

## **Business Planning and Cross Organizational Models**

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### ***Abstract***

*The paper presents techniques to accomplish the basic goals cross-organizational process design on "Process Elicitation", "System Analysis", and "Learning Organizations". "Software Agent" based Coordination is the basis to the designs since our 1998-2005 projects (Nourani 1998-1005). The coordination of processes in the fulfillment of orders, for example, with CRM systems is important for the economic survival of the enterprises. The personal computer interaction areas and learning are addressed with specific systems examples. The paper starts with introducing a systems approach to business modeling. A competitive business modeling technique, based on the author's planning techniques is applied. Systemic decisions are based on common organizational goals, and as such business planning and resource assignments should strive to satisfy higher organizational goals. It is critical to understand how different decisions affect and influence one another. Here, a business planning example is presented where Causal Loops, are applied to decisions. A preliminary optimal game modeling technique is presented in brief.*

## **1 Introduction**

The author's project has introduced new business modeling and optimality principles that are based on competitive model business planning (Nourani 2004). Business planning with goals and predictive modeling are introduced. An example of systems modeling using causal loops is presented. Competitive business modeling (Nourani 2001) is then introduced. Game tree competitive learning is presented with applications to systems, goals, and models. Practical planning systems are designed by modeling the business with tiers, i.e. presentation logic, business logic, and data models. A new 'competitive model dynamic programming' technique (Nourani 2005) optimizes plans where the stages are optimized based on predictive models. Systems thinking is a paradigm and set of methodologies that allow individuals and organizations to adjust their mental models to a holistic view and systemic nature of relationships. Enterprise Resource Planning (ERP) is a planning technique aiming to create a seamless approach to organizational coordination and cooperation. Corporations have to identify and specify their business

processes before they implement an ERP system. The best way to do that is by defining how decisions are made in terms of planning. In applying ERP to the planning process, we might develop tactical planning models that plan critical resources up to sales and delivery. Amongst the tasks are: feasible production schedules, mapping the operational planning process to develop scheduling models for production and plan inventories. Practical systems are designed by modeling with information, rules, goals, strategies, and knowledge bases. ERP is presented as a set of project tasks to satisfy business goals. Below is a schema of business planning model. Agent games applications to economics date to (Nourani 1999). Artificial adaptive agents, not in the exact sense as here, were applied to economic theories ever since (Holland and Miller 1991).

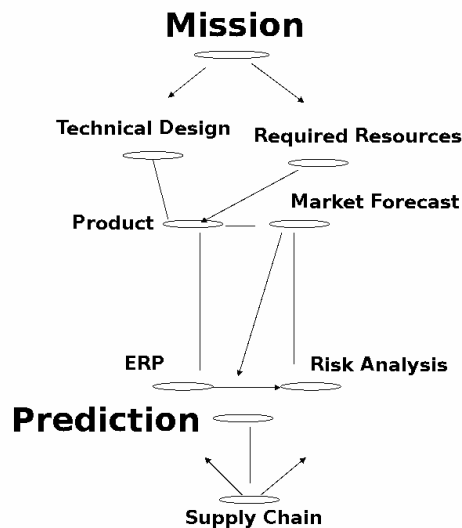


Figure 1 Business Planning

In the above diagram arrows indicate feedback loops and lines denote forward predictive open control loops. ERP involves games, open and closed control loops, And/Or causal trees, and splitting agent decision (Nourani, 1994-2002). Using these tools, management processes can be represented by system models. Example academic projects, where optimization is started to be applied are, is TU Berlin, from location and tour planning via Supply Chain management up to planning telecommunication nets and nets of information. A second systems is iWorkFlow, a comprehensive Workflow management system which unites the advantages of the automated process control and the Internet with each other. iWorkFlow supports all process management functions. Weak spots are uncovered by the process analysis and process simulation in the drains. Processes can be formed therefore optimally and be defined.

## 2 The Milieu and the Collaborative Matrix

The new MIS as an academic and business field might be depicted by the enclosed figure. Software agents are specific agents designed by a language that carry out specified tasks and define software functionality. There is agent computing, cyberspace computing, intelligent multimedia and heterogeneous computing. Plans and goals (see the preceding chapters) are applied to business planning (Nourani 1998a,b) and OR.

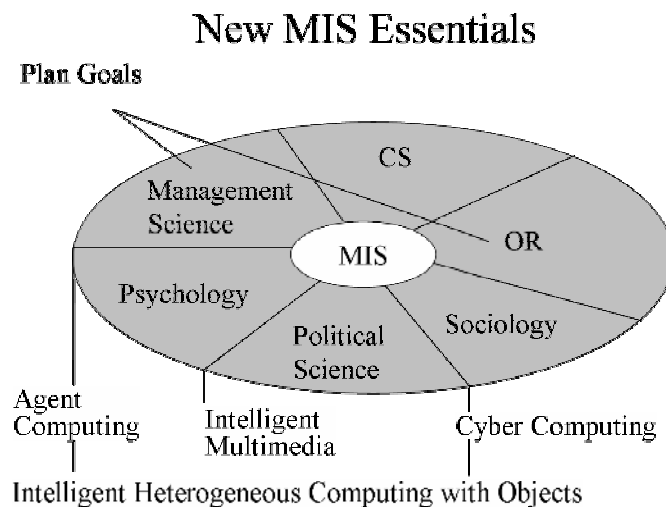


Figure 2 New MIS

The basic multi-tiered designs are based on the following layers. The presentation layer contains components dealing with user interfaces and user interaction. Example a visual JAVA standalone application. A business logic layer contains components that work together to solve business problems. Data layer is caused by the business logic layer to persist state permanently. More and more enterprises recognize that in the electronically archived databases a there is a potential for knowledge that could be processed up to now only insufficiently. For knowledge-processing enterprise departments or management consultancies the institute of economic informatics of the TU of Berlin (BerliNews 2005) a basis is developed which connects process-oriented document management with an easy access to the knowledge management. The system running in the Intranet exists of modular built up components which can be put together individually. Personal info assistants facilitate the access to the enterprise knowledge. An example application for competitive models appears in the transactional business models. Alternate models can be designed based on where assets, resources and responsibility are assigned; how control and coordinations is distributed; and where the plan goals are set. A transactional international business model might comprise a coordinated federation with many assets, and resources. The overseas operations are considered a subsidiary to a domestic central corporation. However, the decisions and responsibilities are decentralized. Administra-

tive formal management planning and control systems are how headquarters-subdivision controls are managed.

### **3 System Modeling and Analysis**

#### **3.1 Planning**

The corporations need to specify how to conduct business before they implement an ERP system. The best way to do that is by defining how decisions are made in terms of planning. Applying ERP to the planning process, we might develop tactical planning models that plan critical resources up to sales and delivery. Planning and tasking require definition of their respective policies and processes; and the analyses of supply chain parameters. Dynamic thinking, that the business world is not static, is a fundamental premise to ERP. Operational thinking is applied when planning for decisions based on how things really work and interact. Closed-loop thinking can be applied to control decision trees on ERP when feedback is necessary to carry on new plans or to set new business goals. Experience Management (EM) at times can assist in obtaining closed loop control or be applied to determine the scope of the project to fit within the resources available (including budget) and the time required and to assign responsibility. ERP has to select the operational planning teams that will manage the process. Amongst the tasks are: feasible production schedules, mapping the operational planning process to develop scheduling models for production and plan inventories. Develop plan for building a data warehouse, KM and interfaces to legacy systems and ERP. ERP involves implementation teams consisting of business representatives, functional representatives, IT personnel and system knowledgeable people.

#### **3.2 Goals, Prediction Schemes, and Open Loop Control**

Practical AI systems are designed by modeling with information, rules, goals, strategies, and knowledge bases. Patterns, schemas, and viewpoints are the ‘micros’ to aggregate information onto the data and knowledge bases, where masses of data and their relationships and representations are stored respectively. The game trees are applied to improve models. Minimal prediction is an artificial intelligence technique defined since the author’s Model-theoretic planning project. It is a cumulative nonmonotonic approximation attained with completing model diagrams on what might be true in a model or knowledge base. The prediction techniques are the basis to ‘Open Loop’ control explained earlier (Nourani2002). Practical planning systems are designed by modeling the business with tiers (Nourani 2003). Facts, rules, goals, strategies, knowledge bases. Schemas might be defined with objects, the object classes, the object class inheritances, user-defined inheritance relations, and specific restrictions on the object, class, or frame slot types and behaviors. A scheme might be

- IntelligentForecasting
- IS-AStockForecastingTechnique
- PortfoliosStock,bonds,corporateassets
- Member Management Science Techniques

From the proofs standpoint patterns are analogies to features as being leaves on computing trees.

### 3.3 Competitive Learning Models and Goals

Alternate models can be designed based on where assets, resources and responsibility are assigned; how control and coordinations is distributed; and where the plan goals are set. Time-space dynamics, short vs long term, and soft indicators are crucial to competitive modeling. Dynamics modeling takes into account the inherent uncertainty of the real world and allows different scenarios to be considered concurrently. Situation-based models (known as Management Flight Simulators) are often used in a 'learning laboratory' environment where management teams 'practice' hypothesized game plans and learn from experimentation and error. 'Soft indicators' and 'short and long term' principles are critical in competitive learning situations. Example (Nourani, and R.M. 2005): A business manager has 6 multitalented players, designed with personality codes indicated with specific codes. The plan is to accomplish 5 tasks with persons with matching personality codes to the task, constituting a team. Team competitive models can be generated by comparing teams on specific assignments based on the task area strength. The optimality principle might be to accomplish the goal with as few a team grouping as possible, thereby minimizing costs.

## 4 Splitting Agent Game Trees

Game theory is the study of rational behavior in situations in which choices have a mutual affect to one's business and the competitors. The best decision depends on what others do, and what other do may depend on what they think you do. Hence games and decisions are intertwined. A second stage business plan needs to specify how to assign resources with respect to the decisions, ERP plans, and apply that to elect supply chain policies, which can in part specify how the business is to operate. The splitting agent decision trees have been developed independently by the author since ECAI 1994. The computing model is based on a novel competitive learning with agent multiplayer game tree planning. For example, when arranging team playing, there are many permutations on where the players are positioned. Every specific player arrangement is a competitive model. There is a specific arrangement that does best in a specific game. What model is best can be determined with agent player competitive model learning.

## 5 Business Process Models

The organizational knowledge is one of the main bases to competitive advantage. Enterprise modeling includes stock management, payroll, and advanced administrative tasks applying decision support. The incomplete knowledge modeling is treated with predictive model diagrams. Model diagrams allow us to model-theoretically characterize incomplete knowledge. To key into the incomplete knowledge base we apply generalized predictive diagrams whereby specified diagram functions a search engine can select onto localized data fields. The author presented predictive model diagrams at the Berlin Logic Colloquium, May 1994, Humboldt Universität Mathematics on a project at the Technical University, Berlin. More and more enterprises recognize that in the electronically archived databases a potential lies with knowledge which could be exhausted up to now only insufficiently. During the past few years on perhaps unrelated projects for knowledge-processing enterprises or management consultancies in the institute of economic informatics of the TU of Berlin a systems is developed which connects process-oriented document management with an easy access to the knowledge management (BerliNews 2005, Nourani 2005).

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