

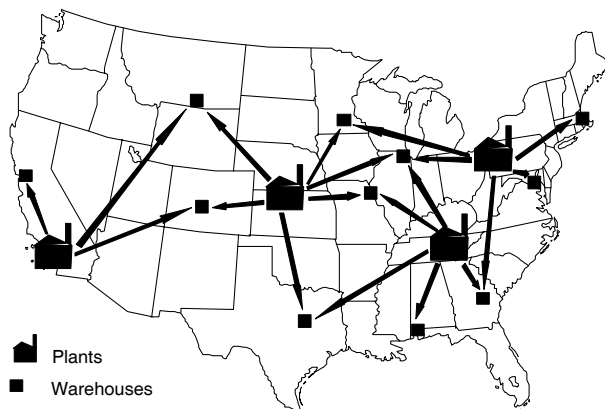
LOPTIS is a decision support tool from Ketron Optimization that is based on a mathematical programming production and distribution model. It provides guidance for facilities location studies and for logistics operations planning.

LOPTIS is data-driven so that it creates the model you envision. Fully populated, your model can include the following:

- Raw material acquisition
- Raw material inventory
- Finished goods production
- Intermediate product production
- Shipments directly from plants to markets
- Shipments to distribution centers
- Shipments among distribution centers
- Finished goods inventory
- Shipments from distribution centers to markets

You can model as many time-periods as appropriate and the periods can be of different lengths. This feature supports analysis of inventory build-up and the timing of investment in new facilities.

Data-driven-ness means that **LOPTIS** works with the data supplied. For example, if you supply data for six plants, there are six plants in the model; if you don't supply raw material data, there are no raw material activities in the model; etc. Data are provided as tables. Each table is named and the rows and columns are named.



LOPTIS has no built-in bias toward any industry or type of enterprise. Think of it as a four-echelon distribution modeling system with some processing of the items being distributed. Viewed as a production and distribution model, **LOPTIS** activities are:

RAW MATERIAL

The significant raw materials are acquired at the various source locations and shipped to the plants. Attributes considered are: cost and availability of the raw material and the cost of shipping it to the plants.

PRODUCTION

Production of multiple products, including finished goods and intermediate products, takes place at the manufacturing sites. Attributes considered are: cost of production, consumption of raw materials, processing capacity, and line capacity.

DIRECT SHIPMENTS TO MARKETS

Products are shipped from plants to markets. Attributes considered are: cost of shipping, product balance at the plant, and demand at the markets.

SHIPMENTS TO WAREHOUSES

Products are shipped from plants to warehouses. Attributes considered are: cost of shipping, cost of handling at the warehouses, product balance at the plants, and handling capacity at the warehouses.

TRANSSHIPMENTS BETWEEN WAREHOUSES

Products are shipped from warehouse to warehouse - representing a hierarchy of distribution centers. Attributes considered are: cost of shipping, cost of handling at each end, product balance at the source location, and handling capacity at both ends.

WAREHOUSE SHIPMENTS TO MARKETS

These activities model shipping products from warehouses to markets. If selling prices are supplied, **LOPTIS** generates a maximum contribution to profit model; otherwise, it is a minimum cost model. Attributes considered are: shipping cost, handling cost and capacity at the warehouse, product balance at the warehouse, and product demands.

FINISHED GOODS INVENTORY

Products are stored at warehouses for delivery in later periods. Attributes considered are: storage cost and capacity.

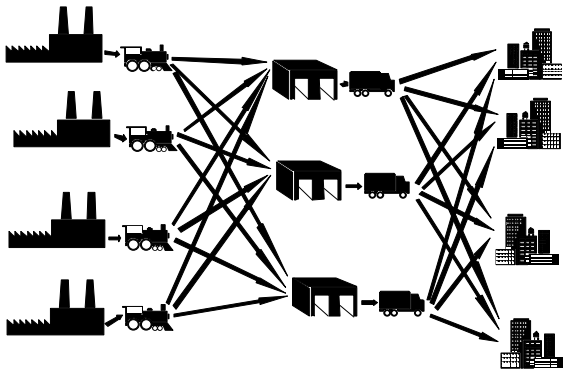
LOPTIS - Off-the-shelf System for Customized Modeling

MODEL DIMENSIONS

The model generator adjusts to the data supplied, e.g., if you supply data for four time-periods, you get a four time-period model. The model attributes are:

- Raw materials
- Finished products
- Intermediate products
- Product groups
- Raw material sources
- Manufacturing sites
- Distribution centers
- Market areas
- Production lines
- Production processes
- Time-periods

Another aspect of data-driven-ness is that activities are generated only for instances where there is data, e.g., shipping activities are created only for those arcs for which there are shipping costs.



FACILITIES LOCATION

Include in the model data information on all of the candidate locations for new plants and warehouses plus the data to describe proposed expansion projects and divestitures. In effect, **LOPTIS** tries all combinations of the proposed actions using the mixed-integer branch and bound technique and selects the best combination. You can specify how many new plants and warehouses you want included in the optimal solution.

INTERFACES TO LOPTIS

LOPTIS can be executed as a Microsoft Access™ application. Ketron supplies several conversion utilities for moving data tables between the LOPTIS model-database and commonly used database systems.

A NO-COST LOOK AT LOPTIS

See LOPTIS in action at no cost to you. The LOPTIS-Access demo includes everything except the optimization; it gives you a quick look at LOPTIS inputs and outputs. If you want to see how LOPTIS works with your data, ask us for the fully functional free LOPTIS trial.

COMPATIBLE KETRON PRODUCTS

DATAFORM: This complete model management system, comprising a model database manager and a data manipulation language, was used to implement LOPTIS. It is an outstanding choice for building LOPTIS data preparation procedures.

OML: The Optimization and Modeling Library permits imbedding optimization and model management in a C or FORTRAN application program.

C-WHIZ: The C-WHIZ LP optimizer is one of the fastest and most robust simplex optimizers available. The Plus version lets you build and solve models with no limit to model size.

MIPIII: The discrete decisions required by facilities location models are handled for LOPTIS by the mixed-integer programming system, MIPIII.

SUPPORT

Technical assistance, training, and consulting services are available from Ketron. A telephone/email hotline is maintained to assist with questions about model building and system usage.

Consulting activities range from model formulation and prototyping through the implementation of complete application systems. Consulting support for LOPTIS users has typically involved custom interfaces to existing data management facilities and the addition on new activities and constraints to the LOPTIS model.

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