

**INTEGRATION BETWEEN BUSINESS UNITS OF A GLOBAL COMPANY: THE USE OF INTERNAL AND EXTERNAL SKILLS IN THE PROCESS OF INTERNATIONALIZATION OF BUSINESS UNITS OF WEG**

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### **The creation of WEG**

In Brazil during the 70s, three friends – Werner Ricardo Voigt, Eggon João da Silva, and Geraldo Werninghaus – decided to found a factory of electric engines in Jaraguá do Sul, a small town in the north of Santa Catarina, which had fewer than 20 thousand people at the time. It was a modest beginning, the company's name originated from the initials of the names of its founders (WEG) and the initial capital was formed from the value corresponding to three low-end automobiles.

The company started its activities in a rented property of around 200m<sup>2</sup> and the owners divided the responsibilities between themselves according to the vocation of each one: Werner dedicated himself to technology, Eggon, to management and Geraldo to production. Individual talents complemented themselves in their differences. The expansion of production and the number of employees during the 70s was substantial and the business had great results. Still, during that decade, the company began its process of internationalization with its first steps through exportation. The first exports occurred in 1970. The first foreign customers were companies in Latin America, basically Bolivia, Ecuador, Uruguay, and Paraguay (where it was first exported to). The company's focus was to establish itself and grow in the domestic market. But sales opportunities arose in the foreign market and the company sold, "as long as it didn't have to go after the sales".

It wasn't easy to keep up in the foreign market, because the company was unknown. The hardship was to establish a network of distributors. Without market knowledge and no foreign contacts, the company decided to build relationships with people that lived abroad and that had knowledge in this business and then could help perform the transactions. Initially, they observed which company already had bought the products frequently or had any knowledge of the products of the company. Looking at these data, they would contact them seeking partnerships to sell the products in their country. That's how began the exports to Latin America. Participation in fairs abroad was also essential. The business was growing until the first container in consignment was shipped to Canada.

While it grew in foreign markets, the company improved its portfolio with high-end engines. It was at that time that they began to manufacture the IP44 engine, that had design, body, and cast developed with imported technology, together with indigenous technology, that formed the internal part of the engine. Despite the foreign markets not being the main strategic focus of the company, international norms had to be respected so that there were no risks of incompatibility with the determinations of international regulatory bodies. So technology from Europe was imported and the norms of the International Electrotechnical Commission (IEC) were adopted. To do that, the company chose to establish an agreement with a German company to manufacture the first regulated products.

This was the source of great pride. It was the end of the 70s and the founders had become the largest manufacturer of regulated products in Latin America, which led the company ahead of its competitors, who did not have this capacity. In 1973, the company was already exporting to around 20 countries and in 1975 32 countries were using WEG

engines (Ghoshal et al 2002). Commercial offices were opened in the USA and in Europe and in 1977 the company exported technology, offering Brazilian know-how to a Colombian factory of electric engines. Today WEG's vision is focused on constituting itself in a global reference for machines and electrical industrial systems, with a large array of products, providing efficient and complete solutions. The company believes that it should be an agent of transformation, providing complete solutions to the business of its customers. This way it starts being a seller of solutions and not just a manufacturer of engines, seeking to raise the aggregate value to its products and progress in its value chain (WEG Website 2016). Picture 1 shows the division of WEG in business units.

**Picture 1.** Business units of WEG company.

Business units	Products
<b>WEG MOTORES (WMO)</b>	-Low voltage industrial electric motors, -Single-phase motors for household appliances.
<b>WEG ENERGIA (WEN)</b>	-Medium voltage electric motors, -Electric generators, including wind generators and -DC motors.
<b>WEG AUTOMAÇÃO (WAU)</b>	-Components for command and protection of motors and maneuver and protection of electric circuits. -Drives (electronics) for variation of the speed of electric motors and -Frequency inverters for the generation of solar energy. -Electrical panels and electric industrial systems.
<b>WEG TRANSMISSÃO E DISTRIBUIÇÃO (WTD)</b>	-Transformers for transmission and distribution of electric energy. -Substations. -Medium voltage sectors.
<b>WEG TINTAS (WIT)</b>	-Liquid and powdered paints. -Electro insulating varnishes.

Source: adapted from WEG RA (Annual Report), 2016.

### The process of internationalization of WEG

The beginning of the 80s was marked by the growth of the network of representatives and distributors. With the rise in sales, the need for a network of technical assistants arose, since it wouldn't make do to sell a product without post-sale support. So the company searched for professionals in the foreign market that knew how to work with the product and that could provide technical assistance. However, the company faced great barriers, as the majority already worked with other big companies. The solution for that was to hire technical assistants, invest in their training and so give the conditions in which they could develop and provide good customer support.

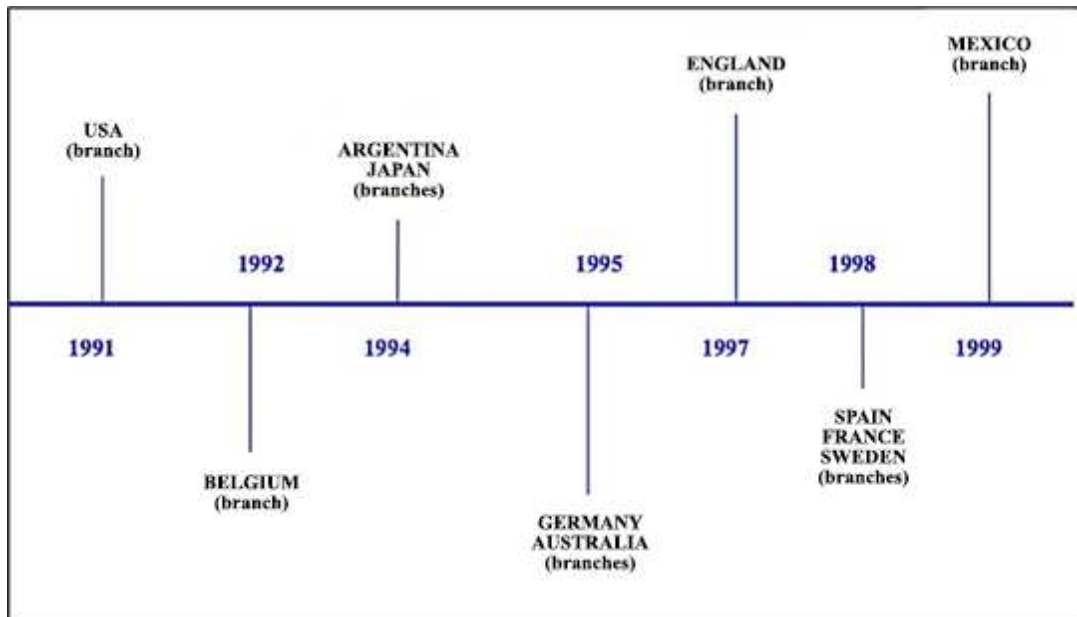
The growth of acting in the foreign markets required changes in the organizational structure and so the Foreign Trade Department was created. It was at this time that the sporadic exportation policy was abandoned. The company found that exporting only the production surplus did not work, it wasn't possible to make production planning. This way a new policy was adopted: "Exporting is part of our business". The adoption of this policy imposed a series of challenges like assuming a goal of revenues in international markets and the creation of a structure dedicated to it. So it was founded WEG *Exportadora*, its holding focused on exportation. This made the foundations to a new phase in the process of internationalization, which represented substantial developments in the international markets.

With the clear strategic intention of extension of sales abroad, a big problem in the internationalization model needed to be solved, the great dependency that had been created with the distributors. A lot of distributors did not have the same ambitions about sales growth and the necessity to create a system with faster and more efficient decisions was acknowledged. The solution was the replacement of some distributors with commercial branches of its own. In some cases, the distributor's company was bought because it already had its own inventory, known employees and an established brand.

In the 90s, commercial branches were open abroad. The first in the USA (*WEG Electric Motors Corporation*), installed in Florida, at the same time that WEG in Baltimore was created, which aimed at the insertion of the name WEG between one of the largest channels of distribution in the USA. At the time, the company already planned to enlarge the distribution of its products in the markets of Mexico and Canada considering NAFTA (*North-American Free Trade Agreement*). The same strategy was adopted in Europe. In the year of 1992, a branch was installed in Belgium (*WEG Europe*), with the objective of increasing sales to the European market. Latin America didn't stay out of the same strategy and branches were opened in Argentina (in Buenos Aires and Santa Fé) with the focus on sales in the Mercosur. In the late 90s, other offices were installed in Japan, Germany, Australia, England, Spain, France, Sweden, and Mexico, as shown in picture 2.

In 1994, a joint venture company was developed with an Argentinean company. But after two years of association, the partnership went through difficulty in perpetuating business. The establishment of branches abroad was a very intense period in the process of internationalization, which demanded the acquisition of many competences, since each country has its own legislation. Before that, there was a necessity to hire local specialists in each country so that the investments were made on a solid juridical basis. Another obstacle that needed to be overcome at the time was the image of Brazil, which was still seen as a third world and poor country. This created the necessity of making investments in the propagation of a more positive image of Brazil. The strategy that was used was to bring current and future clients to get to know Brazil, its regions of acting and the industrial complex that was located in Santa Catarina. This strategy is followed to the present day.

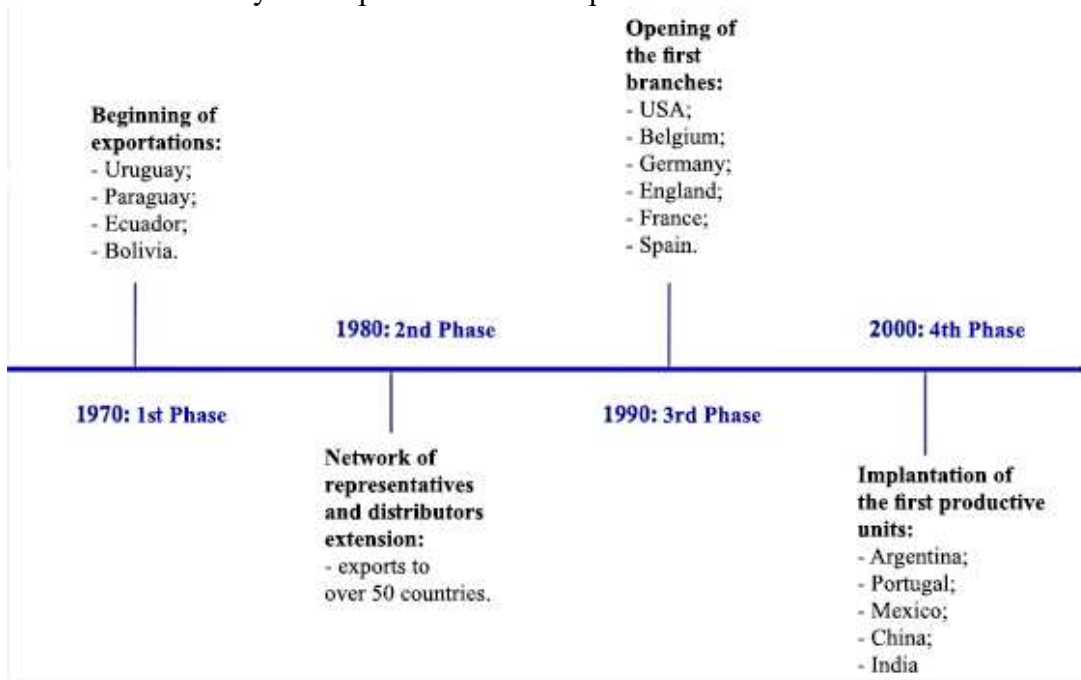
**Picture 2.** Timeline of WEG's first branches



Source: Melo (2011, translated).

The 2000s were marked by the installations of factories abroad, like in Argentina, China, Mexico and Portugal and in the continuation of the implantation of commercial branches. Other important steps that were taken were the acquisition of motor factories in China and the construction of units (*greenfield*) in India, both initially aimed to provide to their respective markets.

**Picture 3.** Summary of the phases in WEG's process of internationalization



Source: Melo (2011, translated).

The factory in Mexico was acquired in 2001 with the intention of supplying all of Mexico and the USA, and today it is one of the largest WEG's branches. A big challenge in this phase of the process of internationalization was the difficulty in finding out how to best implement WEG's

culture inside the branches abroad. WEG values work with human company, teamwork, worker efficiency and of its products, flexibility, innovation, and leadership. For that, WEG sent capable Brazilians as interns to work in the branches, and in the same way, brought foreign workers to participate in training and internships in Brazil, which allowed them to learn about the culture of the parent company. The different phases in the process of internationalization are highlighted in picture 3. The increased role of the company abroad made that the external market represented a great deal of the returns of its activity. In 2016, nearly 30% of the company's employees worked abroad, where nearly 45% of its operational liquid income came from, data which show that the company became a global enterprise.

### **WEG *Automação* (WAU) and its internationalization**

WEG *Automação* (WAU) was made as one of the business units of WEG S.A. This unit was founded in 1981 in Jaraguá do Sul-SC, being part of diversification strategy adopted by the WEG group in the 80s. The unit WEG *Automação* is divided into two parts: area of Serial Products and area of Panels and Systems as shown in picture 4.

**Picture 4.** WEG *Automação*'s Portfolio



Source: WEG SA (2016).

WEG *Automação* is considered: the largest manufacturer and leader in the Brazilian market of frequency inverters and soft-starters; the largest Brazilian manufacturer of command devices, maneuver and low voltage protection; the largest manufacturer of electrical panels in Latin America; leader in supplying electrical centers in Brazil, and with focus in acting in industrial and building automation, urban mobility, solar energy, machine operational safety and critical power (WEG *Automação*, 2016). It has manufacture units spread across Brazil, which are in: Jaraguá do Sul - SC, Itajaí - SC, São José - SC and São Bernardo do Campo- SP, and 4 manufacture units in the world, which are in: San Francisco - Argentina;

Bogotá - Colombia; Johannesburg – South Africa and Valencia - Spain. Nowadays, WEG *Automação* is the only manufacturer of drives in the Southern Hemisphere, competing with many giants of the sector, like: Siemens (Germany), Rockwell Automation (USA), Schneider Electric (France), Mitsubishi, Toshiba and Yaskawa (all from Japan). While the company consolidated its position in the Brazilian market, it expanded its scope of activity diversifying geographically to new markets abroad. Among the reasons pointed to WEG's expansion of business to the international market, it can be highlighted the following: market diversification, aiming to reduce dependency on the internal market and also to seek more markets to sustain the long term growth of the company; and scale gains and the rise of competitiveness of the company, coming mainly from the possibility of acquiring components in bigger volumes and better prices and gains in production efficiency.

The process of internationalization of WEG *Automação* was long and took 20 years to consolidate and continues to this day. So that the process could happen with greater success, WEG adopted as strategy, first inserting abroad the unit WEG *Motores* so it could get to know the foreign market and soon after, establish contacts, customers, define market sizes and later insert WEG *Automação* abroad. The first exportation sales were made to Uruguay and, soon after, WEG *Automação* began to approach other neighbor countries of Latin America, because they were markets geographically closer and of easier access from Brazil. In the same year of 1997, WEG *Automação* decided to enter the market of North America, where it had to qualify itself given the importance of legal requisites, thus providing product certifications and the making of manuals in English. With more confidence, the company decided, at the beginning of the 2000s, to enter Europe which was one of the most demanding continents of the international market. To enter this market the company needed greater efforts than it had so far. It was necessary to obtain CE certification of the products, which demands complex electromagnetic compatibility tests (EMC), the formation of agreements with the University of Wuppertal in Germany and investments in new processes of manufacture.

Shortly thereafter, the company sought support in other universities of North America and Europe as a whole. Still, during the years 2000, the company initiated sales in South Africa and Australia. In 2013, another important step towards the globalization of WEG *Automação* was taken, with the founding of its own center of Research and Development in Solar Energy in Freiburg, in Germany. The generation of Solar Energy forms a promising market in Brazil and in the world and it constitutes an important market segment for drives technology. At this same time, the WEG group also acquired or implanted factories of electrical panels in many places around the world, like in: South Africa, Argentina, Colombia, Spain, and the USA. These acquisitions became important opportunities for WEG *Automação* to begin to place its products (Drives and Controls) inside panels sold in those countries. Also in 2013, a Joint Venture named JEWEC was formed for the supplying of equipment, electrical solutions for drillships and electrical modules (an electrical room of up to 500 tons).

Another important date in the strategy of internationalization for WEG *Automação* was in 2016, where WEG *Automação* officially "incorporated" the operations of electrical panel factories and system of Spain – Valencia, South Africa – Johannesburg and of Colombia – Bogotá. This way these three operations began to have technical and managerial coordination of business unit WEG *Automação* of Brazil. The next challenge of WEG *Automação* is to begin to operate in the difficult Asian market (which includes China and Japan). Currently, the company already has an engineer, Drives specialist, expatriate for the WEG unit in China which has the task to prospect and start operations of WEG *Automação* in that market. Recently it was also initiated a project that may be considered a pilot for the whole WEG group. A WEG engineer was assigned to work in ERIKS in the United Kingdom. ERIKS is a big distributor of industrial equipment in Europe that already distributes WEG products for a while. The task of this engineer is to increment even more the offer of WEG's products, mainly Drives.

In picture 5 it is possible to view the phases of internationalization of WAU.

**Picture 5.** Phases of internationalization of WEG *Automação*.

The phases of internationalization of WEG	Correlation with the stages traveled by WAU	
	Period	Description
<b>1 – Beginning of exportations</b>	1997	Sales to countries of Mercosur and North America.
<b>2 – Markets acquisition</b>	The early 2000s	Sales to Europe, South Africa and Australia (sinergy use from the branches opened previously by WEG <i>Motores</i> ).
<b>3 – Internationalization</b>	2013	Formation of JEWEC Joint Venture, in the USA.
<b>4 – Globalization</b>	2014	Formation of an R&D center in solar energy in Freiburg (Germany).
	2016	Consolidation of panels manufacturing operations abroad (Autral, FTC e ZEST – Shaw Controls) in DRE of WAU.

Source: Research data (2016).

Nowadays, there are approximately 10 expatriates of WEG *Automação* spread around the whole world, and each one with very specific actions in their jobs. Insofar as the process of internationalization of WEG *Automação* happened, the employees also needed to internationalize themselves. So there was a very strong incentive in the study of languages, and with time WEG *Automação* began to insert its workers in some countries for a set amount of time so that they could bring their knowledge of the application of WEG's products. Annually, WEG *Automação* exports to more than 40 countries directly and indirectly through branches, being that 1/3 of its revenues come from exportations or operations from abroad. To WEG *Automação*, internationalization is a big advantage, because it is growing, even more, the revenues only increase, being so, it is an important strategy since WEG *Automação* depends even less of its internal market. From the data collected it was possible to make a comparative analysis between the processes of internationalization of the WEG *Motores* (WMO) and WEG *Automação* (WAU) units, as shown in picture 6.

It is observed that the WAU unit traveled a great deal of the way following the steps of internationalization of the WEG *Motores* business unit, or of other units of the WEG company. With that, it was largely favored by having harnessed all the structure the other units of the company already had installed in the international market, forming a great sinergy between them. This process was facilitated by the structure the WEG group already had in the external market.



**Picture 6.** Comparative analysis between processes of internationalization of WMO and WAU

Process of Internationalization	WEG Motores (Founded in 1961)	WEG Automação (Founded in 1981)
Latin America (A) Entry date (B) Entry strategy (C) Growth strategy	(A) 1970 (B) Exports to Mercosur distributors (C) Opening of own commercial branches	(A) 1997 (B) Exports to Mercosur distributors (C) Use WMO branches to place WAU products
North America (A) Entry date (B) Entry strategy (C) Growth strategy	(A) 1991 (B) Opening of branch in Florida (WEG) (C) Approach OEM's market	(A) 1997 (B) Use of WEG branch to approach distributors (C) Installation of panels factory in WEG
Europe (A) Entry date (B) Entry strategy (C) Growth strategy	(A) 1993 (B) Opening of WEG Euro (Belgium) (C) Opening of branches in the main countries	(A) 2000 (B) Use of WMO branches to approach distributors (C) Installation of panels factories in Spain and other countries (future)
Asia (A) Entry date (B) Entry strategy (C) Growth strategy	(A) 2000 (B) Acquisition of existing factory in China (Brownfield) (C) Acquisition of additional manufacture units and creation of an oversight board in China	(A) 2015 (B) Expatriation of a drives specialist engineer to the Chinese branch (C) Acquisition/Construction of own manufacture units
New Strategies	Investments (of big volume) in manufacturing units in Mexico and in China for the supplying of regional markets (NAFTA and Asia)	Acquisition of panel assembly plants that already performed in OEM's markets to supply special panels/switches with drives and controls from WAU

Source: Research data (2016).

Even with the internationalization process being facilitated, many specific hardships were faced by the WEG *Automação* business unit. Among them it may be highlighted: (a) being a company of high-end products, with its headquarters in the Southern Hemisphere and without tradition in this branch of business, competing with global market players well established for a long time; (b) necessity of forming many partnerships with companies, universities and research centers for the obtaining of high-end technology so it could be incorporated in its products; (c) gradual and permanent effort for the increase in market participation and to attain scale gains and consequently achieve competitive costs, this way feeding a virtuous cycle of increasing market participation.

### The internationalization of WAU and the Network

To the extent that WEG *Motores* began its internationalization, many channels of distribution were opened in the world. These channels may be divided between independent distributors or commercial branches, located in many countries. The products of WEG *Automação* have a very strong synergy with the products of WEG *Motores*. The same customer that buys an electric motor also needs drives for the motor's speed variation, controls for command and protection of electric circuits and also complete panels and systems. Thus, the easier way for WEG *Automação* to export was to put its products directly with these distributors or commercial branches. Even with a facilitated way, the sale of drives is a complex task that requires high-level training of the staff and efforts to earn brand recognition. A new player in high-end products faces big multinationals present in the market, which results in a long way to recognition. To solve these issues and as the volume of business grew in certain branches, WEG *Automação* decided to send specialist technicians and managers of this business unit to perform abroad. In some markets that required high customization (for example, drives inside NEMA panels, in the USA) the company decided to hire engineers with specialized knowledge in this kind of market

to work directly at the branch.

The most recent strategy to increment sales of drives in Europe was to dislocate a specialist Brazilian engineer to work directly in a big independent distributor in the United Kingdom, ERIKS. It is important to note that even with this new approach of the business model for the WEG Group, WEG *Automação* still continues following the trail opened previously with electric motors. ERIKS is an old customer of WEG's business branch in the United Kingdom (WEG - UK) and has already declared the WEG's motors are recognized and asked for in all the markets that this distributor operates. With this new step, the business unit WEG *Automação* intends to obtain the same result with its drives and controls. Following, in picture 7, the advantages of network use between WEG *Motores* and WEG *Automação* is highlighted.

**Picture 7.** Advantages of network use between WMO and WAU

Advantages of network use	WEG <i>Motores</i>	WEG <i>Automação</i>
Reducing exportation costs	YES	YES
Joint marketing	YES	YES
Generate new business opportunities	YES	YES
Sharing resources	YES	YES
Synergy for technical development of products	YES	YES
Exchange information and knowledge	YES	YES
Improve customer service	YES	YES
Obtain international experience	YES	YES
Access to new technologies	YES	YES

Source: Research data (2016).

### Future perspectives

Today, the main focus of operation to WEG *Automação* is in the markets of the USA, Europe, South Africa, and Latin America. But mainly the market of the Americas, since it is viewed as an obligation by WEG *Automação* to have leadership in these countries. Brazil has a good reputation among countries in Latin America, so there's great acceptance when WEG's brand is talked about in these markets. On the other hand, the rise in participation in the North American market will require even greater efforts. The strategy there is based on efforts of cost reduction and certification of products at the same that the branch WEC (WEG ELECTRIC CORPORATION) seeks to enlarge its participation in the market of special panels for Original Equipment Manufacturers (OEM'S). In Europe, the strategy to approach markets of special panels for OEM'S is also being pursued by WEG. It is believed that to magnify this effort it will be necessary to acquire new factories of special panels. Finally, it is understood that the next frontier to be broken by WEG *Automação* is the market in China. Because of the characteristics of low-cost products market and the existence of few alternatives of acquisition of local companies, the strategy is most likely to be that of construction (Greenfield) of a new local plant. Also following the steps of WEG *Motores*, this plant will enjoy the available spaces in one of the industrial complexes already establish in the country by the company.

For the growth of the WEG *Motores* and WEG *Automação* units, it is even more necessary to expand internationally, where they may face some disadvantages or gain many advantages. Network development is a resource employed for the internationalization of companies that has been proving its value even more. Therefore, the establishment of networks by these units reduces barriers and difficulties of national operation and mainly international. The resources are often supplied by other members of the network or are shared in a way to make it viable for a greater group of companies associated to the networks. It is the responsibility of each unit manager to identify the opportunities in which network to enter and which network to remain as well.

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