

Understanding Customer Order Behaviour for More Efficient Supply Chain

CONTEXT

Infineon Technologies AG is a German semiconductor manufacturer founded in 1999. Their semiconductor products have a wide variety of various application areas, and are sold across four different business divisions: Automotive (ATV), Industrial Power Control (IPC), Power Management & Multimarket (PMM), and Digital Security Solutions (DSS). Infineon's supply chain structure is complex with several manufacturing sites in Asia and inventory warehouses across Asia (China, Hong Kong, Singapore).

Depending on the type of Infineon's customers, they can place their demands via Standard Orders or Forecast-based Orders and Infineon will provide an estimated of Best Possible Delivery Date to the customer.

The figures below provide an overview on how the orders are being processed:

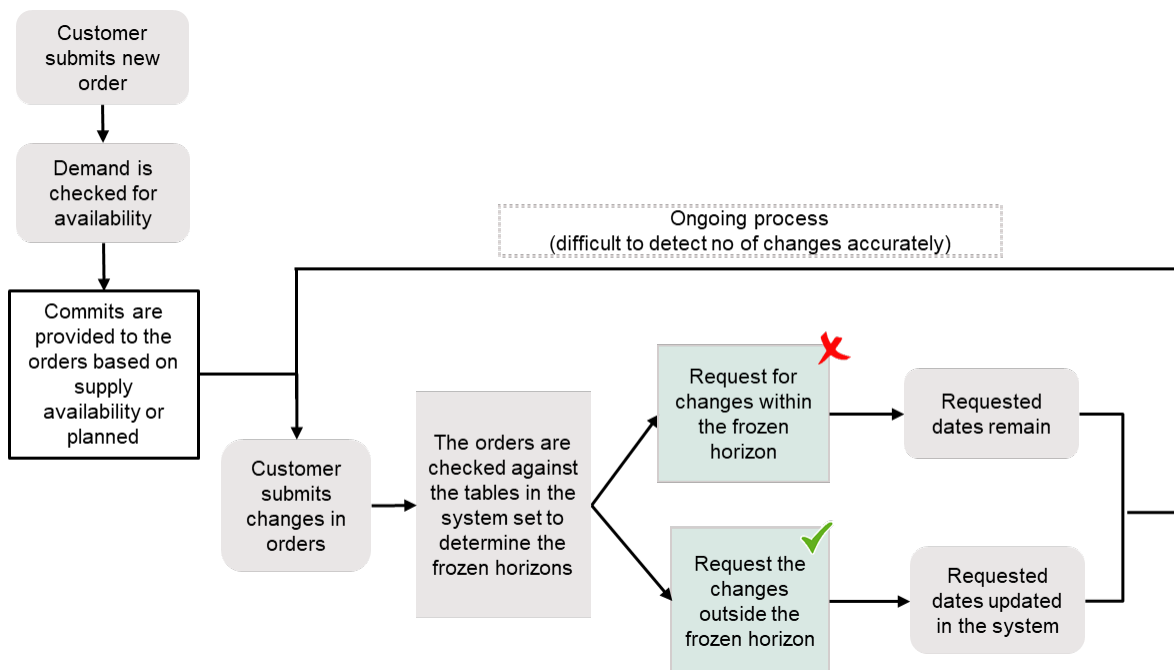


Figure 1 Process flow for Standard Orders

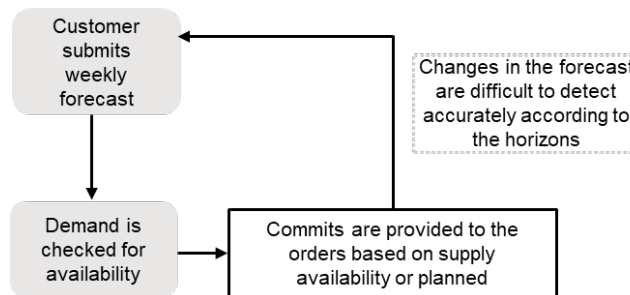


Figure 2 Process flow for Forecast-based Orders

The key issue faced by Infineon is that there is little visibility on the frequency of the changes by the customer, and the extent of changes on a particular order or line item during the process from when the order is placed to fulfilment. Depending on whether the order is a *Standard Order* or *Forecast-based Order*, changes made within the frozen horizon may be accepted by Infineon. The second key issue is that customers are placing their demand or orders shorter than the standard lead time which sometimes is difficult to fulfil.

Overall, this results in volatility and inefficiency in production planning, when there is a mismatch of demand and supply. As a result, a customer who increases the quantities of his demand within a short period of time may not be able to receive his full order due to the short lead time demand. Conversely, a customer who decreases the demand within a short period of time might cause high inventory levels at Infineon.

Infineon would like to seek a solution to better understand its customers' ordering behaviour, including demand and changes, so as to achieve on-time supply to customers, and at the same time keep its inventory at healthy and efficient levels.

PROBLEM STATEMENT

How can we better understand our customers' orders to fulfil their requests in a timely manner to improve the customer experience, while ensuring efficiency in supply chain planning and inventory management?

WHAT ARE WE LOOKING FOR

- A Proof-of-Concept (POC) of a solution that allows the planning and resource management team to have a better and more dynamic understanding the customers' order behaviours
- Empowers Infineon to manage their customers' orders in order to prevent non-fulfillment of target and enhance efficiency in the supply chain
- Solution should have capability to capture the changes made by customers on a monthly/quarterly basis to provide a high-level overview for more effective planning.
- Solution should be built with historical data (at least over the past year), and continually update itself with new orders and changes. It should also incorporate insights from our relationship managers. Such holistic profile of the customers will allow our relationship managers better understand their customers' order patterns and needs so as to improve their request fulfilment.
- Solution should provide market intelligence through external sources across several industries that may be related to semiconductor industry. Such information could enhance the intelligence of the analysis

There are no restrictions on the geographic location of the problem solvers who may choose to apply to this challenge. However, the POC needs to be demonstrated in Singapore.

POSSIBLE USE CASES

1. Through the customers' ordering patterns, a scoring system for each customer and order can be developed to allow the planning team to better manage the customers' orders.
2. Using the data of Infineon's customers' ordering behaviours, insights can be developed for

individual customers to anticipate their needs, and thus foster stronger business relations. These insights can also be shared with these customers via Infineon's Sales and Customer logistic team to improve their order fulfilment experience through customer order education.

3. Using the ordering patterns and data collected, the solution can use a predictive mechanism to identify any anomaly in the customer's orders. It can also then highlight this anomaly to the planning team, who checks and monitors their customer's order to increase order accuracy to ensure just-in-time fulfilment.
4. Based on their individual needs, customers' orders can be across several business divisions (for several different parts). Changes in their orders will affect planning of the respective business divisions, and the product parts. As such, customer order analysis, including the frequency of order change, could be analysed based on several considerations:
 - Customer-business division analysis: Order pattern of products at the division-level, and their frequency of order change
 - Customer-product line analysis: Order pattern of products at product line-level, and their frequency of order change
 - Customer-product part analysis: Order pattern of specific product parts, and their frequency of order change

WHAT'S IN IT FOR YOU

- SGD 25,000 of prize money for each winner of this challenge (see Award Model)
- Understand B2B Challenges in a complex manufacturing supply chain, and working with complex data with high volatility
- Potential future engagement on other use cases
- Winner will be publicised by Infineon at the end of the challenge

EVALUATION CRITERIA

The Applicants shall be evaluated in accordance with the evaluation criteria set out below.

Solution Fit

- To what extent does the proposed solution address the problem statement effectively?

Solution Readiness

- How ready is the proposed solution to go to the market?
- Is there any evidence to suggest capacity to scale?

Solution Advantage

- Is the solution truly innovative, does it make use of new technologies in the market, and can it potentially generate new IP?

Company Profile

- Does the product have user and revenue traction?
- Do the team members possess strong scientific/technical background?

AWARD MODEL

30% of the prize money will be awarded to each selected finalist at the start of the POC, with the

remainder 70% to be awarded during the POC, based on milestones agreed between Infineon and the solver.

Note that a finalist who is selected to undertake the POC will be required to enter into an agreement with Infineon that will include more detailed conditions pertaining to the POC.

DEADLINE

All submissions must be made by **04 October 2019, 1600 hours (SGT/GMT +8)**. Infineon and IMDA may extend the deadline of the submission at their discretion. Late submissions will not be considered.