Sourcing Optimization

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Introduction

In today's competitive and fast-paced marketplace, buyers often strive to make the correct buying decision while keeping in mind the organization's business policies and goals which stress on optimization in the context of standard overall objectives and some binding constraints.

Sourcing Optimization helps and guides the buyers to automatically analyze sourcing problems and create optimal solutions and award recommendations while allocating business to suppliers and taking into account business policies and goals. This results in better and faster award decisions.

This paper presents an understanding of the business case of Sourcing Optimization and its solution using Oracle Apps Sourcing Optimization product.

Problem Statement – A real-life case study

A client in the manufacturing sector dealing with electronic items and assemblies faced a serious problem while allocating business to suppliers. The client was using earlier versions of Oracle applications (11.5.8). The Sourcing Optimization was not present in the aforementioned version.

The buying group in the company handled close to around 5000 components and dealt with more than 1000 suppliers.

Multiple line items and a large number of competitive bids posed a great challenge to the procurement professionals to maximize savings while meeting such business policies and goals such as 'No single sourcing for an item' or 'Veteran supplier preference'.

Consider the case of multiple quotes from the vendors and with multiple line items. Other factors that purchasing department was increasingly taking into account when evaluating bids were transportation cost, taxes and tariffs, inventory carrying cost, and costs associated with supplier quality, delivery, and lead time.

In addition, there were other business constraints and rules that need to be followed such as:

- No sole sourcing for an item.
- Maximum business that can be awarded to any supplier is X
- 80% of business awarded to small business owned supplier.
- Suppliers classified as "Minority" should be given priority while awarding business.

Analyzing the possible allocation scenarios described above quickly outstripped basic spreadsheets capabilities and was not feasible using manual analysis.

Major challenges faced by the organization were as follows:

1. Multiple Bids analysis
2. Difficulty in expressing business policies and goals

3. No provision to add business constraints and objectives
4. Manual evaluation process
5. Constructing multiple scenarios involved great amount of effort and time
6. Absence of a guiding/decision support tool to choose the correct business decision.

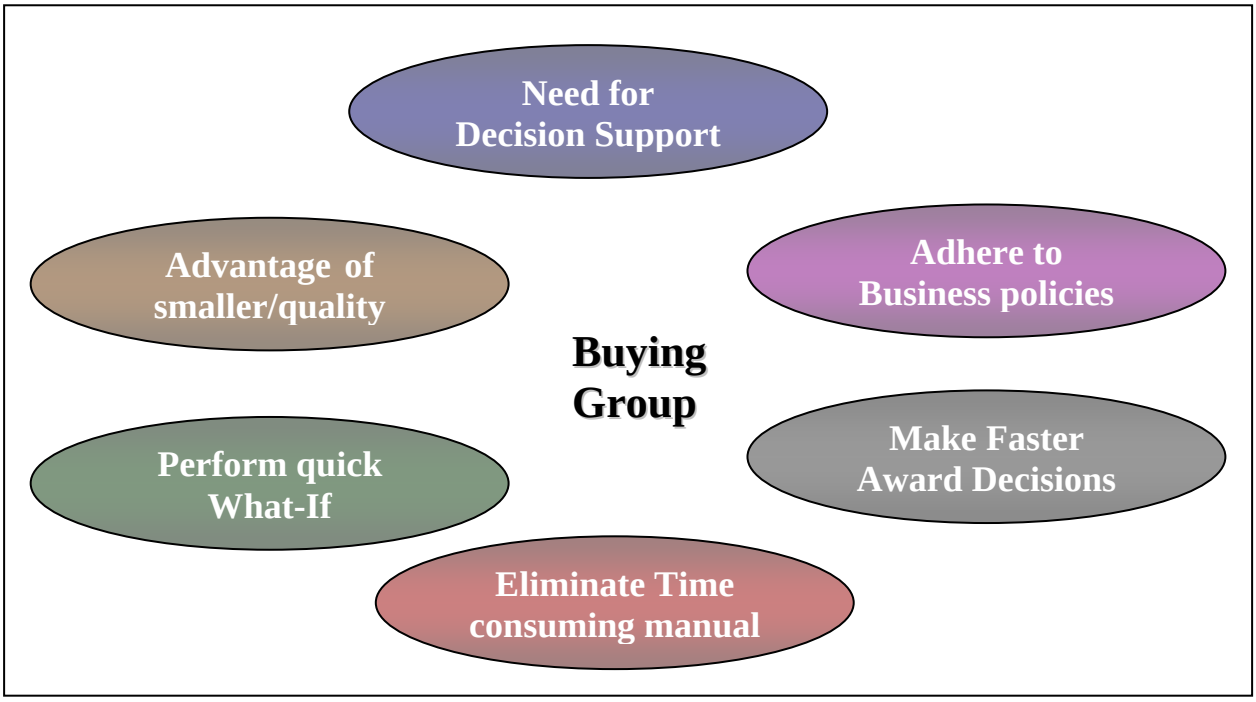


Fig. 1: Major challenges faced by the manufacturing company

The Solution – Oracle Sourcing Optimization

It was observed that the scenario was an ideal candidate for implementation of Oracle Sourcing Optimization. The features present in the Sourcing Optimization solution were highlighted and prescribed after requirement gathering and a detailed analysis of the client's current business need.

The adoption of the feature would help the client in a number of ways. The client was already upgrading to release R12 from release 11.5.8. Hence the client could make use of the feature and make use of the Oracle Sourcing Optimization's capability to analyze quotations faster, use a framework for building scenarios and perform quick What-If Analysis by duplicating and making changes to the existing scenarios and conducting side-by-side comparison.

Sourcing Optimization – The next level in sourcing decisions

In mathematics, the term optimization, or mathematical programming, refers to the study of problems in which one seeks to minimize or maximize a real function by systematically choosing the values of real or integer variables from within an allowed set.

Sourcing Optimization is a key component of Strategic Sourcing solution.

Strategic Sourcing is a process-based methodology that makes use of advanced technologies to simultaneously negotiate and evaluate complex sourcing scenarios and bid structures against a wide range of sourcing objectives, variables, and constraints to help an organization make better buying decisions.

Today's optimization software can consider the implications of multiple business bid combinations--based on user-defined inputs (or constraints)--and recommend the optimal solution. Optimization-based decision support isn't designed to replace human judgment but allows purchasing professionals to run a variety of "what-if" scenarios that determine the best possible solution, enabling procurement executives to make better, smarter, more informed decisions based not only on price but on the holistic requirements of the business process.

Oracle Sourcing Optimization uses advanced analytical optimization engine to evaluate supplier's responses in the form of bids/quotes to provide the best award recommendation while adhering to the business policies and goals. It is also referred as Award Optimization.

German Bertot, group manager, Oracle Sourcing Product Management.

" Oracle Sourcing Optimization helps you define in business terms your criteria for deciding how to award the business, and then it determines what will be the optimal award given the constraints that you specify. ".

Where does Sourcing Optimization fit in the Sourcing Cycle?

Sourcing activities precedes Procurement process. Sourcing cycle in Oracle begins with identifying the sourcing team and creating of the sourcing document, determining the item attributes and the cost and pricing structure, identifying the vendors to be present in the negotiation, setting the starting time and the closing time and bidding rules for the negotiation, publishing specifications, managing supplier queries and questions, receive supplier responses, evaluate and analyze the responses based on price and non price factors and finally making award decisions.

Sourcing Optimization takes place at the Award evaluation phase in the Sourcing cycle shown as below:

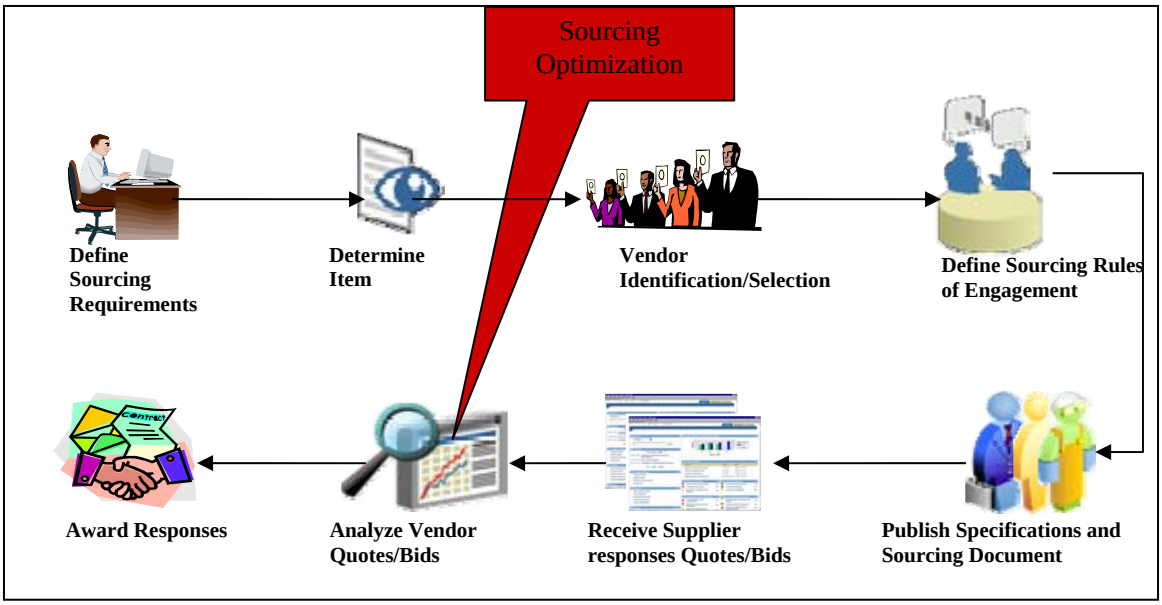


Fig. 2: Where does Sourcing Optimization fit in Sourcing Cycle?

Oracle Sourcing Optimization Features

Oracle Sourcing Optimization was originally released in Sourcing Mini-Pack J. It includes the following five features:

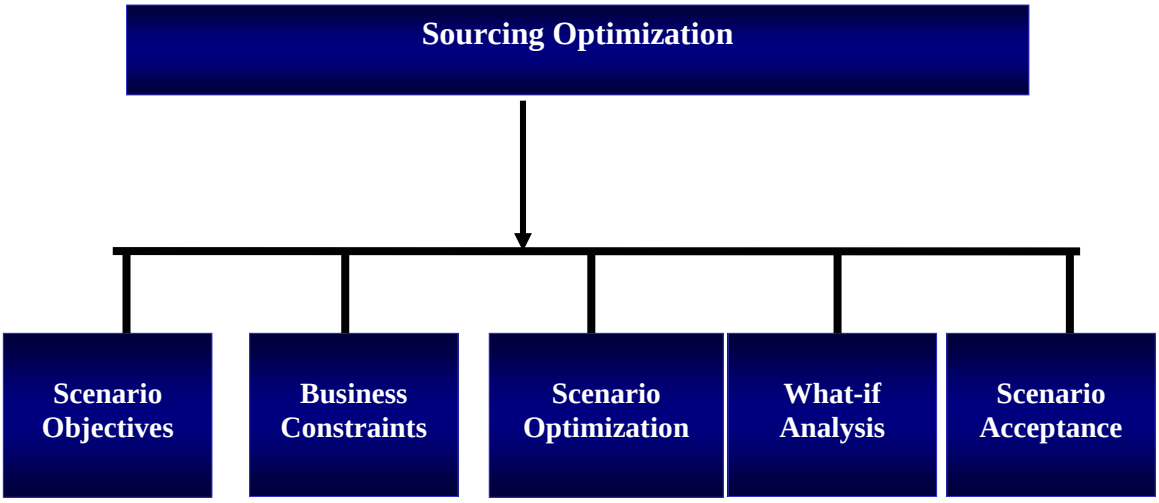
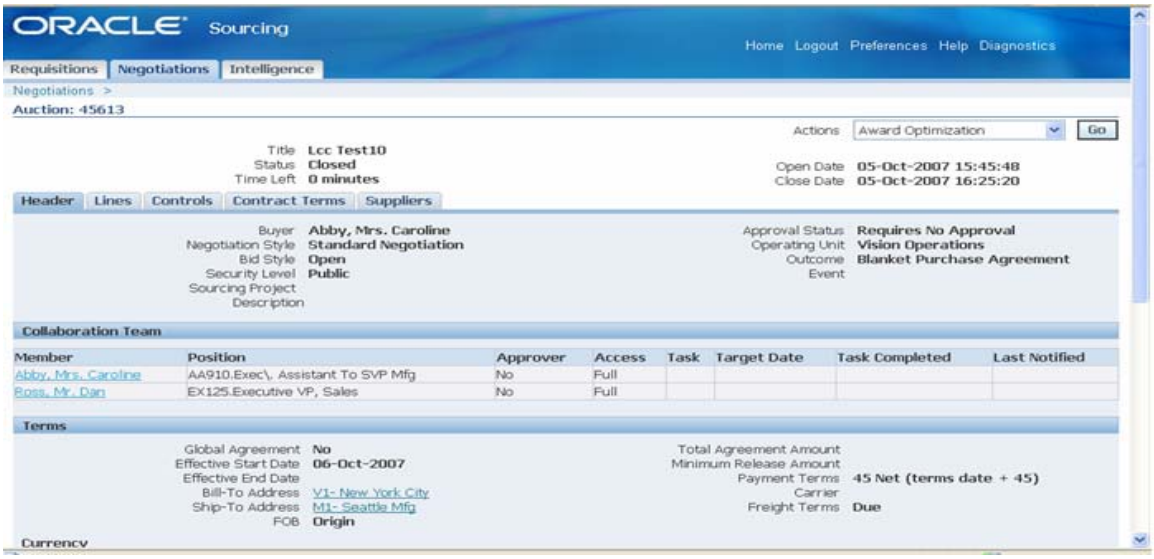


Fig. 3: Sourcing Optimization Features

The screenshot below shows the beginning of Sourcing Optimization cycle in Oracle. It starts off after receiving all bids from the suppliers.

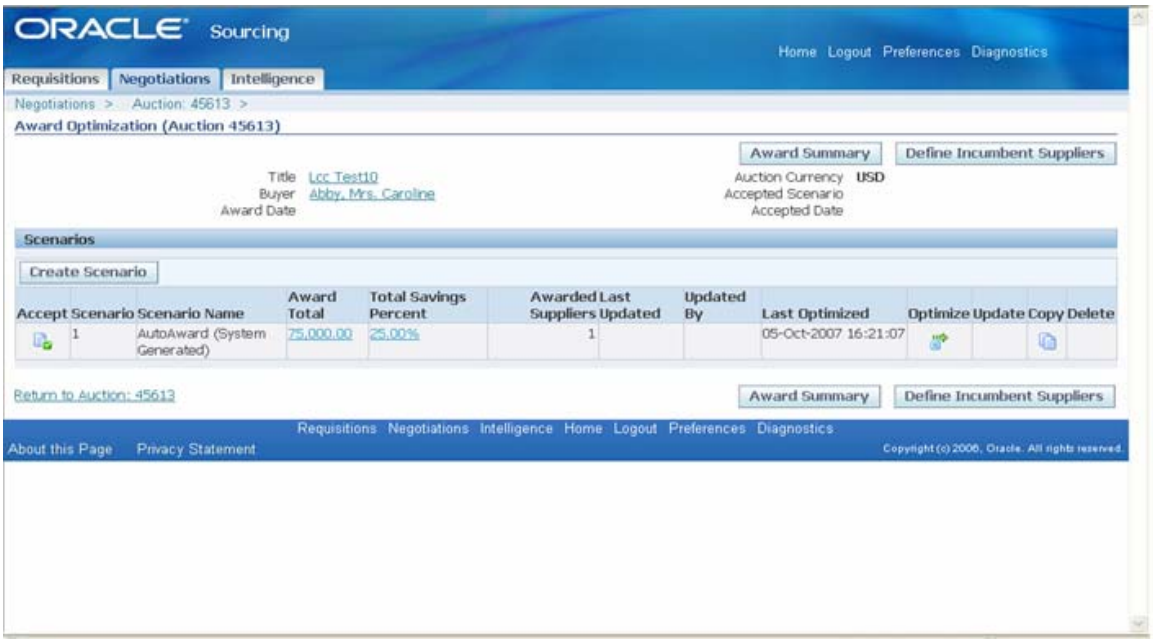


Sourcing Objectives

The buyer chooses an objective that defines what the optimization engine should consider to generate recommendation. For example, the objective 'Maximize award quantity and minimize award amount' will cause the optimizer to try to award quantities indicated on the negotiation while minimizing the total cost of the award. Buyer can choose the following objectives seeded in the system while creating a scenario:

1 Maximize Award Quantity and Minimize Award Amount
2 Maximize Award Quantity and Minimize Price/Score ratio.
3 Maximize Award Quantity
4 Minimize Award Amount
5 Minimize Price/Score ratio

The screenshot below shows the buyer starting the scenario creation phase.

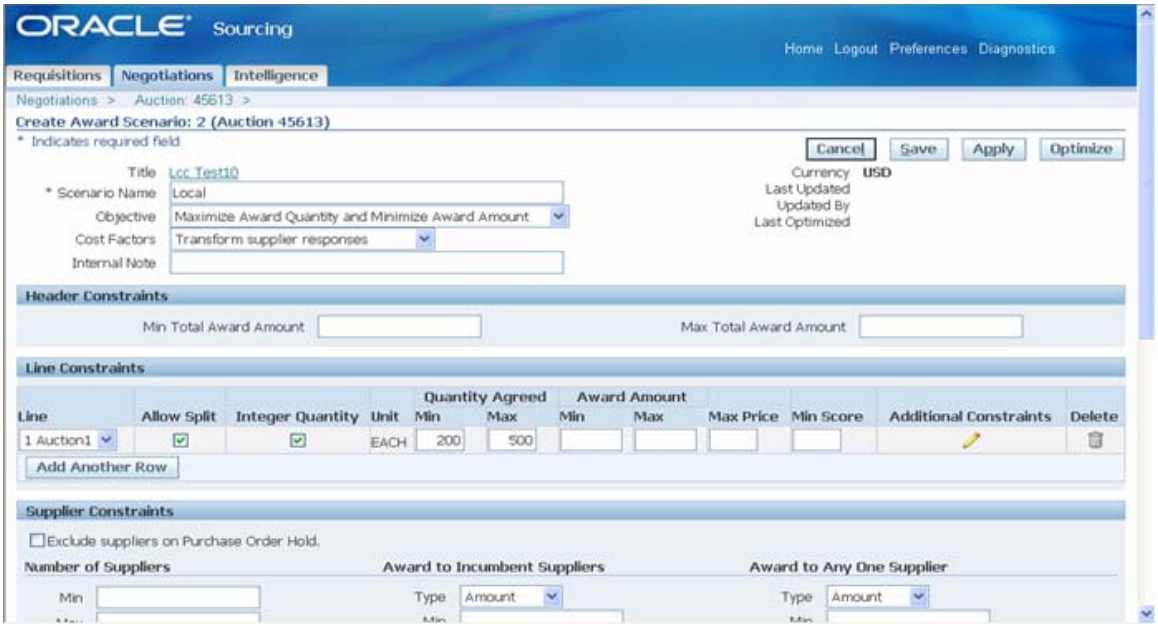


Business Constraints

Buyers specify the purchasing policies or goals in terms of constraints. There can be business constraints and rules that need to be followed, such as:

- No sole-sourcing of an item
- Maximum business that can be awarded to any supplier is X
- Minimum spend with the primary supplier is Y

The optimizer will satisfy all the constraints defined for a scenario, while it seeks to find the optimal solution for the chosen objective.

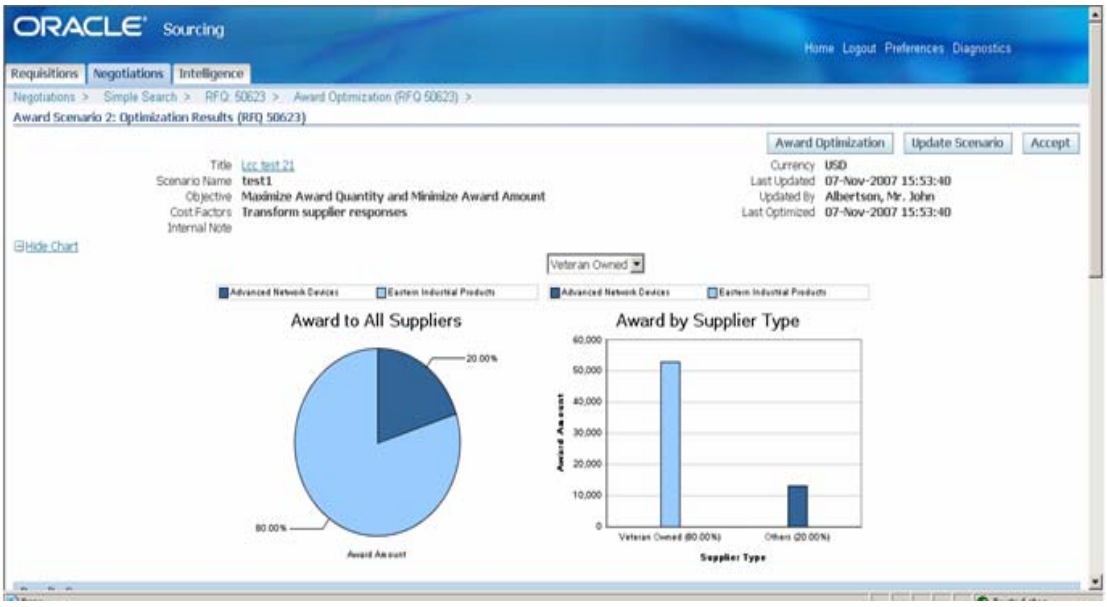


Scenario Optimization

The buyer can compute the optimal award allocations for a scenario with a single click.

Oracle Sourcing uses ILOG's CPLEX optimization engine to generate the optimal award allocation that satisfies the constraints. Optimization results are displayed in both graphical and tabular formats for ease of interpretation. The buyer can easily view savings resulting from the optimal solution for the scenario. The constraints are summarized and supplier type constraints are graphed so the buyer can see how these constraints were met.

The screenshot below shows the result views as pie charts after the optimization engine has been run and optimal solution is generated.



What-If Analysis

Through 'What-if' Analysis, buyer can define multiple scenarios and compare optimization results. The buyer can edit an existing scenario or copy it to create a new scenario to quickly generate alternate scenarios. The buyer can create a scenario where no more than 5 suppliers are awarded. Another scenario might stipulate minimum award percentage to Minority or Women owned businesses. The buyer can compare the optimal solutions for different scenarios; the buyer may realize savings that would otherwise not be apparent.

Scenario Acceptance

The buyer can choose the scenario that provides the most savings and satisfies company policies and business objectives to create the award. A single click copies the accepted scenario results into a draft award. The buyer can modify the draft award if desired. Award approvers can compare the accepted scenario results to other scenarios to better understand the rationale for the proposed awards. Hence, Sourcing Optimization acts as a Decision Support tool in Oracle.

Myths and Realities

Oracle Sourcing Optimization is not an intelligent tool. It will only guide the buyer to take the correct decision. Buyer has to accept the award recommendations generated by the optimization engine. The buyer has to define the scenario, ensure all the data is present and correct, make sure all the constraints are present, and analyze the alternatives against the hard data and soft targets. Hence it does not replace a human being.

Benefits

It has definitely helped procurement professionals save time, cost, manual effort and increase accuracy in purchasing decisions.

Before the sourcing optimization technology, buyers had to manually construct a number of business cases that they believed would satisfy all of the constraints and then analyze each one from a compliance and cost perspective, and repeat this process over and over until they arrived at the best solution they could find in the time available. With sourcing optimization, once a model has been populated and fully defined, a buyer just needs to click one button … 'Optimize' … and the optimal answer is computed, often within minutes. The buyer can then build multiple scenarios with lot many permutations and combinations with the strategic constraints to determine the best solution and generally within a few hours a buyer can have confidence that the selected award decision is right for the organization. If confidence is lacking in the demand forecast, a few scenarios at increased or decreased demands can be run to select an award allocation that is expected to be near-optimal across multiple allocation volumes within a few more hours.

Conclusion

Oracle Sourcing Optimization is an effective tool in the hands of the Purchasing function to award business in complex award situations involving the purchasing objective and several constraining company policies. It helps generate an optimal solution as also perform what-if analysis. Thus, it has eliminated the tedious process of manual evaluations while making such award decisions that used to be the norm in earlier days.

Appendix

ILOG Optimization engine is used in Oracle Sourcing Optimization.

ILOG CPLEX's mathematical optimization technology enables better decision-making for efficient resource utilization. With ILOG CPLEX, complex business problems can be represented as mathematical programming models. An advanced optimization algorithm allows one to rapidly find solutions to these models.
Today, over 1,000 corporations and government agencies use ILOG CPLEX, along with researchers at over 1,000 universities. ILOG CPLEX helps solve planning and scheduling problems in virtually every industry. More than 100 of the world's leading software companies are also ILOG CPLEX customers, including market leaders like SAP, Oracle and Sabre.

Features:

1. Robust and Reliable
2. Fundamental Algorithm
3. Flexible Interface
4. High Performance