

The Business Intelligence Solution STRAT PRO[®] *Enterprise*

1. Introduction

The **Objective** is to contribute towards making organizations more competitive by taking decisions and optimizing every aspect of their business.

It **offers** optimum solutions and evaluates all possible changes by means of a custom designed Model to cater for Management needs and Digital Economy

The Model that **STRAT PRO[®] *Enterprise*** uses to optimize the company is **pre-established** in its program. The **Model** includes all aspects inherent to the Operations Programming and the Strategic Plan.

In the business world, **it is usual for all decisions** at operative and strategic levels to be adopted separately, either in a parallel way or sequentially. In general, decisions adopted in strategic dimensions focus on the *what*, the *how much* and the *for whom*, leaving everything to do with the *how* for the operational area. Naturally at a later instance, the set of decisions remain linked by some compatibility procedure of compatibilization, but **this does not guarantee that they are the optimum ones, nor does it show how far from the optimum the decisions are.**

However, what sets Solution **STRAT PRO[®] *Enterprise*** apart from the others, is the ***simultaneous and integral approach*** to all aspects that involve strategic and operative variables. This is the reason why it guarantees that all decisions being adopted offer appropriate solutions that will afford the maximum benefit and fulfillment of the aims of the business. At the same time, information on the possibilities to improve those results are given, based on its pre-established post-optimum reports.

STRAT PRO[®] *Enterprise*, based on an **integral** method of solution and decision-taking, works in a context of **general and simultaneous optimization**.

The use of the qualifying word **integral** indicates that the economic evaluation of every dimension of the company, is contemplated.

2. Some of the benefits that come up on applying the STRAT PRO[®] *Enterprise* Solution.

2.1 The economic Benefits and opportunity costs in the integral solution.

The economic decision adopted based on an integral and simultaneous outlook allows for the obtainment of well pondered benefit alternatives or underlying opportunity costs. But when one or various elements that do not include every dimension of the problem over which a decision is taken, are considered individually, the alternative benefits and the opportunity costs incurred cannot be fully known. For example, a solution that allows for a minimal lapse of time for a given process –simple or complex- and the least cost of operational management, does not necessarily guarantee that it will lead to a sustainable solution regarding the targeted market share or an adequate financing structure –and the same happens in an inverse situation.

2.2 The alternatives that improve the integral solution

With the use of **STRAT PRO[®] *Enterprise*** you can learn the values of all the alternatives that lead towards optimizing the different dimensions of the business and that show the maximum benefit.

Its reports offer the different alternatives that allow for the increase or maintenance of the maximum benefit by means of the economical evaluation of change

- in the strategies or commercial policies,
- in the investment programs,
- in the commercial or industrial associations plan,

- In the financing policies, etc.

2.3 Executive Reports to obtain the best agreements

The General Management will be correctly informed and in a position to carry out internal agreements, and also to successfully tackle negotiations with external participants of the business knowing the economic advantages and disadvantages of the different alternatives.

Knowledge of the economic and quantitative value of these advantages and disadvantages is crucial for an economy in which negotiation is the essential process for conducting business both within and outside the organization.

2.4 The logic behind the correct re-evaluation of the decisions is technically supported

The explanation as to why **STRAT PRO[®] Enterprise** manages these results is the following:

- *all the results –variables and constraints- are measured in terms of the monetary benefit they generate -both in the operative and strategic dimensions- and,*
- *said benefits are always presented together with the range of quantitative validity for which they have been calculated.*

3. Response to the dynamics or continuous changes in the internal and external environment of the organization

The speed, extent and generalization of changes and innovations hold irrefutable evidence.

This dynamics is one that questions the currentness of the constituting elements of numerous paradigms of business strategies:

- Numerous parameters of models of decision, the ones that most frequently approach the condition of the variable.
- The number of parameters subject to this effect is every day larger.

- The data and structural components of the representative models of organizations are quickly losing their condition as value given in ever shorter periods.

This evolution demands the creation of new systematic and sensitive tools which allow for the evaluation of the changes and their effects in order to decide simultaneously and efficiently in all the fronts of action. In said internal and external fronts to the organizations, the best responses to the changing scenarios must be projected to avoid becoming prisoners of extemporary realities.

Simultaneously and derived from the speed and spreading of technological advance and the institutional changes, other realities of micro economical nature arise:

- The shortening of the life span of the goods and their personalization,
- The continual perfecting, increasing of productivity and the re-thinking of technical, productive and administrative processes,
- Covering not only technical efficiency but commercial and financial aspects as well.

The essence -the analytical, quantitative basis of **STRAT PRO**[®] **Enterprise-** is found in the digital environment where scientific principles are applied, together with Model of Micro-economical Optimization in contexts of General Equilibrium and the Technology of Information.

But it is a friendly product which you design and handle and where a minimum knowledge of the theory will allow you to fully develop your aptitudes in the managerial and analytical activity you are involved in. You may work in the **STRAT PRO** environment or use Spreadsheets and Database managers by exporting and importing the information through pre-established tables.

For your analysis and decision taking, it offers

1. full reports,
2. integrals,

3. generated autonomously and pre-established, that can be interpreted from **STRAT PRO** or exported.

This information will allow you to optimize and decide rapidly and with certainty to:

- Obtain the highest possible income for your company,
- Produce the optimum level of goods or services,
- Make adequate use of resources,
- Obtain the adequate level for your Strategic Goals.
- Fixing optimum prices

It will also show you:

- where the bottlenecks are,
- the idle resources,
- the internal potential and the potential of the context, in monetary values and in amounts,
- market possibilities and optimum prices,
- The optimum degree of ties with other companies in order to minimize the investment risk and optimize the business scale.

In other words, it will help you to comply with the basic paradigms for the successful insertion in a globalized market.

Many technological Business Intelligence tools board the multiple dimensions of the company from the information angle and allow you to make multiple analytical linking between data or parameters and find multiple relations between variables. But **STRAT PRO[®] *Enterprise***, because of the scope it possesses, adds a new dimension to the analytical environment as the multiple relations are derived from the result of the optimization and the multidimensional and integral economic evaluation.

Besides, the conceptual and scientific foundations of the Method and algorithms used (Strat Pro), give **STRAT PRO[®] *Enterprise***:

- **Strength,**
- **Efficiency,**
- **Integrity and**
- **Quality.**

By means of a fine tuned interaction

- of the analytical conceptual and methodological design of the model and
- the computational programming

the following attributes are obtained:

- **user friendliness,**
- **speed,**
- **ductility of use and**
- **Access to multidimensional reports.**

4. Help to modelization

Besides, by means of pre-programmed evaluation routines, you can expect the best guarantees possible to maintain, from the beginning, the integrity of the Model as you go creating it.

STRAT PRO © Enterprise helps you obtain schemes that are basically consistent as the Model is being designed.

When the schemes involve highly complex mathematical inconsistency -such as the existence of conditions that are not attainable taken as a whole or multi-dimensionally- they will be solved based on the **inconsistency reports** that **STRAT PRO © Enterprise** offers, adequately combining your priorities.

STRAT PRO © Enterprise has the following 5 elements to handle the creation and analysis of the models:

- Files
- Structure

- See the model
- Data sorting
- Consistency analysis

The order in which the above are presented responds to a practical method to fill in the contents of the pre-established model of **STRAT PRO © Enterprise** with the information that best explains the functioning of your business.

You can create a ***New model***, ***Retrieve a STRAT PRO © Enterprise generated model*** and ***Import a model generated with other applications***.

Once the models have been created, they can be ***exported***, ***saved*** or ***closed***.

You can import a model using either of the two alternatives.

- 1) from a file
- 2) from a database.

For situation 1), this can be done through four types of files:

- Microsoft Access.
- Strat Pro File.
- Plain text.
- Microsoft Excel Spreadsheet.

As for situation 2), this can be done through

- DB Oracle, and
- Microsoft SQL Server.
- Plain text

Models can be exported to

- ❑ Microsoft Access database.
- ❑ Strat Pro File.
- ❑ Plain text.
- ❑ Microsoft Excel Spreadsheet.
- ❑ Web Page
- ❑ Database Oracle
- ❑ Microsoft SQL Server.

□ Plain text

Given that the outlook is general, the space within which the decision model is formulated and where the variables are linked, is integral. On optimizing in this manner, the solution will always be referred to a simultaneous evaluation in all the variables and dimensions of the model. Any modification that is introduced will capture all the repercussions on each of the components of the problem.

The Solution uses the Lineal Programming algorithms, divisible and/or whole and is presented to be used including the temporal dimension of the short and medium term.

The basic tools used in the analytical and quantitative dimensions and of computational programming, are conformed by what is known as Operative Methods applied to the resolution of the problems of Optimization with the use of the mathematical programming.

The degree of progress that distinguishes **STRAT PRO[®] Enterprise** in the field of decision models is given by the fact that the analytical and informative multi-dimensionality to which you accede is not abstract, relational, or simply descriptive, **it is strictly associated to the obtainment of the optimum Solution. In other words, related to the maximum profit for the company and to the potential benefits that can be obtained by using the sensibility reports.**

5. Main characteristics of the Models formulated with STRAT PRO[®] Enterprise

The methodological sustenance of the model allows for integral optimization of the company, both for any given moment and for a temporal sequence, depending on the nature of the problem.

It is also prepared to make a thorough evaluation, with routine analysis and simulations.

You have only to enter the eventual changes in any component of the model in order to quickly know -via its pre-established reports- the results of all the impacts on the multiple dimensions.

The frequency of the analysis and simulations of any variable or set of variables, (operational and/or strategic) and of the complete Model, is determined by the user who receives assistance to do so. **STRAT PRO** © **Enterprise** adapts, within the analytical and quantitative dimensions of the version, to the linkage or temporal space the companies require.

The components that explicitly form the model are:

1. Those traditionally used to formulate the Operative Program to the interior of the company.

In this ambit the following are defined:

- The Business Sources;
- The contributions or margins of contributions of goods and services;
- The amount of resources and goods or materials;
- The demand made by each one of the Business Sources of each one of the different resources.

2. The strategic or contextual components.

In this ambit the following is established:

- The commercial policy, including target pricing and quantity ranges, where criteria are established and decisions linked to the market or markets are adopted, to which the company must adjust its actions;
- The Financing levels and costs: the commercial, banking origin - be they from the exterior or local- for both buying and selling;
- The Outsourcing, known as the means by which you can benefit from third parties productive capacities that cover roles similar or complementary to our own. It is a way of decreasing the incidence of one's own investment and simultaneously monitoring the level of relative competitiveness with other economic agents. It implies adjusting the operations of the company to the agreements made with suppliers, both for

production alternatives -be they of products or components- as for determined processes, etc.;

- The Insourcing, as a reciprocal modality of the Outsourcing, also allows you to evaluate the level of relative competitiveness reached by the company with regard to the other economic agents.
- The commitment with Partners, is a way of placing less of one's own investment at risk, as well as a way of entering a market additional to that reached by our own action.

The user must define the values of the limits or availabilities of all the Strategic Goals.

Thus, all the strategic and operative components are integrated in one sole System that resolves the Optimum Program and prices of the company in the short and medium terms.

Both the Suppliers and the Partners (partners that generate new Business Sources and increase competitiveness), and the structure and third-party financing levels, can refer to the country, to a common market; or be external. To include them explicitly and simultaneously - either as variables and/or conditions- in a decision-making model, is the mode adopted for the rigorous search of the highest level of competitiveness for the company, as well as decreasing the required level of investment and consequently the risks associated to the increase of own investment.

The connection with Partners and Suppliers can also be very useful to balance the basic relation that the proposal of a good business demands:

- greater diversification of products (to sustain a good commercial plan)

versus:

- technological and manufacturing specialization and qualification (to guarantee effectiveness, quality, innovation and efficiency) of the production plan.

Companies have always had to –and now also must- somehow combine the scope of their Strategic Goals with the operative

possibilities. Besides, it is the interaction with their clients and competitors, the market and the context, what will determine the success of the decision.

For **STRAT PRO © *Enterprise***, precisely, **the final objective to which the design of its optimization procedures concurs, is to find the optimal combination of Strategic Goals and Operational Programming that allow for the most convenient negotiation to strongly confront the competition.** Further ahead, the other question marks that will be revealed by applying **STRAT PRO © *Enterprise***.

STRAT PRO © *Enterprise* for its calculation makes considerations on the following:

- a. Strategic Goals,
- b. operative benefits and
- c. the resources of the company.

The consideration is the corresponding monetary contribution or increase of the value that allows you to do each one of them.

It also provides the information of the optimum prices and of the additional profits (what is known as dual of the resources) that can be obtained from a re-dimensioning of critical capacities.

As has been said, the interdependence and multi-dimensionality of **STRAT PRO © *Enterprise*** allows you **to include the Strategic Goals in the models, together with the above mentioned results, by expressing them as conditions to be achieved.** That allows you to evaluate the positive or negative monetary contributions that conform the company profits.

What is important is that the values of the monetary contributions generated by the Goals be known (they are expressed in the System report as **duals** of the strategic goals). In other words, the limits defined by the company for each one of the strategic goals and their level of achievement, are assessed in the model from a strictly economic point of view and together with the rest of the results.

In other words, the Goals are assessed from the point of view of the respective monetary contributions and the demand of resources they

make. This is because, in the search of a higher level of benefits, the Goals also compete for the business capacities and with the profits of the Business Sources. Therefore, on knowing the profit or loss that arises from incorporating the determined levels of Strategic Goals, can also evaluate –both strategically and economically- how much it is convenient to have them reformulated and in that case proceed to change them. For that, the reports with the post-optimal analysis are available, in which the maximum and minimum values of the changes in the Strategic Goals are quantified, in such a way that they be consistent with the additional contributions or monetary costs that derive from the levels reached by the Goals in the solution.

A Model designed with **STRAT PRO** © *Enterprise* can be applied to the most simple cases such as metallurgical factories, cold-storage plants, medicinal laboratories, timber and furniture factories, soda plants, insurance companies, banks, etc., even companies such as auto-motor factories, that own several plants or manufacture multiple products, or their suppliers; that enter risk-related associations; receive and/or expend licenses; use international and/or local financing; that must comply with environmental and government rules and regulations; etc.

6. About the Reports of the Solution

There are two non-excluding alternatives to obtain the solution. These will show different results and economic evaluations reports depending on the selection made.

6.1 Integral Optimization

6.2 Advanced Optimization

6.1 Integral Optimization

Through search of **Integral Optimization** the **Optimum Solution** is obtained.

From **Integral Optimization** you gain access to six pre- established interdependent reports.

Three of them quantitatively display the results found in the **Optimum Solution**.

1. **The Business Sources report**: includes the information of each one of the results for the optimum quantities and prices of the optimized variables.
2. **The Use of Resources report**: offers the optimized levels that are required of the Resources or Productive Capacities.
3. **The Scope of the Strategic Goals report**: offers the optimized levels for all the limits of the Goals established by the model.

Each one of the above mentioned reports are completed with their corresponding calculation of the sensibilities based on the Solution obtained. These are shown in another three reports:

4. **The Stability Report**: allows you to know the degree of invariability of the optimum quantities obtained for the Business Sources. It is based on the range of change - higher and lower- for the value of the Contribution of each source. The results obtained cannot be held as optimum if they go over the value of the Contributions.
5. **The Additional Utility of resources report**: offers the Utility that could be obtained – in monetary value- (**dual of the resource**) by changing the limit of the resources. It also shows the corresponding amount -(**Increase and Decrease**)- over which the quantities of the limits of the capacities can vary in order to obtain said utilities. These values take as reference the results obtained in the Use of Resources report.
6. **The Additional Utility of the Strategic Goals report**: As in the case of the Additional Utility of the resources report, offers, the information of the Utility that could be obtained from each Goal –in monetary values- (**dual of the Goal**), by changing its limits. It also gives the amounts (**Increase and Decrease**), the present limits can be modified. These values take as reference the results obtained in the **Scope of the Goals** report.

The results of the six reports allow you to obtain the maximum benefit and simultaneously comply with all the established conditions of limits in **Maximum Limits** and **Minimum Limits** of the operative and strategic components.

In the operational analysis terminology, the set of results of the first three reports of the ***Optimum Solution***, that include:

The level of the **Business Sources** (variables),

The **Use of Resources** (constraints) and

The **Scope of the strategic Goals** (constraints),

is called the “***primal***” of the model.

It is a distinctive of **STRAT PRO[®] Corporate** to complete the optimum result with the inclusion of

Values of variables and resources,

together with

The value of the optimized Goals,

The benefits and opportunity costs that they possess, and

The quantitative range –in more and in less-associated to those benefits and costs of opportunity- for each one of them, in the unit of measure that is used to express the corresponding Goal.

6.2 Advanced Optimization

When **Advanced Optimization** is started the **STRAT PRO[®] Corporate** Solution adds three new reports to the six reports of the Solution obtained in ***Integral Optimization***.

The three new reports will include the following results:

7. **Changes that decrease the utility,**
8. **Changes that do not decrease the utility,**
9. **Changes that decrease the utility with undetermined results.**

The three new reports help to evaluate, in an integral context, the convenience of deciding on a change in the values of the variables found in the **Optimum Solution**. These allow you to evaluate the inclusion of positive values for the **Business Sources** that reached a zero value in that solution.

The reports respond to the following question marks:

What is the cost of changing the solution by including values greater than zero in some, several or all the **Business Sources that were entered with zero in the Solution?**

At that cost, if there were any, how many units maximum could be included?

By activating **Advanced Optimization**, STRAT PRO[®] Corporate will provide the opportunity cost to be contained in a new Solution, with values greater than zero to all the **Business Sources** that have been entered with zero value for the **Optimum Solution** obtained in **Integral Optimization**.

Besides, it determines, for that cost, which is the maximum possible amount that can be entered in the corresponding Business Source. The report computes the values for all these Business Sources simultaneously.

6.3 Post Optimum Analysis: Executive Reports

The **Executive Reports** consist of information obtained from each one of the 6 structural reports obtained through the use of **Integral Optimization**, and from each one of the 9 structural reports obtained by means of **Advanced Optimization**.

You can access these reports from the general menu: **Post Optimum Analysis**.

These reports are pre-established and back the analysis of the information of the structural reports of the ***Optimum solution*** and the possible changes to be evaluated. Each one of the reports can be accessed by clicking on the name are indicated:

- **Composition of the optimum sales by contribution**
- **Composition of the optimum sales by quantity**
- **Stability in face of change of margins in numerical values**
- **Stability in face of change of margins in logical concepts**
- **Saturation Level and obtainable Profit Capacities**
- **Capacity Economics**
- **Saturation Level and Profit obtainable from goals with Maximum Limits**
- **Saturation Level and Profit obtainable from goals with Minimum Limits**
- **Goals Economics**

You can access the ***Cost of varying the solution*** report, from the information window of **Advanced optimization** and **right clicking**

7. Programation and tools utilized in the product

Plataform: Windows

Programming Language: Delphi

Sub licenses included: "Strat Pro" by Pedro Dudiuk, "C-Plex" of Ilog Corp; "Solvers" of Frontline Systems; "SQL Server" of Microsoft Corp. licenses