

FAST

Factory arrival Scheduling

Overview

The timely arrival of raw materials is critical to any JIT production process. FAST optimises the use of transportation resources so to meet the demand of suppliers and consumers and ensure constant factory production.

FAST is designed to be plugged into existing Production Planning and Transportation Resource systems.

FAST uses a relational database supporting SQL, such as ORACLE, to hold all the transportation, factory and supplier data. Users download this information into FAST and can plan all transportation movements, optimise arrival to several factories, assign resources to all transportation tasks and then in a real-time environment react to changing conditions.

FAST is built using the Constraint Programming Toolkit CHIP. This provides all the programming facilities to connect to external data sources, represent data in textual and graphical forms and allow multiple users to schedule manually or automatically using CHIPS built-in optimised constraint scheduling technology.

Production

FAST has been exploited for a UK food manufacturer to transport highly



perishable goods from numerous sources to several factories. A fine line is drawn between holding too little stock and a factory losing production; and holding too much stock and goods perishing or exceeding storage capacities.

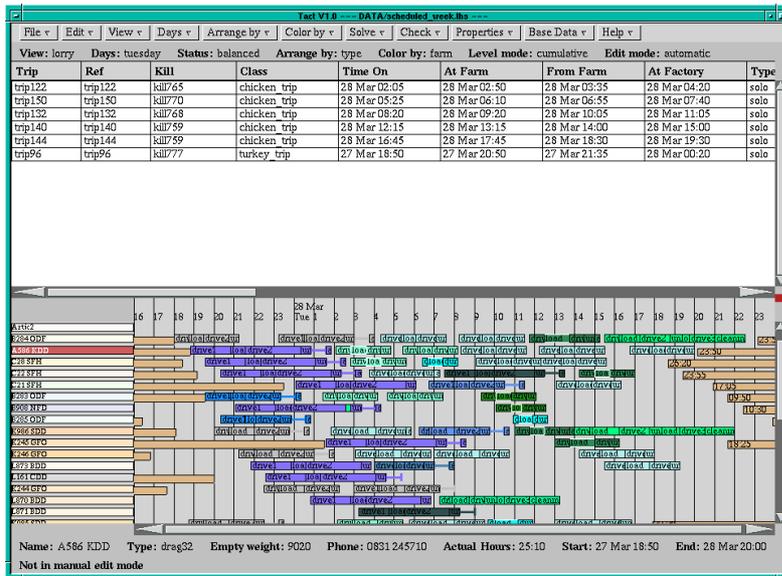
Satisfaction of the factory's wishes is in direct contradiction to the requirements of the transport division, who wish to minimise the number of operations and resources used, and the suppliers, who wish to have smooth dispatch service. FAST solves this problem using a unique consumer/producer constraint.

Once the arrivals to the factories have been planned the application assigns resources such as trucks, trailers, fork-lifts, drivers and teams of workers to tasks respecting all constraints. FAST relies extensively on the latest constraints provided in CHIP.

Performance

FAST can optimise the trip allocation and assignment in minutes rather than a manual method of hours.

The solver can re-schedule the complete assignment for 10000 tasks to 100 resources for a 1 week period in less than 5 minutes taking into account all constraints and searching for near optimal solutions.



FAST supports three modes of operation for scheduling: manual, check and active. The user interface provides a Gantt chart, database tables, factory production graphs, etc. to aid the user in the decision making process.

Deployment

The FAST package requires adaptation to integrate with customer's existing IT infrastructure. Such adaptation includes:

- connection to an existing database or development of a standalone database.
- adaptation of the Graphical User Interface (GUI) to meet the client needs.
- inclusion of specific transportation constraints and strategies.

COSYTEC provides services so that FAST can be easily integrated into a clients existing infrastructure.

Reference Site

FAST has been developed for UK fast food manufacturer.

The client manages a transportation division required to schedule deliveries from hundreds of suppliers to several factories.

The development was undertaken over a 9 month period initiated by a design and prototype phase followed by development and delivery phases.

The client has reported a considerable return on investment measured in both monetary and organisational benefits:

- optimisation of delivery to three production factories.
- reduction in the number of transport resources required.
- centralised database for all transportation data.
- better reaction to supplier and factory needs.
- return on investment measured in months.
- shorter scheduling time.
- faster reaction time for re-scheduling.
- balanced and optimised use of lorries, drivers, teams, etc.

CHIP V5 is a product of COSYTEC

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