

Part I

Enterprise Evolution

Chapter I

The New Informed Business Architecture¹

Andrew Targowski
Western Michigan University, USA

Thomas Carey
Western Michigan University, USA

INTRODUCTION

The fall of the Berlin Wall, the collapse of the Warsaw Pact, and the disintegration of the Soviet Union are certainly monumental events in the history of the human race as the 20th century nears its close. Monumental changes are taking place in business organizations and in the managers who run them. The business community is shifting its paradigms and the manner in which it does business.

To avoid “*Future Shock*,” one must look beyond the trends of the past and discover the rules that will govern business in the Twenty-First Century, the Information Age. By knowing the nature of such changes and how to anticipate them, the strategist can elicit extraordinary leverage in shaping the future. Drucker (1980) in *Managing Turbulent Times*, writes that one of the most important skills during times of turbulence is anticipation.

This chapter explores the effects of the information age (Figure 1) upon the global business enterprise which is shifting from an old paradigm to a new one, in the way Kuhn (1970) described paradigm shifts in science in *The Structure of Scientific Revolutions*. We will also suggest that since all major business dimensions have shifted paradigms, a new era in business requires a new set of rules.

This chapter offers an integrative strategic model for a new informed business architecture which operates in the new Electronic Global Village (Targowski, 1991, 1996). In this village, planet Earth, computers, communications, and cognition (3C) will globally connect islands of business, customers, and citizens between diminishing national boundaries. These new tools develop computer and human networking within a new informed, more abstract, or icon driven environment (Tapscott and Caston, 1993).

SHIFT OF POWER

The most easily recognized paradigm shift is that of power: political, economic, and social.

The Political Perspective

At the end of World War II, the United States was preeminent in all areas of commerce and industry with 52% of the world's GNP. This singular leadership by *Pax Americana* was seriously eroded during the decade of the 1980's and has evaporated altogether with the collapse of the Soviet Union and the reemergence of Japan and Germany as economic superpowers. Perhaps the most dramatic shifts of the second half of the 20th century have occurred in the areas of political, economic, and social power. The polar competition between capitalism and communism has ended without an unboastful victor while the former communists are busily transforming themselves into fledgling democracies (Huntington, 1996).

The Economic Perspective

The year 1991 marked the end of the old military industrial arms race and the beginning of economic warfare conducted by stateless corporations (Korten, 1995). Since 1991, large corporations have moved away from local or national boundaries toward cosmopolitan and global ones without borders. For example, IBM had 62% of its sales in countries other than the U.S. Similarly, Colgate had 64% of its sales outside of the U.S. while Coca-Cola did 54% of its business abroad (1991, annual Reports). In these instances, companies thought to be American are in fact global competitors, serving global markets, with global products. But to whom are they responsible? They wield

the power and financial resources which rival that of many nations. This shift from local to global has eroded the previous power of a single nation. For centuries many corporations served their own nation, while today many nations serve as markets for the multi-national corporations.

This change of a global environment has led to changes in regulation—the creation of G-7; changes in production and marketing—from mass consumption to highly differentiated global markets; changes in employment—from full employment to structured unemployment; changes in organization design—from hierarchical core units to joint ventures, peripheral units, and expanded partnerships or Keiretsu; and changes in the state, from a military—welfare society to an industrially competitive—self-supporting society (Elliott, 1996).

In 1992 the trade barriers fell among twelve countries—Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom, which had formed one integrated economic market—European Union (E.U.). In 2004 another ten countries from Central and Eastern Europe will join E.U. Rather than being pawns in a rapidly escalating trade war between the U.S. and Japan, the nations of EU have opted to form a single entity that will become the third economic superpower, with a population of 520 million and gross national product of over 10 trillion dollars in 2010 (Targowski and Korth, 2000).

It has been said that “economics controls politics.” The successful integration of the rapidly-growing American (including Latin America) market and simultaneous slow growth of the European market may lead towards the further integration of the two components of Western Civilization. As a result, the Americas may integrate with Europe into the *FTA of the North Atlantic* (FTAAT), with at least 50 Western-Civilization countries forming the world’s largest market.

Several factors will propel Europeans in that direction. Both areas already trade much more with each other than with Asia. Furthermore, Great Britain trades twice as much with NAFTA as it does with its E.U. partner, and would prefer to have its own currency and political identity as a member of FTAAT rather than as a member of a political union (Black, 1999). Also, Italy and Central Europe have strong ethnic ties with the United States as a result of massive migration from Europe to the U.S. These are only some of the influences that may lead to the emergence of FTAAT. FTAAT could have half of the world’s market and 1.5 billion consumers—more than in China.

The rest of the world will grow faster than in the first decade of the new century. Due to the expansions of NAFTA and the E.U., as many as 40-50 countries will join either FTAA or the E.U. The remaining 140-150 countries

will be strongly stimulated by the four larger markets. There will also be benefits as more and more of these countries open their economies to world markets and capitalism. Therefore, economic growth of close to 4% per year is reasonable. And there are some potentially very strong countries in that group: in addition to the “tigers and dragons,” India, South Africa, Australia, and the oil producers. All have favorable potential. India might very well compete with China as the most dynamic of all of the major developing countries. Also, the possible success of other integrated regional markets, such as ASEAN, or any group involving India, should be considered.

The coming generation will be a period of great change—political as well as economic. The evolution toward multi-country economic integration will continue—especially in the Atlantic and ASEAN regions. Today’s economic powers will continue to dominate in the coming years. China may well become the world’s largest individual economy. However, the United States, which is very likely to integrate with larger groups of countries into a massive free-trade area, will continue to be a dominant world economic force.

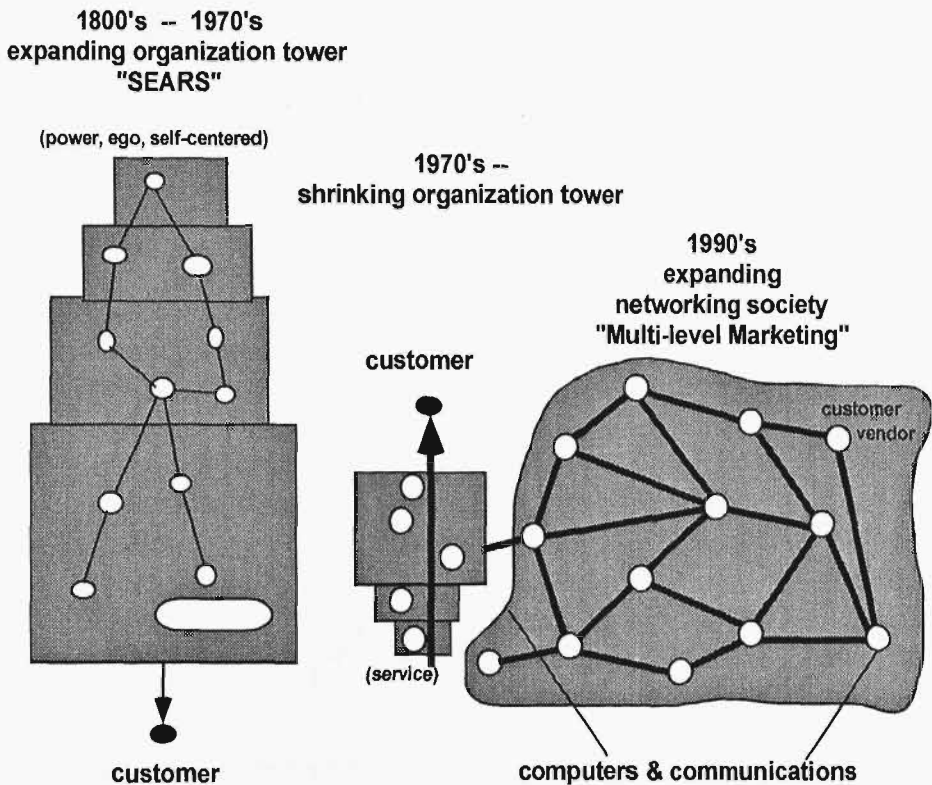
The proliferation of Internet access will open intriguing scenarios. On one hand, windows of opportunity will be offered for developing markets (e.g., India and Brazil already have booming software-development industries). Also, ready access to the communication and information opportunities provided by the Internet may help stimulate education, improve health, and encourage entrepreneurs—thereby improving living standards and stimulating the economies. On the other hand, the dissemination of information, together with the ready access to free worldwide communication, can abet terrorist groups such as has been seen with al Qaeda. Also, as widespread cyber attacks have shown, the Internet is open to abuse—from anywhere in the world.

The Social Perspective

For most of mankind’s history the individual worked either on the farm or as a craftsman and was solely responsible to himself or the guild, with a resulting per capita income of approximately \$300 per year. Then at the end of the 18th century, the industrial revolution was started in England by entrepreneurs and their families, an event that radically transformed productivity and personal income. In America, men such as John Rockefeller, Henry Ford, and Andrew Carnegie created, financed, and managed their own businesses. These early entrepreneurs were the first capitalists and their offspring today control at least 25% of the stock in over one third of the present day Fortune 500. During the first half of the 20th century, the role of the capitalist was assumed by individual

stockholders, while entrepreneurs provided the knowledge and the vision, but not necessarily the capital to start a business. By 1950 “managerial capitalism had gained ascendancy over family and financial capitalism.” In the 2000’s the managerial class caused some serious crisis trying to rob stakeholders, as is best exemplified by the Enron and WorldCom cases. This shift in economic power has had a great impact upon the blue collar work force. Prior to the 1980’s the manufacturing cost of direct labor was approximately 25% of sales and almost a third of the workforce was employed in manufacturing. Today the U.S.’s average cost for direct labor in manufacturing is less than 5% of sales, while fewer than 16% of the workforce is employed in manufacturing. The collective voice of labor has also been muted. Union membership among manufacturing workers had a post-war high of 25% in the 1950’s, while today barely 10% of all U.S. manufacturing workers are unionized (Krugman,

Figure 1-1: From Hierarchy to Networking

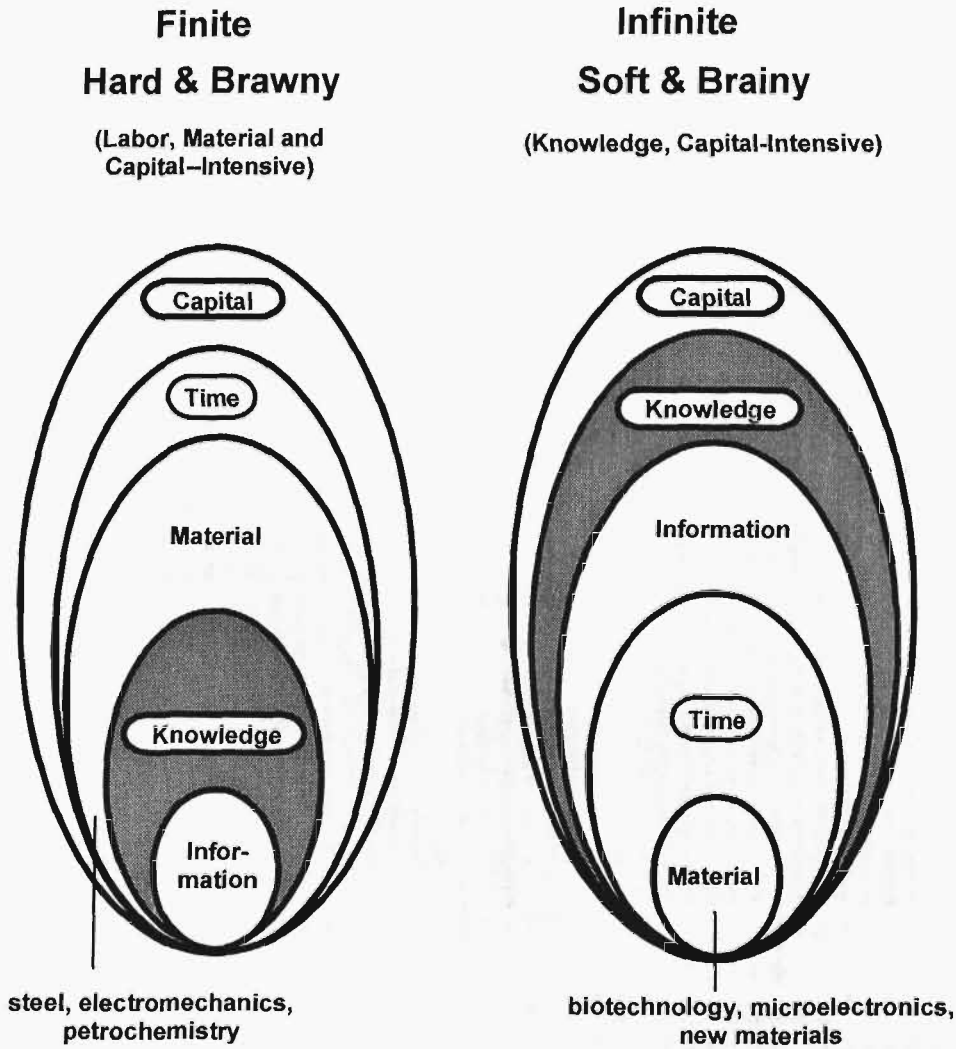


Forbes, and Lawrence, 1996). The evolution of economic, and thus social power is shown as a model in Figure 1-1.

SHIFT IN STRATEGIC RESOURCES

The raw materials paradigm will actually shift along two dimensions: from more resources to fewer resources, and from quantity and quality to the

Figure 1-2: A Shift of Strategic Resources



timeliness of resources. Plastics and synthetic materials actually replace heavier, more labor intensive and scarcer materials. For example, the vacuum tube was replaced by the smaller, more knowledge intensive, but less labor intensive transistor, which in turn was replaced by silicon chips and now by molecule sized chips etched by single electrons. Even automobiles have fewer parts, fewer cylinders, with less direct labor and a tremendous increase in quality. Fewer parts, less labor, and diminished resources have actually resulted in a better automobile. New electric motors have fewer parts, require less direct labor to produce, less energy to run, and are virtually maintenance free. Total product redesign adds product value by employing fewer resources.

The other paradigm shift (Figure 1-2) involves product development. Companies no longer have the luxury of waiting decades to see new products or technologies brought to market. Computer producers would love to have the luxury of more time between development cycles, but neither the competition nor the customer will allow it. Likewise, service companies live with new time constraints. One such example is the United Services Automobile Association, which recently settled three hail damage claims to one of the author's cars in less than 43 hours, with an apology that the claims were not settled in 24 hours — their corporate goal.

SHIFT OF THE ENTERPRISE STRUCTURE

A modern business organization represents one of the most complex forms of social organization. By the end of the 19th century and the beginning of the 20th century, most firms grew through vertical integration: by moving back in the productive process, by the owning of raw materials and minerals, or by forward moving in the distributive process toward direct sales. This was typical of U.S. Steel, Standard Oil, American Tobacco, Ford Motor Co., and almost all large manufacturers. During the 1920's and 1930's companies grew by horizontal integration, a movement toward expansion of similar activities throughout a wide geographical area. This type of integration was typified by the chain-store movement, like Sears & Roebuck. During the post-World War II period, the pattern of growth for most enterprises has been through heterogeneous growth with concentric and conglomerate diversification into new and varied fields, exemplified by General Motors, General Electric, United Technologies, General Dynamics, LTV, and ITT. This approach has greatly increased the complexity and size of the business organization.

The corporate structure that emerged from WW II was designed for the era of *Pax Americana*. The structure was organically simple: an isolated enterprise which competed as a complete manufacturer in both the domestic market and international trade (Elliott, 1996). As late as 1950, 24 out of 25 cars sold in the U.S. were made in the U.S.

Playing suppliers off against each other keeps each short of capital to modernize and unable to compete in the global economy. That is one reason why American factories have more outmoded equipment than the plants of other industrialized countries. The average age of the U.S. plant and equipment is approximately 14 years, which experts believe is double the figure for Japan and Europe.

In the 1980's *Pax Nipponica* tried to replace² *Pax Americana* as Japan became a major manufacturer of industrial goods and a country which enjoys a large trade surplus. The Japanese corporate structure is organized around a concept of *vertical—horizontal keiretsu*. Together the Sumitomo, Sanwa, Mitsui, Mitsubishi, Fuyo, and Dai Ichi Kanguyo groups account for roughly one-fourth of Japan's total business assets and revenues. The vertical dimension of keiretsu is a pyramid of companies that serve a single master. Every large manufacturer, regardless of its affiliation with a horizontal group, dictates virtually everything, including the prices it will pay to hundreds of suppliers that are often prohibited from going outside the keiretsu. At the pyramid's base is a swarm of job shops and family ventures with primitive working conditions and subsistence-level pay and profits (Ferguson, 1990).

Horizontal groups provide security and stability to promote risk-taking and long-term investment. Keiretsu members, collaborating on research and production, deliver new products ahead of independent rivals. U.S. companies are now forming some organizations that could be even better than the Japanese keiretsu. American industry is shifting from the isolated enterprise to a network-cooperative, virtual enterprise with the goal of strengthening its own position in the global marketplace by improving the quality of products and by quickly getting them to the market. What is emerging is the virtual enterprise model that borrows from Japan's keiretsu, with a reliance upon cooperation and alliances among manufacturers, researchers, suppliers, and financiers, where commitment is a virtue and free choice is desirable (Dyer, 1996). The virtual enterprise is shifting its orientation from a monopoly to a niche corporation which balances scale and scope while focusing on customer-oriented products. A monopoly could manufacture 100 products at high volume as a follower (IBM as a PC producer), while a niche corporation (a contract manufacturing) makes 1,000 products at low volume, but as an inventor.

The virtual enterprise structure (Handy, 1995) (Figure 1-3) works in the following manner:

- Corporate Partnership operates on a project-by-project basis, with ideas coming from people throughout both organizations. The main criterion for

Figure 1-3: The Architecture of a Virtual Enterprise

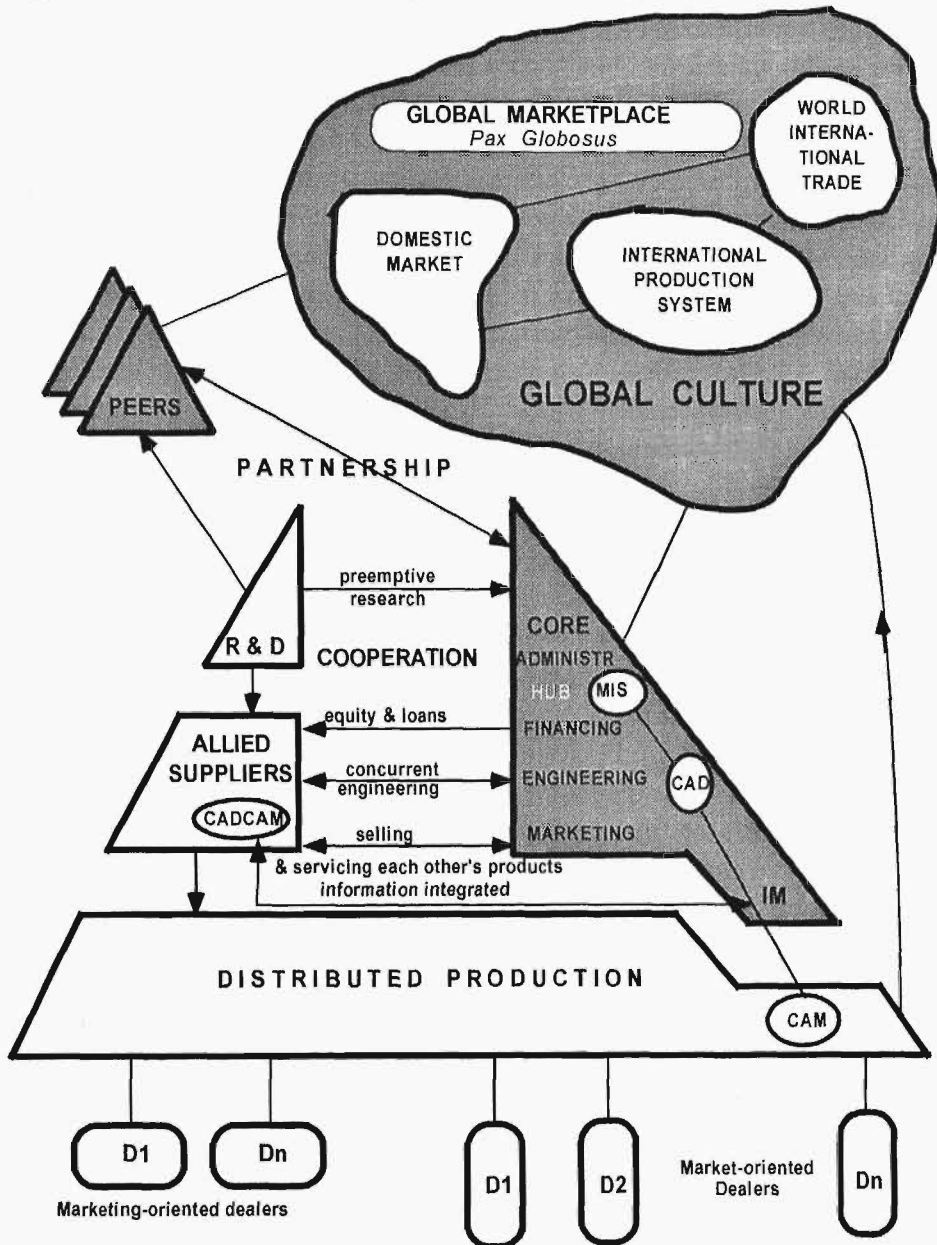


Figure 1-3 The Architecture of a Virtual Enterprise

approving an idea is that it must benefit both companies. The secret of the successful partnership between Ford and Mazda is such that neither side wants to be a part of the other (Moore, 1996).

- Research and Development are concentrated in a consortium funded by peer companies to provide preemptive (precompetitive) research and technology for distinctive products. Since 1982, when Microelectronics & Computer Technology Corp. was initiated by 22 shareholders and 51 associate members, more than 250 new R&D consortiums have been operating. Thus, American companies have begun forming direct research links with competitors. For example, with the help of \$120 million from the federal government, the Big Three car manufacturers have jointly developed a new battery technology for electric cars (Brandenburger and Nalebuff, 1996).
- Financing allows the strategic suppliers and startups working on promising technology to receive equity or loans from hub companies. Other cash-rich investors, such as IBM, Ford Motor Co., or Intel sometimes invest up front, instead of on delivery, for research or product-development (Tufano, 1996).
- Engineering is provided concurrently by trusted and organized alliance suppliers and major manufacturers in new-product designs. This process helps avoid time-wasting traps that occur in the final stages of product development. The best suppliers are totally responsible for designing components and subprocesses or subsystems. Harley-Davidson buys 50% of the production value of motorcycles from suppliers, who have been reduced in number from 320 to 120. The buyers are still the boss, but are constrained by their augmented dependence upon the suppliers to be an ally or partner. IBM has invited Motorola Inc. to send engineers to IBM's advanced Semiconductor Technology Center in East Fishkill, N.Y., to help develop a new chipmaking technique (Adler et al., 1996).
- Production is distributed overseas to Pacific Rim Countries or Mexico through single-source contracts or strategic partners. IBM is teaming up with Germany's Siemens, a competitor, to launch joint production in an IBM plant for the next generation of memory chips with 32-megabit dynamic random-access memories (DRAM's). These contracts set strict product quality, cost, and delivery schedules for components that are to

be delivered just-in-time and assembled into the final product. Manufacturers and suppliers are becoming partners in production. At Deere & Co., workers now solve problems with their counterparts at suppliers such as McLaughlin Body Co.

- Marketing is performed by manufacturers and suppliers each selling and servicing the other's products. For example, Wang sells IBM products.
- Information Management processes for suppliers and manufacturers are integrated through Computer Aided Design (CAD), Computer Aided Manufacturing (CAM), and Management Information Systems (MIS), all composing Computer Integrated Manufacturing (CIM), sometimes sharing electronic mail, via local, wide, and global area networks (LAN, WAN, GAN). A supplier has to follow the assembly master plan of a manufacturer who retrieves and updates the suppliers' production schedule in order to compete in time and cost through the just-in-time approach. When GM announced that it would not deal with any supplier that had to send it paper documents instead of electronic ones, the company adopted the manufacturing automation protocol (MAP) (Keen, 1988; Targowski, 1990).

Table 1-1 provides a summary of the shifting enterprise structure.

Table 1-1: The Shifting Paradigm of Enterprise Structure

Element	From	To	Permanency
World Power	Cold War <i>Pax Americana</i>	Single superpower and terrorists <i>Pax Globosus</i>	Dynamic
Enterprise Type	Isolated	Virtual	Temporary
Products Program	Economy of Scale	Economy of Scope	Long-term
Relationship with Suppliers	Disposal	Alliance	Long-term
Market	Domestic	Global/Regional	Long-term
Culture	National	National/Global	Long-term