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TRANSITION TO ADVANCED MARKET ECONOMIES

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SESSION 9

INFORMATION AND TELECOMMUNICATION

CHALLENGES IN DEVELOPMENT AND APPLICATIONS OF LIFE CYCLE COST (LCC) FOR TELECOMMUNICATION OPERATIONS

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Economic studies of Telecommunication systems have been gaining a growing momentum among both telephone operating companies and system vendors as market globalization forces cost cuts coupled with simultaneous demand for a higher quality product. This translates into the challenge of driving design development toward a lowest possible life cycle cost (price and operation) at given telephone company requirements, market window limits as well as the reliability and integrity objectives.

Life cycle cost analysis requires a good communication and efficient cooperation between telecommunication vendor and operating company at several different disciplines, addressing business organization, systems and technology. Therefore, a process of defining common terminology, business environment, selecting methods of analysis and cost functions should be established first, before any economic studies take place. The paper presents and discusses a systematic approach to life cost control, intended to serve as a generic process of continuous cost improvement (to be followed by joint teaming of telecommunication vendor and operating company). The process is composed of three major stages: first - definition, second - cost analysis and third - technology parametrization and design optimization. In the definitions stage, the objective and scope of analysis are precised, operational model of organizational interaction and functions determined and the cost model, addressing the accounting structure and cost equations, is developed. In the analysis stage, the data required by the model are collected, cost calculations are performed and the problem focal areas selected. In the optimization stage, the cost equation factors are parametrized as the functions of technology or/and organizational variables. This stage involves concurrent computer simulations of product reliability and integrity preformance as well as projections of maintenance costs. This allows for the best possible cost scenario to be selected early in the design development cycle. The proposed system technology is then fedback to the process definition stage to begin its next iteration. New technology opportunities may lead to the process definition stage to begin its next iteration. New technology opportunities may lead to the development of more cost effective operational structure followed by modifications of the cost model.

The paper illustrates the process steps by examples from telephone company operations. The prices and maintenance cost imporovements are demonstrated on a new generation of Northern Telecom switching products.

MANAGING INFORMATION TECHNOLOGY IN EASTERN EUROPE

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The current situation in information technology is quite different in Eastern Europe than it is in the West; consequently, effective management strategies for information technology in your country must build on the strengths of Eastern Europe rather than slavishly copying the West.

The lack of a large existing base of equipment, applications and personnel creates a unique opportunity to learn from the mistakes of the West and to avoid replicating these mistakes.

Information technology can be powerful. However, outside of a few areas, this power has been consumed by management errors. Its economic potential in business has been wasted.

The reason is that the West has fallen into several traps from which, for historical reasons, it is difficult to escape. Eastern Europe has the opportunity to avoid these traps completely. These traps are: the maintenance trap, the labor-intensive trap, the product trap and the quick fix trap.

All of these are really examples of a fundamental blockage against the use of real, powerful technologies in favor of illusory "panaceas".

This paper is devoted to an explanations of these traps and how to avoid them.

TELECOMMUNICATIONS: THE KEY ELEMENT IN A MODERN INDUSTRIAL NATION'S INFRASTRUCTURE

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Telecommunications has experienced an explosive growth in capacity and penetration during this century, and especially within the last four decades. The ready availability of cheap bandwidth (video, audio, data, or printed) in the advanced industrialized countries means that many old tasks can be completed more easily and inexpensively. But more importantly, it means that many new tasks can be accomplished that were not feasible before, and that the entire organization of a country, political, economic, and industrial, can and must be restructured to be more efficient and productive. Telecommunications as a generic resource (rather than a specific technology) will be an integral part of the necessary restructurings. As a direct consequence, any business or political entity which depends for its existence on suppression of information or delay in dissemination of information will see its viability sharply reduced or eliminated. The emerging democratic states of Middle Europe have the opportunity now to put into place a telecommunications infrastructure which will meet their current needs and provide an evolutionary path for future growth. In order to take full advantage of this infrastructure, the business, technical, and political leaders of these states must learn to think about problems they face in light of the scope and power of modern telecommunications systems and the enormously broader range of solutions they open.

MULTILEVEL REGULAR ARCHITECTURE OF LARGE INFORMATION SYSTEMS

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The modern computer tools do not only provide powerful support for human intellect, but evidently generate new questions. In this respect large informationsystem technique still remains worth discussing. Most traditional aspects of this problem are oriented to simple dispersion of all the data over the set of local computerized memories which are controlled by the distributed data base management system.

Hence, if abstracting from user status differences, arbitary data components are normally supposed to be potentially accessible at any terminal of intergrated information bank. This way of data monitoring does not seem to be optimal, because it gets in conflict with the basic principle of advanced system engineering theory, konw as structure regularity. According to this concept the whole data space of separate subsystems put together should be considerably transformed and reduced while getting prepared for the next high level of supervision. The consequent vertical information compressing makes it possible for all the hierarchy strata to be covered by single-class computers, as well as each of the system levels to be autonomously designed and implemented.

The paper outlines some theoretical aspects and application experience of large enterprise analysis, oriented to computer aided system control technology.

C^4I FOR THE TRANSITION TO ADVANCED MARKET ECONOMY

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Transition to advaced market economy from command economy is a long term dynamic process. This process is controlled and coordinated by government. For transition it is necessery to use the information technology, such as computers and communication. The transition process is information and inteligence intensive. In the paper the role of communication (C), commputers (C), control (C), and coordination (C) as well as information (I) and inteligence (I) for speed up the transition to advanced market economy is discussed.

MANAGING UNCERTAINTY

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For the past twenty years the author has become increasingly concerned with the way computers are perceived in business, and in society in general. For "Computers are useless. They can only give you answers" (Pablo Picasso); and answers are not enough. It is an issue that has caused him to reject an academic career in Computer Science, and has led him instead to enter the domain of Information Systems, to become a 'fledgling Social Scientist'.

He rejects the prevalent 'optimistc rationality' which measures everything that moves, and the ritualistic pretence that managers can thereby be in control of complexity and uncertainty. He claims that complexity and uncertainty are far more than just incomplete information. "there is little sense in submitting the decisions that affect commercial success to simplistic rules and measurement, all implemented on a 'glorified adding machine'!" That way lies organizational 'obsessive compulsive neurosis'.

He has developed an 'opportunistic' approach to coping with uncertainty, which he calls 'dispositioning', which involves a radical view of how computers should be used within organizations, and also how they should not, to maximize opportities and minimize risks. He sees a major revised role for computers in organizations, but ultimately he would emphasize a philosophy which rejects the idea of answers and methodologies, and insists on 'thinking managers' rejecting their role as as machine-minders and taking full responsibility for their actions. 'Living with uncertainty, and loving it'.

RESOURCE ALLOCATION IN DISTRIBUTED INFORMATION SYSTEMS - DESIGN ISSUES AND ALGORITHMS

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One of the primary tasks of communication networks has always been to support the sharing of various user-defined resources by a collection of geographically dispersed user processes. In performing this task, a communication network is usually assumed to behave passively i.e., merely to provide virtual connections between the processes and resources with certain load balancing if necessary. while such an approach seems to work well with single-resource-only requests (i.e., when a user process may request just one resource at a time), a more active ('intelligent') role should be played by the communication network in the case of multiple-resource requests.

The system under consideration is modelled as a collection of user processes and reusable, commodity-type user-defined resources interconnected by an intelligent network, so as to cover a wide scope of practical applications including office communications, distributed banking, manufacturing and reservation systems, as well as multiprocessor computing and remote access to a set of satellite links. A detailed system layout and a few efficient algorithms of request scheduling are presented along with their simulation-based evaluation, the main focus being on seeking a satisfactory tradeoff between the mea response delay, resource utilisation, fair access to resourcess and cost-effectiveness.