

THE CURRENT ORDER PROCESS

There is currently a 3-stage process to order fulfilment:

- Order entry to production: the order being passed from the dealer through the administrative selection for production from an order bank
- Production: the scheduling and sequencing of orders through the assembly of the vehicle and rework
- Distribution: the delivery of vehicles to the dealer/customer

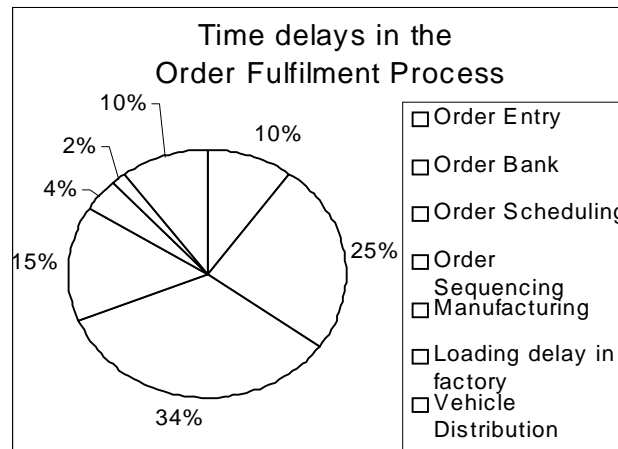
Across the 6 manufacturer sponsors of 3DayCar, the order to delivery lead time is on average 40 days. Taking the demonstrated best practice for each of the elements of the process from the customer placing the order to the dealer receiving the vehicle shows a total system capability of 10.6 days. ICDP research shows that c 30% of UK customers are not currently prepared to wait for this length of time and therefore existing processes are not capable of satisfying all customers from build rather than from stock.

Current vehicle scheduling and supply systems are mainly driven by the sales forecast, not by orders that reflect the actual market demand. Only 30% of the vehicles were built to customer order for the UK in 1999, including 12% of amendments to stock orders already existent in the manufacturer order bank.

There is a reluctance of dealers to place customer orders for build on the factory due to the unreliability of delivery times, if quoted.

WHY DOES IT TAKE SO LONG?

The breakdown of the total order lead time into its constituent parts reveals where the major delays occur:



85% of the time in the 40-day lead time is in the order processing, scheduling and sequencing subsystems, with only 6 days for the actual manufacture and delivery process.

This is due to production being organised on the traditional 'push' or order wholesale supply philosophy, where manufacturers desire a "comfort zone" buffer of orders to maintain a stable production programme and to ensure that someone else is financially responsible for the cars when they are produced.

It is reinforced by a legacy of IT systems that have grown in an ad hoc manner over the years. IT system complexity and batch processing introduce a minimum of 4-5 overnight updates as an order goes through the system. This current system architecture inhibits change and improvement.

WHY IS IT UNRELIABLE?

While manufacturing offers little potential for time compression, the unreliable body, paint, and assembly sequences compromise lean distribution and ultimately lengthen the logistics lead times. For the typical manufacturer, only 60 to 70% of orders are built on the day to which they are originally designated.

Complexity is a general problem, both in product variety and technical complexity. The two most important factors identified are:

- The total number of specification permutations offered in the marketplace. This is a major factor in the efficiency of line balancing activities and component stock control and also effectively determines the proportion of orders which can be sourced from stock in the market place
- The number of body-in-white and body colour combinations, which determine the flexibility and potential sequence reliability within the manufacturing process.

It is clear that a 3DayCar requires radical changes to processes and IT systems.

SHORTCUTTING THE SYSTEM

Redesigned systems are necessary if vehicle manufacturers are to embrace the philosophy of providing custom-built vehicles from the factory within an acceptable timeframe for all customers. The major elements of this are:

- Actual production must be determined by customer orders rather than by sales forecasts. 'Internal' orders such as demonstration, showroom and employee cars can be used to smooth production.
- Direct order booking systems - the retailer places orders directly in to the factory production schedule
- Open, real time systems - the component supplier, manufacturer, logistics company, and retailer view each other's order/vehicle input, schedule, and status information

Identifying the order with the vehicle later in the production process will reduce lead times and give greater reliability to order sequence. An intermediate solution might be to use a resequencing approach after the paint shop to restore the original sequence, technical complexity allowing.

Reliability and flexibility is also assisted by designing vehicles to give a minimum number of variants entering the final assembly line. Alternative technologies to the steel mono-coque body, such as the spaceframe, potentially meet this criteria.

Having defined the market strategy for necessary specification range complexity, the art is to design a vehicle to use the minimum production specification variants to satisfy the number of customer specification offerings.

A DIFFERENT MINDSET

A 3DayCar is not achievable with current scheduling procedures, production processes, and information systems. However, solutions can be found and new technology will be available to make a 3DayCar achievable within the next 10 years. The challenge is to prove that variation in the volume and mix of market demand can be catered for in production in a cost effective manner. These must be matched by a change in the mindset of the industry, particularly manufacturers, which will involve radical changes in organisation, performance measures, costing systems and the culture of sharing information.

Future research into the processes within logistics and component suppliers will broaden the understanding of what is required for the total supply system. This will be supported by analysis of the feasibility of a 3DayCar and its cost impacts through the use of the simulation that is being developed within the programme.

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EXECUTIVE BRIEFING

The Current Order Fulfilment Process

by
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This briefing describes the steps involved in getting from placing an order for a car to delivering a vehicle - the order fulfilment process - and shows how a 3DayCar is impossible with current methods.

It also identifies where significant improvements are required to achieve a 3DayCar and where future research should focus.