



Written for *export & import SA* by Arnelle Wolmarans, Western Cape Branch Manager, OPSI Systems



## Balancing service and costs – the scheduler’s dilemma

“ . . . creating a schedule that takes every element into account has become extremely challenging . . . ”

In 2007, logistics and the transportation of goods amounted to 15,9% of GDP. For this reason, many companies continually focus on the transportation of their assets and goods, which weigh in heavily on the logistic cost of their operations. Transportation optimisation has come to the forefront of logistics in recent years as a means of increasing profits by minimising the transportation costs associated with fuel, transport asset depreciation and maximising the loads transported by their fleet.

Transport optimisation attempts to balance the cost of doing business with the need for customer service. The aim must be to provide the best possible service at the lowest cost. Cutting costs too much may result in poor service levels and loss of business. On the other hand, service at any cost may increase costs to such a level that the business will no longer be feasible. Transportation optimisation strives to achieve the correct balance between these two elements.

A critical step in achieving a balance between service levels and logistic costs is to define service requirements. In some cases, companies pay for service levels that their customers neither expect nor demand. Defining service requirements leads to a better understanding of customers’ needs and expectations. In the majority of cases, customers want visibility of where their shipment is and when their shipment will be delivered. Have an accurate plan and communicate that plan to customers.

Another important aspect to consider is the cost to service a customer. Not all customers are equal in terms of profitability to the business. Classifying your customers according to their profitability to the business will aid in determining where to draw the line with regards to service delivery.

The next step in achieving a balance between service levels and logistics costs is to ensure that the transportation function is operating as efficiently and effectively as possible. The main area of focus should be on proper planning and monitoring of vehicles to increase utilisation and decrease costs. Computerised vehicle routing and scheduling systems can greatly help with optimisation of routes and increasing vehicle utilisation. The main objective of these systems is to save logistics costs by:

1. Reducing the number of vehicles used;
2. Improved time utilisation;
3. Increased capacity utilisation;
4. Decreased travel distance.

Another non-quantifiable benefit of these scheduling systems is increased visibility of your transportation operation. Customers can be informed of the expected time of delivery of shipments and – if integrated with GPS – customers can be kept up to date if any unexpected delays occur.

Proper planning alone does not equate to a more efficient and effective operation. Planning, execution of the plan and monitoring of vehicles will ensure that the fleet is operating optimally.

### The impact of dynamic scheduling

Dynamic scheduling – the act of analysing data and numerous variables to generate an optimised schedule in real time at any given moment – is being used more than manual scheduling and master routine generation.

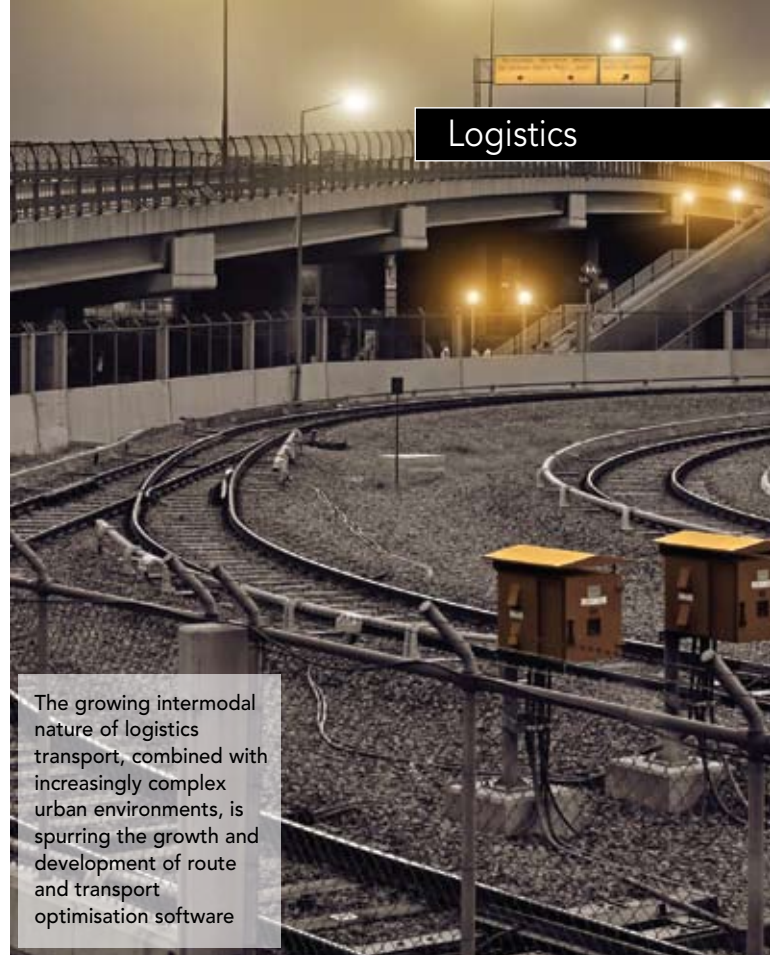
With the growth in fleet sizes, intricate tariff structures and an increasingly complex logistic environments, creating a schedule that takes every element into account has become extremely challenging – particularly so if the schedule is static and generated manually.

Schedulers have got around their limitations by focusing on nominated delivery days (NDD) or master routes, which allow them to analyse their client base, deliveries and fleet over an extended period of time and create optimised largely static schedules followed on a weekly or monthly basis. While these methodologies do offer certain benefits – increased driver familiarity with a specific route, greater visibility and customer satisfaction due to set delivery times, and being easily adjustable when adding new clients or vehicles to your operations – it favours stability over flexibility and cost-efficiency.

Master route and NDD schedules battle to deal with many of the unpredictable factors that affect route and vehicle optimisations. Traffic jams, ill drivers and unexpected vehicle maintenance are just some of the factors that have a knock-on effect which can adversely affect the performance of the schedule over an extended period of time.

Dynamic scheduling removes the focus of the user from schedule creation to schedule and customer service management. Dynamic scheduling software – such as OPSI Systems' PLATO suite – is often able to generate multiple schedules against a massive range of criteria in a fraction of the time it would take to do manually. Applications often tie into online customer information portals, automatically updating ETAs and other pertinent information and adjusting the schedule to deal with unexpected incidents.

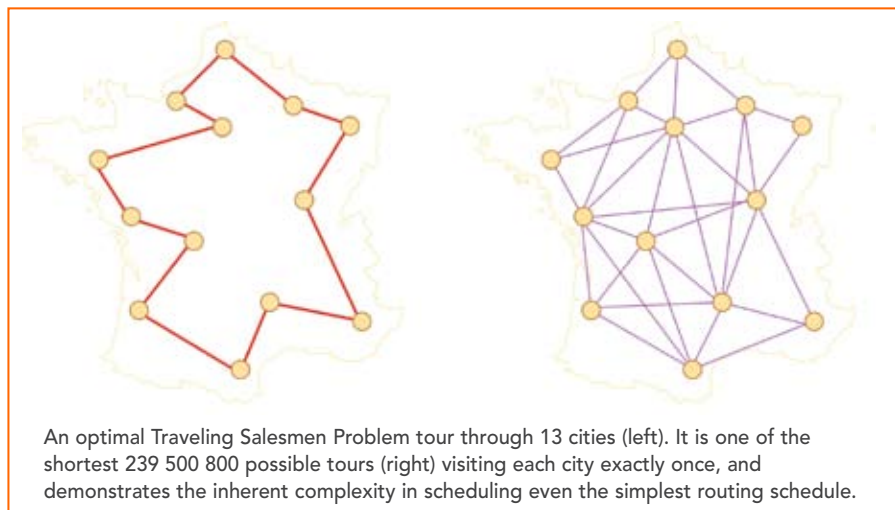
Dynamic scheduling is providing clients with improved analysis tools, even for the generation of static schedules. For example, Fast 'n Fresh, who dedicate a large portion of their fleet to servicing Woolworths' various stores, currently employ a large number of staff to make small changes to their delivery schedule when a new store is opened or volume expansion occurs, amongst other events.



The growing intermodal nature of logistics transport, combined with increasingly complex urban environments, is spurring the growth and development of route and transport optimisation software

a constant stream of products and tight storage constraints. Dynamic scheduling software can tie into the manufacturing process. Check the production levels – and ensure that vehicles are constantly available to pick up the next batch of ready products.

This approach has seen companies such as SAB reduce the amount of downtime incurred at their bottling plants due to a lack of storage space while simultaneously increasing fleet utilisation.



### Conclusion

The ever expanding growth of the logistics and supply chain sector, the introduction of a tolling system in Johannesburg and Pretoria and rising fuel and electrical costs all demand ever-greater efficiency, precision and response times to remain competitive – requirements which the scheduler is finding progressively more difficult to meet without aid. Route and vehicle optimisation software serves to bridge this gap by removing the grudge-work from schedule generation and presenting multiple potential solutions quickly, giving the scheduler the necessary time to think and react accordingly. ♦

While they will not be discarding their master routes, the use of dynamic scheduling software reduces the time to create new schedules while providing a safe environment in which to gauge the effect of a fleet or route change.

Dynamic scheduling has also been on the rise in the manufacturing, milling and factory environments, which have

### About the author:

Arnelle Wolmarans holds a Master's Degree in Operations Research, and is currently preparing her PhD in the same field. As an analytical consultant for OPSI Systems, Arnelle concentrates on optimisation, algorithm design and OPSI Systems' software implementation, testing and training.