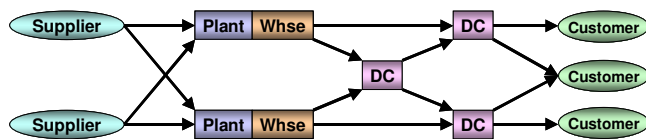


If you have an international logistics network and want to decide on where to source, manufacture and assemble goods, you need to consider the international duty regime, taxes and transfer prices as well as the physical supply chain costs. We use the Infor Network Designer (formerly known as CAPS) to carry out this type of project. A typical project would be for an international company that needed to decide where to locate a new facility, or at which plant to manufacture or assemble which products.

Physical network

The physical network is defined as a collection of sites and lanes. Sites can be demanding, supplying or flow through and are connected with lanes, which represent the possible transport movements. There is no limit to the tiers in the model. Supply and demand can be defined at product level, allowing the flow on sites and lanes to be

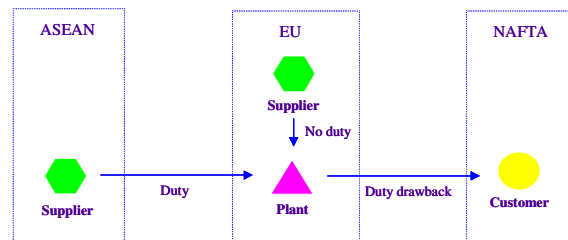


costed and controlled accurately. Where production is being modelled, bills of materials can be used to convert products into other products.

Costs are applied to the sites and lanes, using tables and formulae that reflect real life. Revenue can also be included in the model, which will then maximise profit.

Duties and drawbacks

In order to include duties and drawbacks in our modelling, we need to define the international trading regime. Sites must be grouped together into trade blocs and duties are incurred when shipping goods between them. Duties are relatively easy to model: they are simply a cost that applies when moving goods from one trade zone to another. Duty drawbacks, sometimes referred to as duty credits or reliefs, are used by some countries or trade blocs to encourage local industry. For example, if axles are imported and used as components in cars that are then exported, the import duty on the axles may be fully or partly recovered.



Different types of drawback can be modelled, where:

- a product is exported in the same condition as it was imported, a relief on the import duty can be claimed
- value has been added to an imported product by incorporating it into another product, a relief of the import duty can be claimed

- a product is exported, has value added, then is imported, a relief on the export duty can be claimed

When the optimiser is at work it considers the source and destination of the materials, as well as the production processes applied to it, to calculate any duty drawback properly.

Taxes and transfer prices

In international network modelling you may also need to model differences in tax rates along in the supply chain. Taxes calculations can be included to reflect different rates by country or even by state, if local taxes apply. Transfer prices are costs that occur when one unit in a company pays another unit in the company for a product it has received. A transfer price is a cost incurred at the receiving site and revenue earned at the supplying site which may be included in the model.

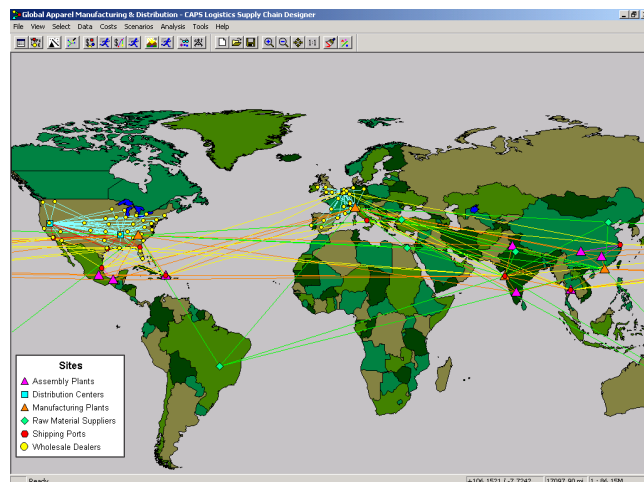
Optimisation

An integrated scenario manager controls the modelling process, keeping a record of the data changes and constraints used in each scenario.

Normally, the first scenario is the base case, where the model is constrained to reflect the existing situation. This should result in costs that are close to the existing costs, which validates the data and assumptions and provides the comparator for other scenarios. Additional scenarios will free up

the constraints, possibly allowing sites to be opened or closed, capacity limits to be overruled or allowing products to be manufactured or assembled at other sites. One option would be to turn on or off the duty and drawback calculations, to see how it affects the solution. Another scenario would be to change the trade blocs to see how the supply chain is affected.

When a scenario has been set up, it is sent to CPLEX, a proprietary MILP solver which is embedded within the Network Designer. When the solver has reached the optimum solution, product flows are displayed graphically for ease of understanding. Detailed cost and flow reports are also available to help evaluate the results.



For further details contact Phil Gibbs of Logistech on 01327 811641 or at phil.gibbs@logistech.co.uk