



# **Enterprise Intelligence: A new concept of management for the new economy**

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## **ABSTRACT**

*In the present article we introduce the idea that the economical models, based upon the three traditional production factors, should be revised regarding the incorporation of the Knowledge as an essential instrument of the economical production itself. Through the necessary recognition of this point-of-view, we propose a new concept for the business administration in the Knowledge Society: the Enterprise Intelligence, and we introduce, as well, a model for the management of the Knowledge capital. We also suggest and would like to discuss a few ideas of how developing countries like Brazil should position itself on this new Economics.*

## **1. INTRODUCTION**

The Knowledge economy moves the axis of the wealth and the development of the traditional industrial sectors — abundant in labor, raw material and capital — to areas whose products, processes and services abound in technology and Knowledge. Even on agriculture and on the consumer goods and capital industry, the competition is daily increasing its capacity to transform information on Knowledge, and Knowledge on decisions and business attitudes. Therefore, the value of the products depends, day-by-day, on the percentage of the innovation, technology and the intelligence attributed incorporated by them.

If capital, land and job were once considered the main generators of wealth and power, today, according to the World Bank, 64% of the world's wealth comes from Knowledge (Neef98).

Such changes cause a deep impact on the country's economy and on the life of millions of people. They may configure as a threat to the developing countries, if they rest on the present role of consumers of Knowledge products, or as an opportunity to explore unstable today's balance which allow new actors to explore the spaces created to appear on the world's scenery.

In the present article we introduce the idea that the economical models, based upon the three traditional production factors, should be revised regarding the incorporation of the Knowledge as an essential instrument of the economical production itself. Through the necessary recognition of this point-of-view, we propose a new

concept of administration in the Knowledge Society: the Enterprise Intelligence, as well as introduce a model for the management of the Knowledge capital.

In the next section, we introduce a short characterization of the Knowledge and of the evolution of its significance through History and, in section 3, we demonstrate how Knowledge is the new engine of the new Economy. But, if in one hand Knowledge is that much important, in the other hand we shall know how to manage it efficiently. In section 4 we present a model that teaches us how to do so; section 5 describes a way on which developing countries may become inserted in this Society, and we conclude by presenting the central philosophy that lies underneath this article.

## **2. LAND, CAPITAL, JOB AND KNOWLEDGE**

Peter Drucker (1993), on his book *Post-capitalism Society*, assures that “the modern executive's neuralgic point is to be able to make use of the Knowledge to create new products and services.” But, which Knowledge is he talking about? And what is the relation between Knowledge and technology?

Since the Ancient Greece, there are different points-of-view concerning significance and function of the Knowledge, not only in the West but also in the East side of the World. Socrates and the Taoists and Zen Buddhists monks believed that the only function of the Knowledge it was the self-knowledge, and that it should be

used for the personal growth, enlarging our self-esteem and wisdom. Confucius, in the East, and Protagora (Socrates opponent), in the West, believed that the purpose of the Knowledge was to make the individual take note of what to say and how to say it. For Protagora, this signifies to deal with logic, grammar and speech, foundation of all the Western Education.

Much has been spoken concerning Knowledge (Nonaka, 1995), but never arriving to a common system of how to define it better. In fact, the Knowledge is something that one can absorb only through learning and experience. Even being difficult to explain, it can be, thus, demonstrated. It is technique — from Greek, *téchne* —, i.e., something with a specific application, with no general principles, without a *formalization*.

The first attempts to systematize the Knowledge came from Europe: the first Engineering School was founded in 1747, in France, the “*École des Ponts et Chaussées*” (School of Bridges and Pavements), followed immediately by the “*École Polytechnique*” (Polytechnic School), in 1794. In Germany, the first Agricultural School was founded in 1770. Technology is the combination of *téchne* (Knowledge) and *logy* (organized, systematized).

Truthfully, what these new Schools and the Encyclopedia were doing was to convert experience into Knowledge, generating “*recipes*” of how to do things, i.e., creating methodologies. Technology had changed, thus, the significance of Knowledge also changed. It took “*téchne*” even further, demonstrating that this specific Knowledge could be generalized around the general principles and that this could be taught and learned by other people. And when was it that Knowledge and Technology happened to become economically important?

Since Adam Smith different sort of well-thinking minds of the economical thought agree that the main production factors are land, capital and job. This classification showed a deep impact on the development process of the Economy, as a Science, and marked the thinking of generations of economists<sup>1</sup>.

By studying the economies of agricultural nature, we can see that lands and labor were the critical factors to determine the economical success. It is obvious that capital and technology, were important, but the agricultural community could subsist well with a minimum amount of money and technology, but never without land and labor. With the industrial revolution, technology gains importance, but capital and labor come to be the engines to move the economical development.

Nevertheless, a new reality it is imposing itself on the World’s scenery: it is the so called Knowledge Society. Peter Drucker, back in 1968, had already emphasized that “*the Knowledge has been transformed in an essential resource of the Economy.*” In his book “*Post-Capitalism Society*” (1993), he assures that “*the decisive factor for production is Knowledge.*”

In brief, in the new Economy the economic models based on the three traditional production factors must be revised in order to incorporate Knowledge not only as one more production factor, but also an essential factor of the production process and wealth generation. The traditional production factors will never disappear, but may be easily obtained if we have Knowledge.

### 3. KNOWLEDGE: THE NEW PRODUCTION FACTOR

The OECD report observes that back in 1998, more than 50% of the GDP (Gross Domestic Product) of the developed nations should be credited to the Knowledge usage. The report highlights the fact that the increasing reduction of the costs and the easy access to information show clearly a growing of the Knowledge participation in generating wealth for the organizations, regions and countries.

As a direct consequence of this highlighted role, i.e., the Knowledge, we witness an increasing search for better qualified professionals. This report demonstrates that the unemployment, between people that completed High School, is 10,5% average in the OECD countries, falling to 3,8% average among the ones that achieved university degrees. Furthermore, the study demonstrates, that at the same time that unemployment decreases in the industrial sector, it increases rapidly on the high-tech levels, such as Communications, Technology Information, Pharmacy and services sectors. *Therefore, Knowledge is the new engine of the Economy.*

To deal with this new production factor is a novelty; to formulate a new economical theory to deal with it is a challenge. Nevertheless, we can be sure that we deeply need this new theory to be able to put the Knowledge in the very center of the generation wealth process.

### 4. THE ENTERPRISE INTELLIGENCE

When Drucker began to analyze the enterprising management, right after World War II, an administrator was defined as “*someone who is responsible for the work and for his workers*”. In a word, someone who is the “*Boss*”. Today, Drucker suggests that this definition should be changed into “*someone who is responsible for the application and performance of the Knowledge*”. This signifies that the management today shall use the organization’s existent Knowledge to generate better results. *The higher productivity profits, from now on, will come from the improvement of the Knowledge management.*

The Knowledge productivity shall be, therefore, the XXI Century’s administrators central concern. Nevertheless, Knowledge will be productive only if we administer its entire chain of values.

The enterprises must be productive to be profitable. And profitability and competitiveness are the true main points to determine the technological innovation and the increasing of productivity. Therefore, we cannot feel contented simply by generating new Knowledges, or in making the research for the research itself, or, yet, by simply collecting information and saving them. Without innovation capacity — to create new products and services —, but also to create new markets, to export and to establish new business, no enterprise will be the leader in its sector, or better saying, no enterprise will survive the globalized economy.

Knowledge, innovation and entrepreneurship thus form a non-divisible tripod on the success of the organizations under the new Economics management. To the coordination between these factors we called Enterprise Intelligence.

#### 4.1 KNOWLEDGE MANAGEMENT MODELS

Several authors have encountered the economical importance of the Knowledge as a production factor and so they have proposed models of Knowledge management. Sveiby (1997), Stewart (1997) and Edvinsson (1997), the pioneers of Knowledge Management, were businessmen and journalists. For these authors, the value of the enterprises abundant in Knowledge is no longer related to its *tangible goods*, such as buildings and machinery, but is being

<sup>1</sup> Although the works of Adam Smith may be the most recognized ones, in reality/in fact, the first to define the production factors — like land, capital and job, was the French economist Jean-Baptist Say (1767-1832), in his book “*Cours d’Economie Politique*” (Political Economy Course), which is edited by Flammarion, 1996.

now quoted by its *intangible goods*.

The three of them propose an enterprising model of management thus formed by three basic components: the first of them, Sveiby titles it *internal structure*; Stewart calls it *structural capital* and Edvinsson names it *organizational capital*. They are, herein, referring to the patents, concepts and to the information technology data and administrative models of an organization. The second capital is the one Sveiby calls “*the competencies*”, while Stewart and Edvinsson call “*the human capital*”. This capital is related with the individual capacity of each person of the organizational crew to act on his/her own. In this category are included the abilities, the formal education, the experience and the values of a certain individual. And, at last, the third capital is called by Sveiby the “*external structure*”, and by Stewart and Edvinsson, the “*clients goods or clients commodities*”. In the last one we subscribe the clients, the partners, the suppliers and the image the enterprise presents to the market and to all the other performers in its sector.

All the introduced models do agree on the same point: that to monitor and to manage the information and the Knowledge is an essential task for all the individuals and organizations willing to compete in a World more and more globalized, at the present time. The three analyzed models obviously do not collide.

The model of management for enterprises in the Knowledge Society we are introducing next, herein named “Knowledge Capitals”, was born under a theoretical reflection and practical observation on the matter. Theoretically, it is based upon concepts Sveiby, Stewart and Edvinsson had exposed; empirically, it is founded upon concrete experiences developed by a few projects of Knowledge management, which came out in reality, since the beginning of 1998, by the Reference Center on Enterprise Intelligence of the Federal University of Rio de Janeiro (CRIE/COPPE/UFRJ).

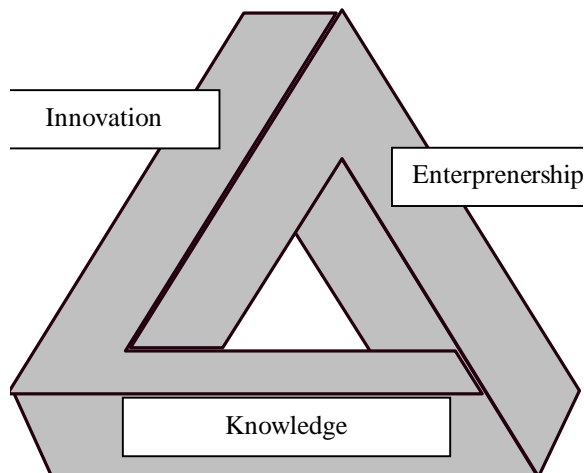


Figure 1: Enterprise Intelligence: the management of the new Economy<sup>5</sup>

<sup>5</sup> The relation between these factors is represented on figure # 1, a stylized Möbius ribbon. This ribbon, which is also the symbol of IMPA - Instituto de Matemática Pura e Aplicada (Pure and Applied Mathematics Institute), is a ribbon that has only one side. The idea is to demonstrate the cooperation that must happen between Knowledge, innovation and business undertaking.

## 4.2 THE KNOWLEDGE CAPITALS®

The model of the Knowledge Capital presents four capital which must be monitored and managed for an effective management of the Knowledge in an organization. They are: “*the environmental capital*”, “*the structural capital*”, “*the intellectual capital*” and “*the relationship capital*” (Fig. 2).

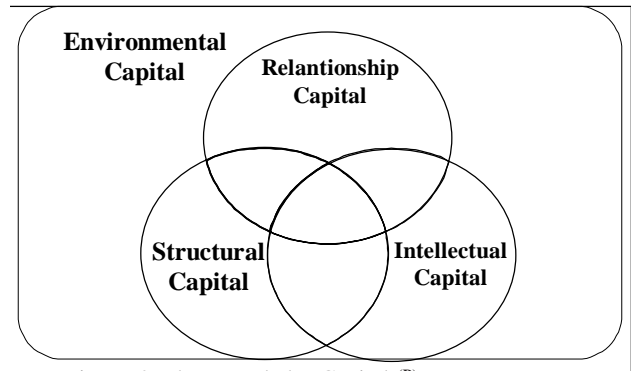


Figure 2: The Knowledge Capitals<sup>(R)</sup>

Source: Reference Center on Enterprise Intelligence CRIE-COPPE/UFRJ

In fact, *a priori*, there is no one capital more important than the other. The relative importance between the four capitals depends on each organization, its development level and the type of business in which it is involved. The growth of an enterprise depends of the cooperation between these capital.

For example: a young enterprise that originates inside a company that generates others, normally presents a high degree of intellectual capital and a low degree of structural and relationship capitals. To grow, it will be necessary to develop these capitals. Each enterprise needs to analyze its own situation to be able to define its Knowledge strategy.

### 4.2.1 Environmental Capital

The environmental capital is the first of the four capitals. It is defined as a conjunction of factors which describe the environment where the organization is inserted. These factors are expressed by the conjunction of the social-economical characteristics of the region (formal education level, money per capita, birth rate, etc.), by the legal aspects, ethical and cultural values, governmental aspects (participation of the government's grade, political stability) e by the financial aspects — such as interest taxes level and adequate financial mechanisms.

An organization cannot exist unless it knows exactly where it is and where it wants to go. This means to have a very clear definition of its strategic company vision and of its position in the market. It is also indispensable to be alert to the changes, to be flexible, to realize the technological innovations and, furthermore, to understand that information and Knowledge are strategic factors. In addition to these important points, the definition of the segment where it is going to act, to pursue the excellence and, most of all, to align with the clients/consumers needs, are matters that must be considered.

The definition of the strategic vision can be done through traditional planning techniques, but the analysis of the organization position in the Market, i.e., to know profoundly the environment in which it is inserted, must be made, in our model, through the implementation of the model of Competitive Intelligence (Fuld, 1987).

Competitive Intelligence is a systematical and ethical process of collecting information of the activities developed by the competitors and of the general tendency of the business environment. It must be systematical. It is not valuable to structure the information collecting on the business environment, to generate the first reports and, all of a sudden, to stop doing it. In the same way, a method must be established and sustained since the beginning until the end of the activity. More over, the process must be ethical to preserve the image of the enterprise among the competitors and the clients.

In brief, a system of competitive Intelligence must be a composition of at least four phases: The Source of the necessary information; the Collecting of this information; the Analysis of it and, more important yet, the Transmission of the information to the manager that will handle the decision.

Issues of social, political, economical and technological nature were taken in consideration in order to realize this work. For each one of these variables we considered the conjunction of the actors and competitors in the business environment. Nevertheless, to monitor the external environment of the enterprise, through its competitive intelligence, is a necessary condition, for the role to be performed by the organization inside the Knowledge Society. Both external and internal environment, under this monitoring, shall be in the most perfect tune with the business goal of the enterprise, in order for the latter to become profitable and gain competitive advantages. This monitoring will work well only if the enterprise and its members are aware and committed to the strategic vision of the organization.

#### 4.2.2. Intellectual Capital

In our own understanding, the concept “*intellectual capital*” refers either to the capacity, ability or experience, as well as to the formal education that the members have and add to the Organization. Nevertheless, the “*intellectual capital*” is not a property of the enterprise. People are not an asset. They do not belong to the organizations since, at least, the end of the slavery; and neither do their “*intellectual capital*”. The “*intellectual capital*” is an intangible asset, which belongs to the individual himself, thus it might be utilized by the enterprise in order to generate value.

All of us are used to think of the employees regarding “*how much to they earn?*” and worth, “*how much do they cost?*” The questions should be: “*how much do they value?*” “*How much does the competence, ability and experience of this individual add to the enterprise?*” What we mean is that the important thing is to know how this “*intellectual capital*” may produce value for the organization.

To absorb, develop and keep this “*intellectual capital*”, first of all the organizations must define their own essential competence. This competence is defined as the conjunction of abilities and technologies that allow the organization to benefit the client. The abilities of which consist these competencies are to be found in the employees and only through the development and encouragement of these individual abilities the organization can guarantee the business to prosper. Next step, the organization must work on a attracting and retaining the talented workers on the labor market, i.e., the ones that better adapt themselves to the essential competencies of this organization. Instruments such as the map of these individual abilities are used to assist the search.

And last, but not least, the development of this intellectual capital is made through the implementation of forums of discussion and workshops, where the organization’s employees share their experiences and Knowledge. Nevertheless, to absorb and to develop the “*intellectual capital*” do not add value to the organiza-

tion: it is necessary to keep it. And one way to do so is to create desirable and encouraging work environments, to promote a sharing management and to offer programs of profits sharing.

#### 4.2.3. Structural Capital

The structural capital may be defined as a group of administrative systems, concepts, models, routines, trade marks, patents and information technology systems, which allow the organization to work effectively and efficiently. It is part of the structural capital the “*culture of the organization*”; in other words, the way a certain organization runs its business. In a very clear and extremely simple manner, Leif Edvinsson (1998) describes the structural capital as “*everything that stays in the organization when people live the office and go home*”.

If we enter a McDonald’s unit in Rio, Paris Tokyo or Moscow, we always find the same lay-out of the store, the same type of equipment, the same smile of the attendants, the same type of service and, if we go through the counter we will see that the stores must fill out the same type of financial report and utilize the same information technology system.

The structural capital, contrary to the intellectual capital, can be created by the clerks, thus it belongs to the organization. Of all the capital-goods, the structural capital is the easiest to measure, for we, in general, know how much a certain software or a determined patent cost.

It is our point-of-view that the management of the structural capital shall contemplate three distinct and complementary processes: the definition of this group of processes — the heart of the business; the definition of the type of organizational structure and the definition of the instruments that go along with it and the assessment of the projects (tools that should be used in the management).

#### 4.2.4 The Relationship Capital

For us, the *relationship capital* is defined as the net of relations an organization has among its cooperators and its clients, suppliers and partners. We agree with Allee (2000), when she says that “in the business universe, the nets are compounded of groups of dynamic chains between their several partners, which are engaged in deliberate exchanges and services strategies, Knowledge and value.

The clients are a fundamental part of the enterprises relationship. As Stewart would have said (1998): “*Between the three great categories of the intellectual assets — human capital, structural capital and client — the clients are the most valuable. They pay the bills!*”

Therefore, the relationship capital is the one that values and encourages the establishing of strategic alliances, in order to amplify its presence in the market. An isolated enterprise will have less chances of obtaining success. Both individual and/or institutional relationships are valuable and must be managed.

Beginning with its strategic vision the organization must determine the “key-relationships” for the success of its business and build an strategy of relationship in each one of them. There are clients that are worth a financial profit; others, give an image return; and there are, yet, the ones that charge for quality on the services provided and on the products supplied. Some times they do not add any economical value not even of their image, but they certainly are valuable for the enterprise to maintain its high quality patterns..

### 4.3. COOPERATION BETWEEN CAPITALS

We have called the attention to the fact that the cooperation



between Knowledge, innovation and business development, defined as Enterprise Intelligence, is indispensable for the success of the organizations in the Knowledge Society. We have focused on the importance of the capital management (environmental capital, structural capital, intellectual capital and relationship capital). The interaction among these capitals is the organizations' wealth foundation: it is "*the map to the mine*".

We can simply give an example of the importance of this integration between capitals and Knowledge. What would an organization do to count on excellent professionals, with a high level of intellectual capital, if it does not have a minimum level of structural capital? The intellectual capital will not be able to do anything whatsoever; nothing will happen! It is easy to imagine what would be of an excellent orchestra where the musicians do not have their instruments....

Each organization must draw a map of its capitals and verify how each capital can contribute to the growth of the other<sup>7</sup>.

## 5. HOW ABOUT BRAZIL?

The World bank, in an essay published in 1996, highlights the subject "Emergent Markets": the countries and regions that will have increased their participation in the goods and services World market. Through this study the participation of the USA, today closed to 40%, would drop back to less than 30% in 2010; the European Community would see its participation reduced from today's 35% to more or less 27%; Japan would sustain its participation (around 15%, today) and the emergent regions should be Asia (China and the Asian tigers), Latin America and East Europe Countries (figure 3).

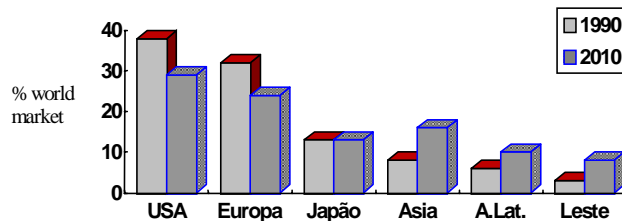


Figure 3: Emergent Markets (Source: World Bank)

In the same year, the Institute for The Future<sup>8</sup> presented its projections regarding the American exports of intangible goods — software, patents, royalties, services. By this analysis, these exports would grow from 4% (1998), to almost 25% in 2000 (figure 4). Computers, airplanes and robots exports do not count as intangible products, although their value is given, mainly by technology and Knowledge built-in these products. If we consider the percentage of Knowledge incorporated in these products, the participation of the intangibles goods in the American export market, goes up to 70%!

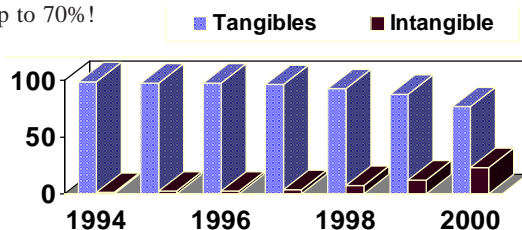


Figure 4: American Intangible Goods Exports (Source: Institute for the Future).

<sup>7</sup> The readers can read more on the subject in "Management.com: Administrating Enterprises In the Knowledge Society", to be published in October 2000, by Campus Ed. Rio de Janeiro.

<sup>8</sup> <http://www.iftf.org>

Such numbers suggest the following question: to whom does the United States of America intend to export these intangible products abundant in Knowledge? The figure 3 suggest that the so called emergent markets should be the preferential markets for the absorption of these products of high aggregated values. Our role would be well defined, then. As well as in the transition of the agricultural to the industrial society, at the very beginning of this Century — Brazil, for instance, is being well known as a great coffee Producer and exporter — in the transition of the industrial to the Knowledge society, the role we should perform would be of a mere industrial producer/exporter and importer of the abundant Knowledge products.

Would we, once more, be condemned to occupy a partner's role in the Worlds scenery? Should we accept well the general opinion that developing countries does not present good enough conditions to compete within the most dynamic sectors and areas which present more aggregated values?

We do not agree with this opinion! A paradigmatic moment, like the one we are living now, generates threats and creates opportunities for all the participants on the market. The enterprises that lead a special segment of the Market realize that their old prosperous ways of working do not guarantee their success, any longer. The innovative way of the new technologies transforms the organizations — which simply did not exist 6 years ago — in leaders of the Market, and such is the case of Netscape or the Amazon Books.

In most developing countries like Brazil, we have all the elements for an innovator environment: businessmen, researchers and/or inventors, investors and political administrators. The question is: what is the reason for us to be out of the competition in the business that abound in innovation and high growth?

Herein, we carry a *cultural problem* which we are not going to speak about or discuss in the present article. Generally speaking, the Culture of developing countries does not value the work, although the majority of the population works many more hours per year than an European or an American worker. A research made in our graduation and post-graduation courses, since 1993, at UFRJ's (Federal University of Brazil) Production Engineering School, Rio de Janeiro, reveals that within the values "Work", "Leisure", "Money" and "Health", the preference goes in this order as it follows: health, money, leisure and work<sup>9</sup>. The same research, made with engineers recently graduated in the USA, England, Germany and Japan, presented inverse results: in the first place comes work, then money, leisure and health.

As we affirmed in our book "Management.com: administrating enterprises in the Knowledge Society": One of the comments we are used to do, regarding this research, is that we can become rich from one day to another if we gamble and win in the lottery, all by ourselves. We have no information that this can happen with a Country. The United Nations Organization (ONU) has not invented a lottery in which a poor Country would gamble and, winning, transform itself in a rich Country from night to day. The recipe is clear and the research in the four developed countries indicated: work. If Germany and Japan had, as we do, the work at their lower part of the values scale, they would not have succeeded in the reconstruction of their countries devastated by the last two World Wars.

## 6. CONCLUSION

The Knowledge, as that incorporated by the human beings ("*intellectual capital*"), and in the Technology, was always the central dot for the economical development. But only in the last few years, when the economical activities became more and more

intense in Knowledge, its relative importance was recognized. Investments in Knowledge, such as research and development, education and practice, and innovator approaches on the work front are considered “the key” for the economical growth.

In this article, we try to introduce a few ideas for a debate which we cannot postpone. We demonstrate the need to create a new economical model which is based upon the fact that the Knowledge is the factor of the essential production in this new Economics and we propose a new business model for the Knowledge Society: *The Enterprise Intelligence*. This new model has its main substance on the tripod Knowledge, Innovation and Entrepreneurship.

For the management of the Knowledge we propose the model of the Knowledge Capital, which considers the internal management (structural capital, relationship capital and intellectual capital) and the external business management or knowledge environmental (environmental capital). This model does not propose magical realizations or to transform the organization from night to day. It only highlights a way to be followed by all the organizations that wish to succeed in the Knowledge Society. It is a trail, not a train.

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