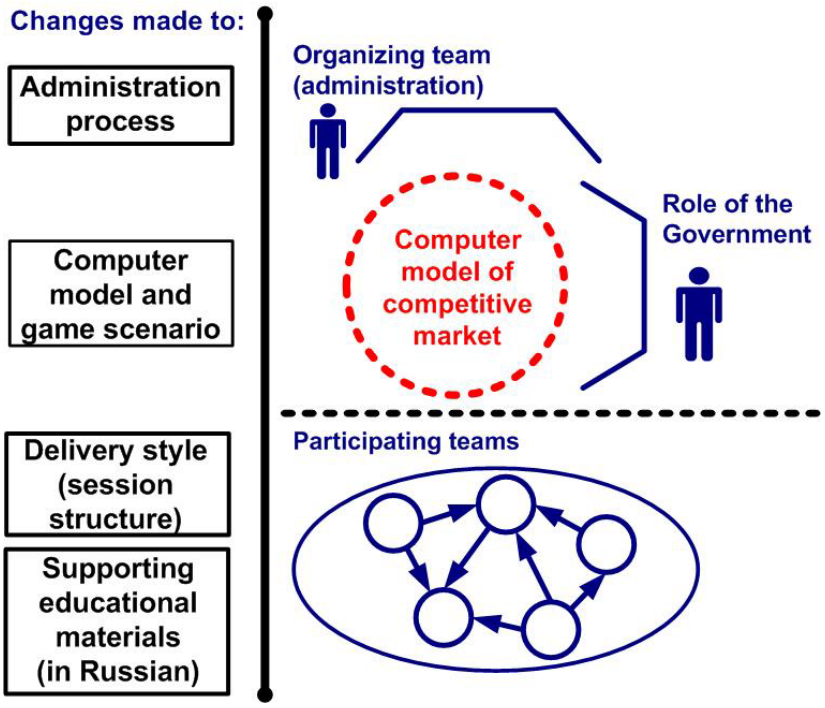

Figure 3. Localization process and outcomes

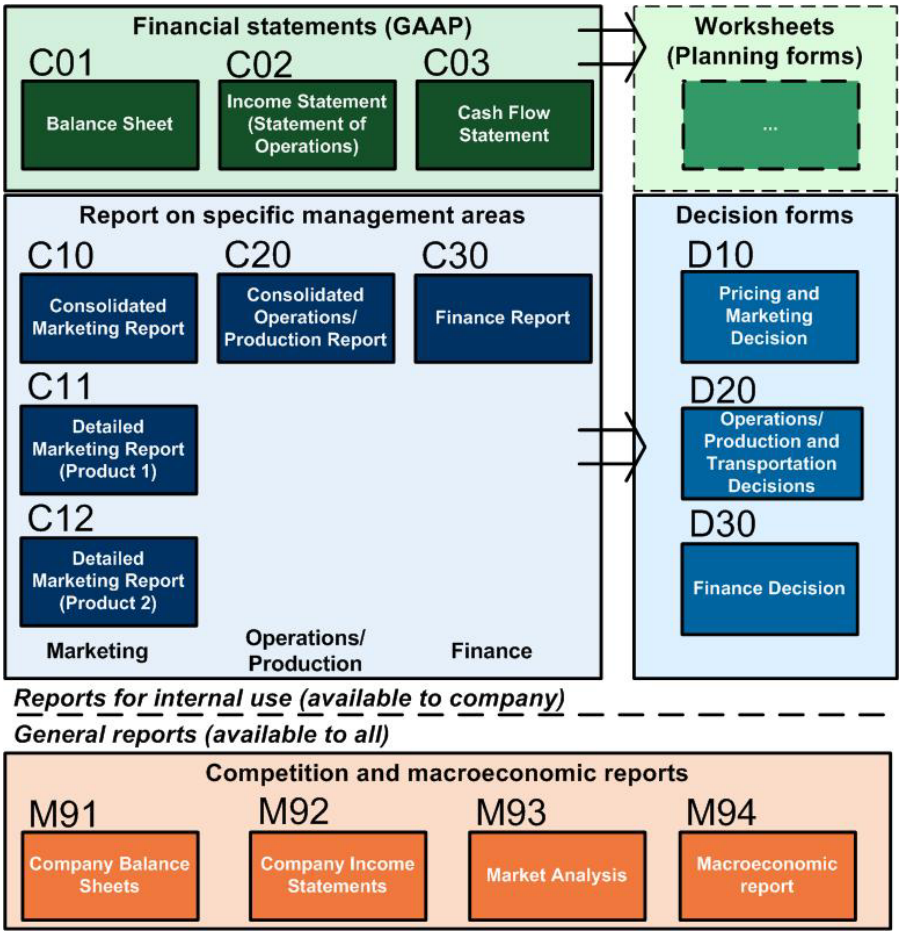

Figure 4. New reports in the game

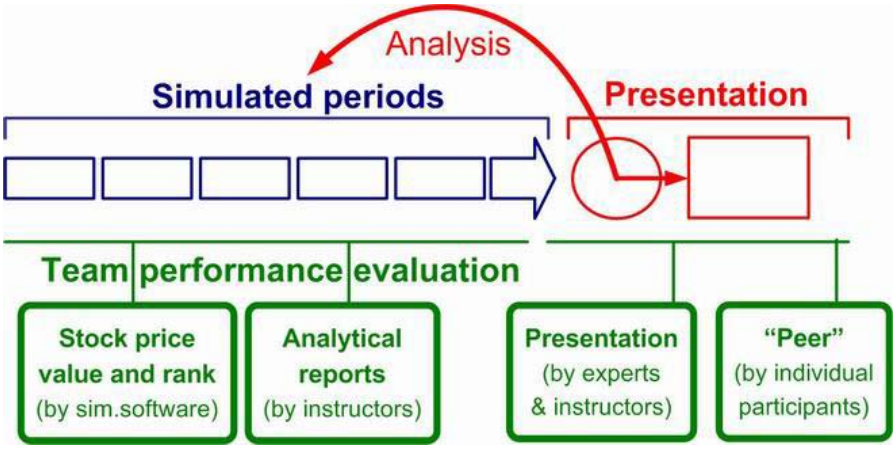

Figure 5. Evaluation of teams' performance in the game process and grading

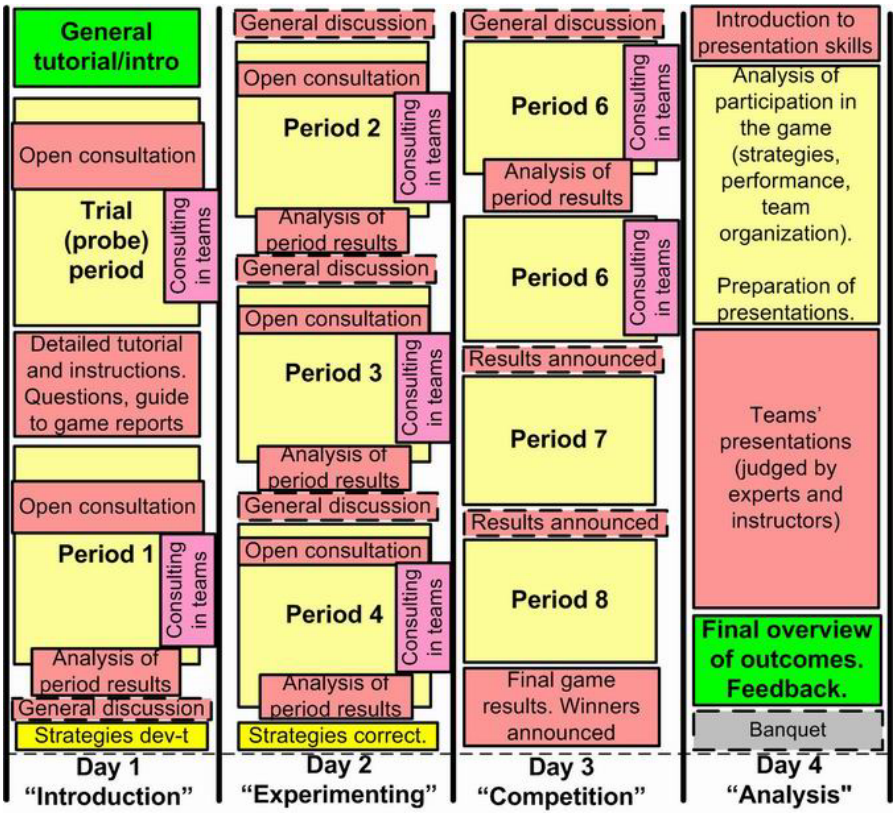

Figure 6. Structure of typical Executive training session based on the simulation

Plans for changes to the United States version of the International Management Game include more synchronized, real-time activities. Currently, students can participate in a synchronized product auction environment and a synchronized stock market. In the coming years, we will add a bond market and an auction environment for inputs to production. We plan to ultimately make most aspects of the competitive environment real-time and move away from a batch process for accepting decisions and processing decisions. Students can learn more if they receive dynamic feedback. Therefore, as we make more aspects of the decision making process dynamically adjustable, we can speed up the entire process and also the learning. In the long run, the entire environment will become a dynamically adjustable, real-time competition. Additional plans exist to overlay several different industry

templates to the basic simulation. Right now, the environment is limited to manufacturing. However, in the future, we will give participants the opportunity to choose what type of company they wish to run. Currently, we are modeling service industries, banking industries, and several pure intermediary agents that will give future players the flexibility to choose the most relevant industry specific environment. The concept of one simulation with several different industry specific overlay templates will make the environment flexible and more powerful than simply developing a family of different games. The ability to play essentially the same game with multiple industry specific templates creates educational opportunities in a cross cultural environment that can not be simulated other ways.

It is expected, that, in the future, the localized IMG version in Russia will have more instruments and decisions within specific management areas that are relatively new to Russian management practice. Among them could be the following items: implementation of new distribution channels (e.g., e-commerce and sales via internet platforms), extended borrowing possibilities (bond issues, term loans) and others.

There is a plan to introduce a new integrated course entitled "Strategy and competitiveness of the company" that will last for 6-7 days and offer 2 days of case studies on best strategies of transnational corporations and main principles of strategic planning and strategy development immediately followed by 4-5 days of practicing on developing and implementing strategies in the simulation. Such a combination would help to eliminate disadvantages of cases and simulations when offered alone and create a unique, valuable and intensive activity-based course in general management.

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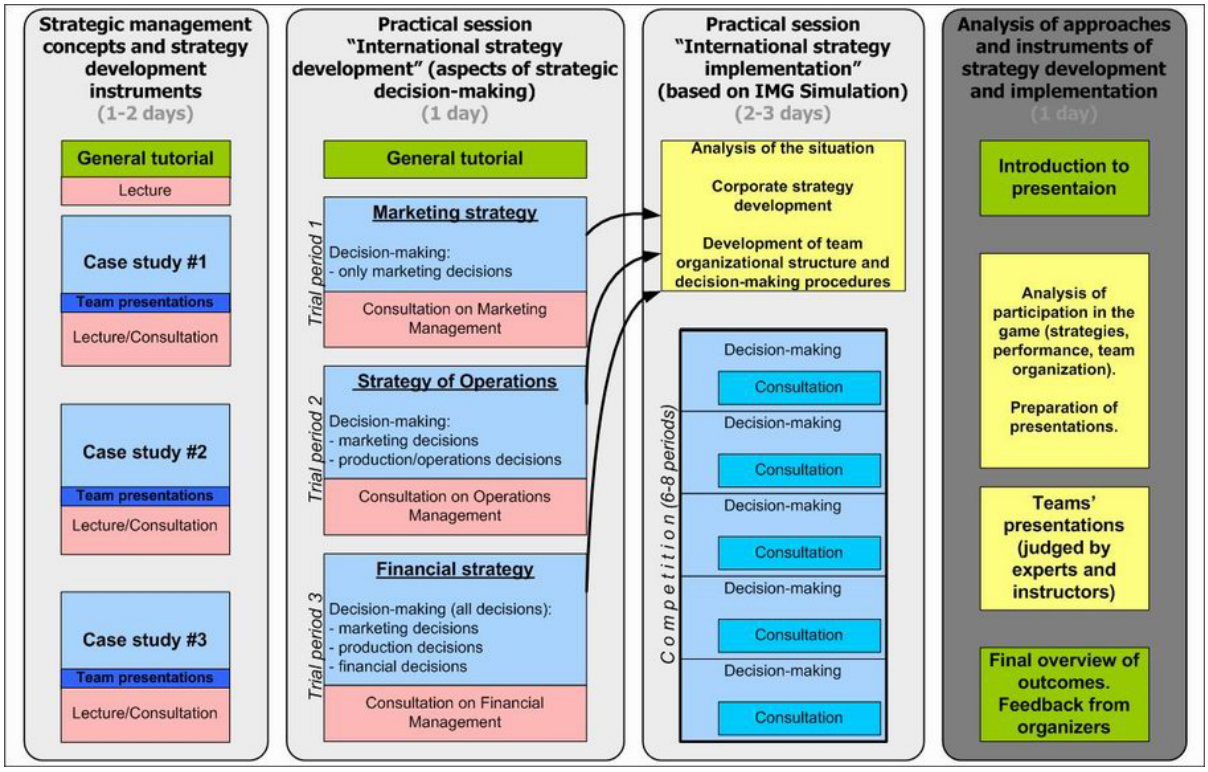

Figure 7. Structure of the integrated course "Strategy and competitiveness of the company"