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The advent of a global economy is forcing companies to improve competitiveness more than ever and to increase collaboration by providing for ICT based interoperability. These needs generate the necessity to focus on company core processes and increase operational flexibility to satisfy customer requirements. The paper is aimed on strengthening the enterprise adaptation to changing markets focusing on the integration between strategic planning and business processes, using enterprise modeling as documented in CEN/ISO 19439 and 19440.

1. INTRODUCTION

Global markets require companies to improve competitiveness and increase inter-organizational collaboration. In most enterprises their mission, mission-objectives and quality policy have been defined independently of enterprise functionality or the corresponding enterprise model. Reason for this lack of integration between strategic planning and enterprise modeling is the missing formal support for objectives in enterprise process models. This situation arises because the process definition is not well understood, let alone sufficiently standardized in most supporting modeling tools.

Strategic management has evolved from an early emphasis on planning to become a comprehensive management approach that helps organizations align organizational direction with organizational goals to accomplish strategic change (Vinzant *et al*, 1999). Strategic management process is the full set of commitments, decisions, and actions required for a firm to achieve strategic competitiveness and earn above average return. (Rumelt *et al.*, 1994)

In summary, the lack of integration between the entity strategies to the enterprise model leaves great question marks on what functionality is needed to improve competitiveness of the organization and its interoperation with external organizations. The CEN/ISO work on standardization of enterprise modeling, (CEN/ISO 19439 and 19440) has established an enterprise model and modeling language definitions that allow integration of the strategies into the business model, achieving an enhanced vision of enterprise integration. The goal we must seek is to develop the skills of the work force to overcome opposition and to create a unified system of global governance. (Alexander the Great, 330 B.C.)

Practitioners of the strategic planning as well of the enterprise modeling have to their disposal tools like Balanced Score Cards (BSC) (Smith, *et al*, 2002) and Hoshin Kanri (Tennant, *et al*, 2001) to unfold the strategies throughout the company. These tools look for things to do and to establish actions that impel the

strategies throughout the organization. The aim of this paper is to have strategic planning become integral part of the enterprise model and, as a consequence, any changes to the strategy will result in changes to the enterprise model accordingly.

Nowadays a valid, robust framework exists that is free of ambiguity and that can manage the integration of enterprise functionality and enterprise strategies. With that, it is possible to clearly identify how the processes are going to contribute to the mission fulfillment in an enterprise model.

The following benefits can be obtained:

- Mission-based company structure.
- Process-based company operation, with each process fulfilling one strategic objective. With clearly assigned process ownership eliminating multiple objective owners.
- Increased operational flexibility due to fast operation reorganization through enterprise model adjustments according to strategic changes made as a result of changing markets.
- Identification of the needed capabilities to improve the competitiveness of the business operation.

This improvement process will apply to the areas of information technologies, human resources and other resources participating in the enterprise processes. We must always remember that behind every successful company, there is a superior strategy. (Markides, 1999)

1.1 Missing a Strategy - Process Integration

Strategy is an integrated and coordinated set of commitments and actions designed to exploit core competencies and gain a competitive advantage. (Hitt *et al.*, 2003) Consequence of the missing link between strategic planning and business modeling is the lack of support for the mission objectives from enterprise processes. .

This is clearly observed when the company personnel has to make a lot of unplanned efforts in order to meet their given objectives and their customer requirements. Another example is the lack of upper level management support for new information technologies implementations when the board does not see any contribution to the company base line.

This missing link leads to very similar ICT implementation across an industry. But with all competitors working with similar technologies, there is no competitive advantage to be gained with ICT. The question is, how do we determine which capability must be enhanced or added to improve our position against our competitors? This question comes up constantly through out company life, since one must continuously determine what technology is going to contribute the greatest value to the organization. But poor integration with the mission will generate a weak vision of the required capabilities.

The same holds for all other operational resources: What capabilities in machinery have to be increased? What skills of the workforce have to be enhanced through training and education to enable them to perform their functions?

In summary, the lack of integration between the mission and its objectives to the processes generates great uncertainties of what functionality is needed to improve the competitiveness of an organization.

2. ENTERPRISE MODELING – FROM MISSION TO OPERATION

Modeling enterprise operation based on its mission and its objectives allows identification of organizational weaknesses and directs leaders of process improvement to follow the strategic path as a solid source to improve competitiveness. It avoids the waste of resources that do not contribute to the value add of the organization.

2.1 The Mission and its Objectives

With a solid mission statement, the company defines what the company is, in order to enable the organization to direct its efforts to fulfill it. With a well defined mission employees will not be confused on why the company is in a particular product segment and consequently, they will focus their energies in fulfilling the mission. One important aspect of the mission is that identifies the primary goals or objectives to be fulfilled by all levels of the organization. “Goals make the mission specific and direct the company toward the future” (Christopher, 1993). These goals or objectives are the pillars on which the company mission is going to rest; allowing the business to obtain its strength and its flexibility.

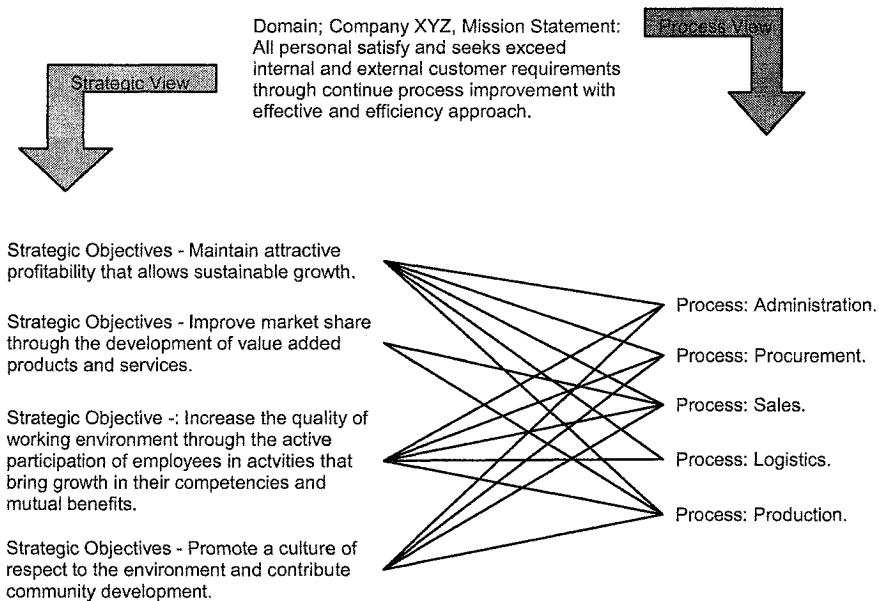


Figure 1: Two views with uncertain relations between objectives and processes.

Great disadvantages for competitiveness materialize when the mission statement does not have a clear link to the company processes, from which they're supposed to receive its strength. (see Figure 1) What we have found in most of the organizations visited in the course of our practice it's that strategic objectives are not related to the operational processes, generating great confusion about how those processes are going fulfill the company's mission and its objectives. The mission only defines a generic path, but does not guide the processes in "how to follow the path".

The main role of strategic objectives should be to identify the functionalities needed for mission fulfillment. Therefore the practitioners of strategic planning defining strategic objectives should think in operational processes, because these objectives will become the objectives of the specific processes or even domains of the enterprise. If they do this the integration of processes and mission becomes a natural step.

Generalizing, with the mission being the reason for the being of the company, we could conclude that the objectives are the reason for the being of the domain and its processes.

2.2 CEN/ISO 19439 and the Strategic Process Integration

Until this moment we have seen the disadvantages of the lack of integration between the mission and its objectives and the processes of an organization. Now we are going to establish the relation that can exist between the mission and the enterprise model by starting from the definitions of GERAM (Generalized Enterprise Reference Architecture and Methodology) (IFAC/IFIP Task Force) that are shaped into a language in CEN/ISO 19439 and 19440.

Let's consider these definitions of CEN/ISO 19439:

- **Domain:** that part of the enterprise considered relevant to a given set of business objectives and constraints for which an enterprise model is to be created.
- **Process:** a partially ordered set of activities that can be executed to achieve some desired end-result in pursuit of a given objective.
- **Enterprise Activity:** all or part of process functionality,
NOTE Adapted from ISO 15704. An enterprise activity consists of elementary tasks performed in the enterprise that consume inputs and allocate time and resources to produce outputs.
- **Enterprise Integration:** the process of ensuring the interaction between enterprise entities necessary to achieve domain objectives.
- **Mission Statement:** a short written description of the aims of a business

After we see in the first four definitions, objectives are the main part of it, let's have a look at the definition of objectives:

- **Objective (Purpose):** a reason for doing something, or the result you wish to achieve by doing it. (Cambridge Dictionary On-Line)
- **Objective (Aim):** something which you plan to do or achieve. (Cambridge Dictionary On-Line)
- **Objective:** a statement of preference about possible and achievable future situations that influences the choices within some behavior. (CEN/ISO 19439)

If both the domain and the process pursuit objectives, and the strategic planning define objectives, these two tasks – strategic planning and enterprise modelling – have to be linked in order to integrate the enterprise strategies into the operational processes.

Therefore, we can establish that the functional description of an organization – the enterprise model - must be completely related to the mission and its objectives. With CEN/ISO 19439 and 19440 the practitioners of strategic planning and enterprise modelling now can and must start their models from the mission of the organization. With this relation we have a strategic direction into our models and

thereby will define the functionality according to the basic needs identified in the mission statement.

3. STRATEGIC PROCESS INTEGRATION (SPI)

For incorporation of strategic planning to processes modelling there exist many techniques that allow unfolding strategic targets throughout the organization. The intentions here are not to propose yet another technique, but to adapt the existing international agreements and standards into the strategic planning methodologies. The paper proposes to change from unfolding the strategic planning, to make the strategic planning part of the design of the processes.

Strategic competitiveness is achieved when a firm successfully formulates and implements a value-creating strategy. When a firm implements such a strategy and other companies are unable to duplicate it or find it too costly to imitate, this firm has a sustained (or sustainable) competitive advantage (called competitive advantage). (Maritan, 2001; Helfat, 2000; Barney, 1999)

In order to obtain the Strategic Process Integration (SPI) the following sequence of steps will support practitioners to accomplish the integration between strategic planning and enterprise modelling: Mission, Strategic Objectives, Decomposition of Objectives and Indices, Domain, Process Decompositions and Enterprise Activities, and Complementing Enterprise Model Views.

When these steps were lectured in several companies in Mexico participants were in a dilemma. Either follows what they had learned in the strategic planning or what enterprise modelling was dictating them. Although they all agreed that the effort must be directed by the mission, they found that it was not possible to tie the objectives to the processes.

What they decided to do is to redefine their strategic objectives, respecting the definitions of the enterprise modelling. These objectives redefinition gives the opportunity to define them now oriented to processes. The result was the board of directors' defined new strategic objectives (SO), and managers define new key processes base on those SO with more clarity on how those processes are going to support the strategic.

Two examples of the benefits resulting from this approach: 1) identification of the key processes that fully support the mission; when defining the strategic objectives base on processes, they found three key processes instead of five. 2) the organizational structure is now oriented fully to the processes; with three key processes they reduced the number of directors of first level from six to three, giving each of the new organizations complete control to fulfill their strategic objective.

3.1 The Steps of SPI

Mission

Starting point is the company mission, which must be defined first. It is the departure point of all the processes in enterprise modelling aimed on improving the enterprise operation; especially its competitiveness and interoperability. The mission can be defined with its essentials: Business Type, Strategy, Goals, Performance Measures and Values. Strategic mission is a statement of a firm's unique purpose and the scope of its operations in product and market terms (Ireland and Hitt, 1992). The practitioners may use whatever tool or methodology is best suited for him.

Strategic Objectives

The strategic objectives make the mission specific and direct, orienting the future of the organization. It is important that when defining the strategic objectives one thinks of the generic process that is going to support the specific objective. It should be avoided that the strategic objectives must be shared by different processes, because the dividing of an objective hampers its fulfillment. (see Figure 2)

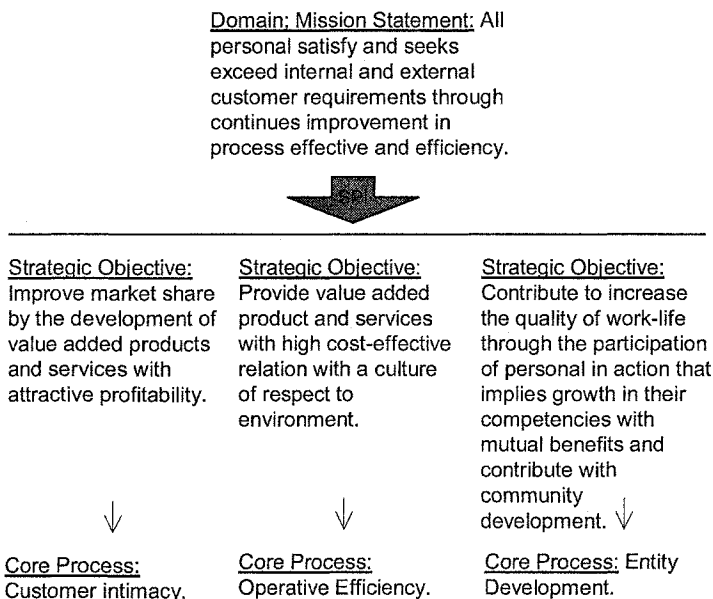


Figure 2: Decompose mission statement using the SPI approach

Decomposition of Objectives and Metrics

Each strategic objective is decomposed into functional objectives and transformational objectives. The functional objectives are satisfied by the processes or sub-processes and the transformational ones by the enterprise activities. This decomposition simplifies the unfolding of the mission and its fulfillment. The elementary level of the decomposition of objectives is the transformation objectives. (see Figure 3) At the end each objective must have his metrics to control his performance. For this the control system must be define.

Domain

Mission is related to an enterprise domain. The domain therefore is defined by its mission, and then the name of the domain could be based on mission statement definition. (see Figure 2)

Process and Enterprise Activity Decomposition

Using the decomposition of objectives (strategic or functional), lets do just the same at the process level. Assign strategic objectives to processes, functional objectives to sub-processes and transformational objectives to one enterprise activity each. The

main change to the actual definition of process decomposition is that we no longer decompose processes; we decompose objectives then name the processes from their objectives. (see Figure 3)

Complementary of Enterprise Model Views

The by now constructed process and activity decomposition allow working with the enterprise model using its views: Functional, Information, Resources and Organization. It is important before starting this aspect remember to verify that objective has his goals or indices. Only with these indices it is possible to find out if the enterprise model has the performance needed for his competitiveness and his interoperability.

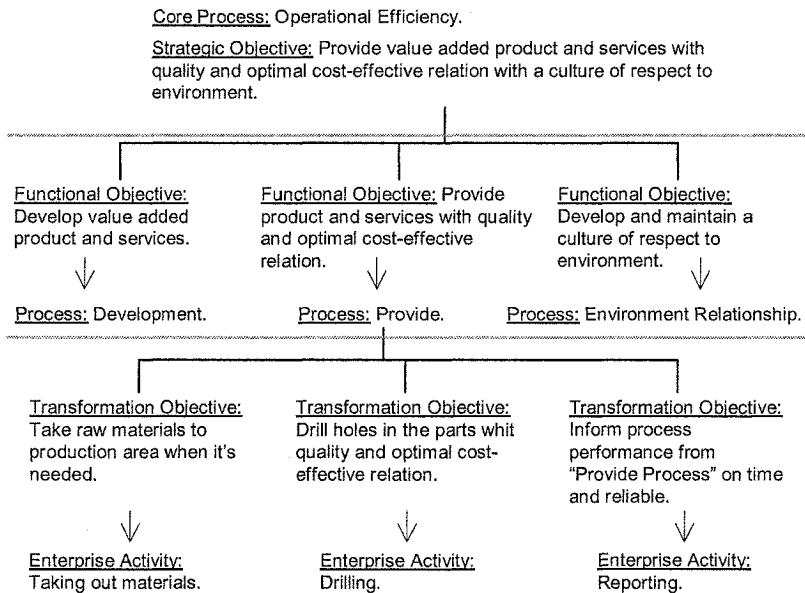


Figure 3: Decomposition and integration of Processes and Enterprise Activities

Developed through these steps of the Strategic Process Integration, the model may be used make all kinds of analysis to determine the improvements needed in the enterprise operation and organization to improve its competitiveness and interoperability. It is needed to improve enterprise activity performance to make real better competitiveness. Two major approaches can be found to make attainable this competitiveness; improving the quality of inputs and improving capabilities. To perform the analysis practitioners must focus on what is the objective that must be accomplish, and make a list of weaknesses the activity has.

After this practitioners can find weaknesses in IT or Machinery or Knowledge or Infrastructure. Let identify the set of weaknesses we can get more cost-effective result, and the put the resources needed in order to straight them. Always remember modifications in the strategic objectives will modify enterprise model; respecting the enterprise model phases as is defined in CEN/ISO 19439.

4. CONCLUSION AND FURTHER WORK

The enterprise modelling serves to capture the reality of an organization. With the explicit integration of the strategic planning in the modelling we strengthen the processes of the company and develop the strategic flexibility. Strategic capability is a set of capabilities used to respond to various demands and opportunities existing in a dynamic and uncertain competitive environment (Harrigan, 2001). Also, the personnel working in the company is going to know clearly what s(he) must improve and how they can directly or indirectly contribute to the mission.

Definitions of domain, process and enterprise activity in CEN/ISO 19439 must be adapted in order to contemplate in an explicit way the strategic planning. With these adjustments practitioners of strategic planning and enterprise modelling will find their link and will work as a team in their entity organization.

Examples of possible adjustments to the definitions are:

- **Domain:** that part of the enterprise related with the environment and considered relevant to a given **mission** and constraints for which an enterprise model is to be created.
- **Process:** a partially ordered set of activities that can be executed to achieve some desired end-result in pursuit of a given **strategic or functional objective**
- **Enterprise Activity:** all or part of process functionality in pursuit of a given **transformation objective**

In reference to methodologies for unfolding the strategies as Balanced Score Card, we can take advantage of the methodology and the systems that exist for unfolding and monitoring the indicators. This integration between BSC and enterprise modelling until this moment is not complete, but the investigation has shown that the strategic maps can give the strategic and functional objectives. The adjustment of the functionality of the enterprise modelling will occur as a next step from the adjustments in the objectives.

The paradigm of being able to modify the functionality based on the strategic necessities of the market and the clients is guided by the Business Process Management (BPM). BPM mentions that processes must be able to readjust their functionality to adapt to the changes in the requirements of the customers and to the situations of the market.

It has to be theme of further investigation harmonizing the definitions of enterprise modelling based on strategic planning, the development of the adjustments in the methodologies of strategic planning, unfolding indicators and administration of business processes, integrating all of these into enterprise models.

With this paper and future investigations entity organizations are going to be able to better clarify their future needs for resource capabilities and to support their decisions to get benefits from improving competitiveness and interoperability. Also SPI will fortify the relationship among stakeholders that is used to determine and control the strategic directions and performance of organizations (Corporate Governance) (Hillman *et al.*, 2001).

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