Session Title

Analytics of Industry Responses

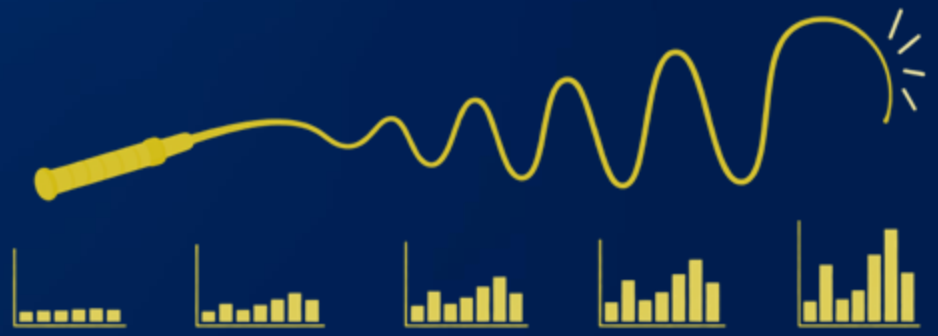
Dr. Florian Kaesen

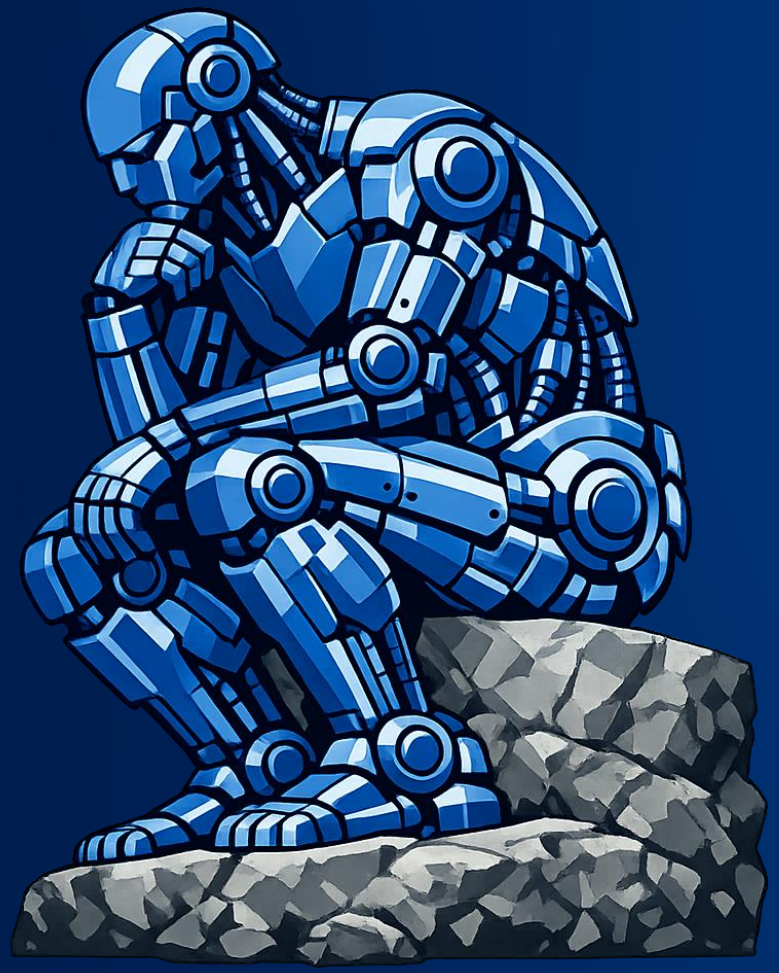
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Main Reasons for Bullwhip Effect in Semiconductor Industry

1. Human bias
2. Negotiation tactics
3. Feedback loop delays





Observation from Analyzing Suppliers' Responses

Driving factors

- Historical volume and outlook
- Forecast reliability/quality
  - Forecast bias
  - Forecast volatility
- Order behavior
  - Committed capacity utilization
  - Order changes



- Engagement model (partnership vs. opportunistic)
- Transparency of changes
- Negotiation strategy and tactics
- Commercial agreements (e.g. take or pay agreements)
- Mutual respect



Supplier's Reaction

- Capacity allocation/commit
- Prices and commercial terms & conditions



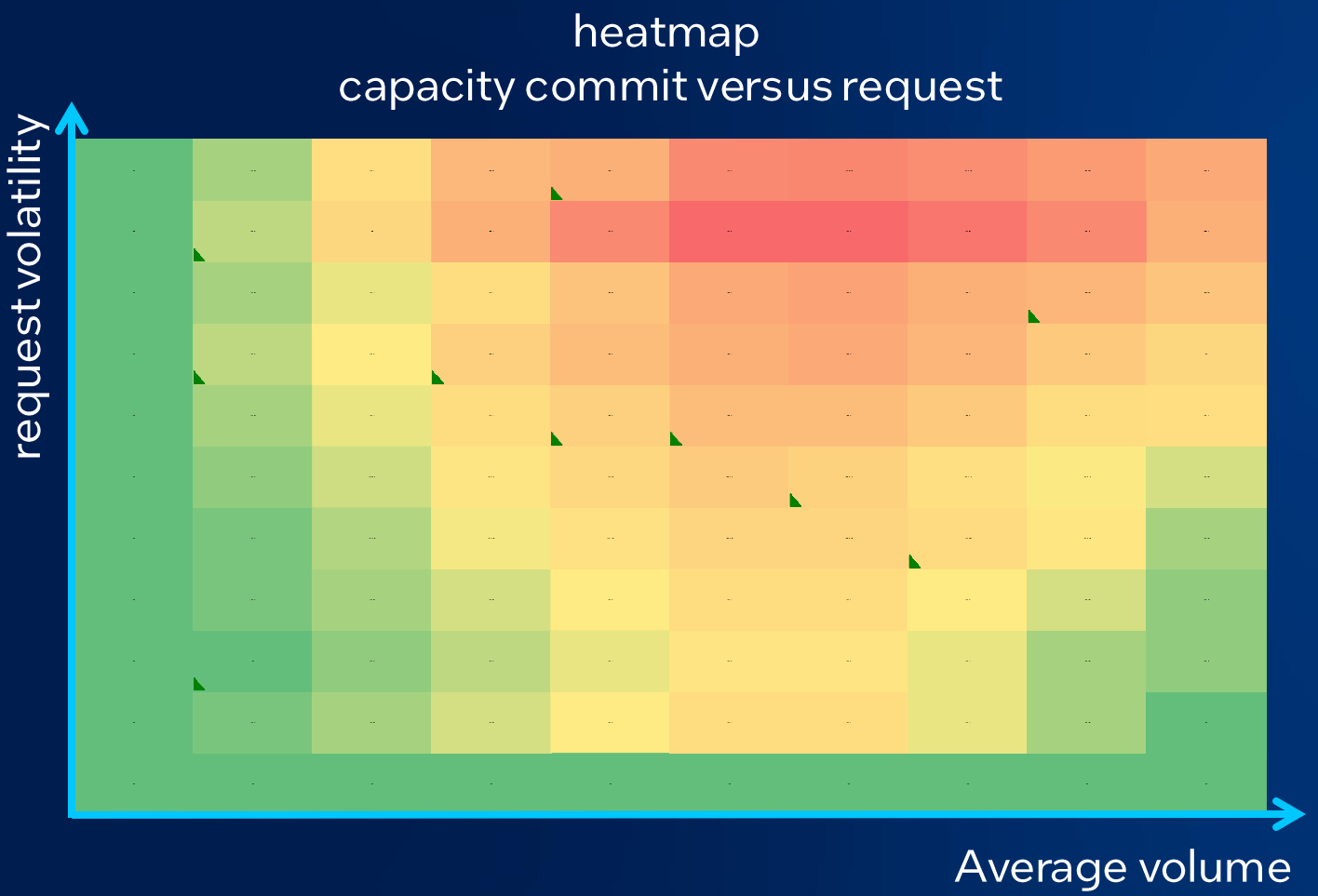
- Responsiveness
- Service level for engineering
- Customer status



Example: Impact of Intra Cycle Forecast Volatility

Results from real life data:

- Commit rate decreases with intra cycle forecast volatility
- (Extreme) low volume capacity groups are hardly affected
- Medium volume products show the highest dependency



Analysis based on data from 2018-2023

Effect of positive forecast bias

Idea: reserve/build up capacity above demand in all market situation to avoid allocation **at all cost**

- → High idle cost for internal fabs
- → Lost trust from suppliers leads to overcommitted capacity
- → Insufficient supply during upturns
- → Increasing forecast bias

With fully digitized sourcing and procurement suppliers are able to detect systematic forecast biases!



What prevents customers to provide honest forecasts



Internal organization

- Planning has no incentive to provide stable and realistic forecasts
  - If customer demand is missed due to too low planned volume, planning will receive the blame.
  - If suppliers do not commit sufficient capacity supplier manager will be held accountable.

→ By inflating demand (bull case scenario) planning pushes the problem to execution



Legal restrictions

- Some data e.g. related to M&A may not be shared



Negotiation tactics

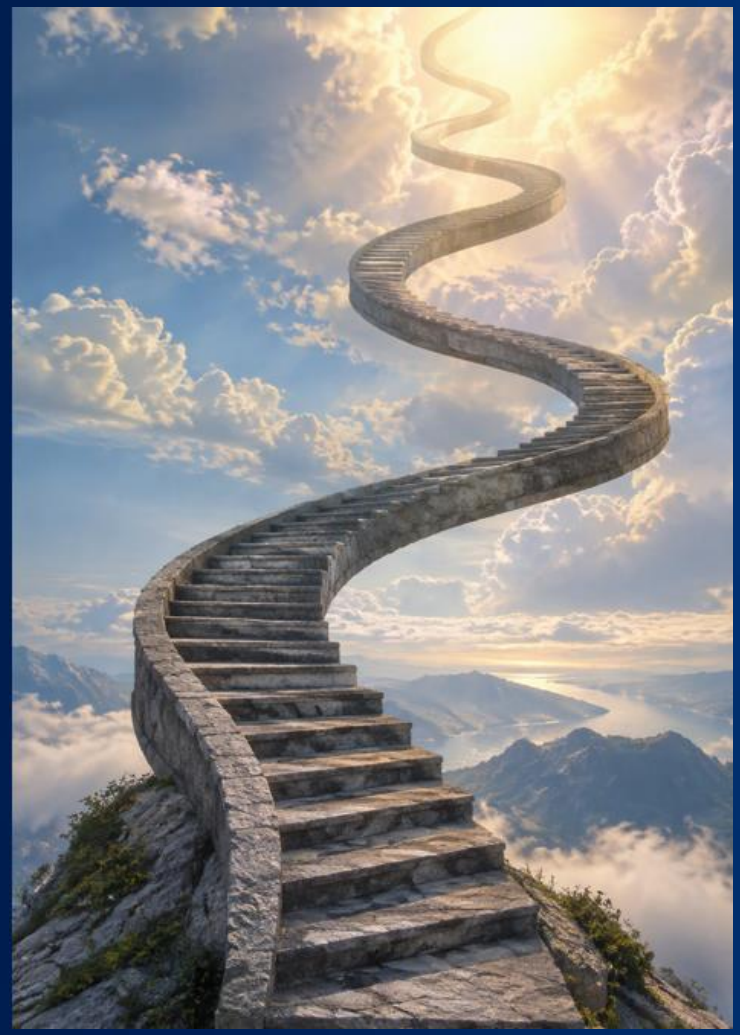
- Ankering
- Advantage from unsymmetrical information



Mistrust

The way forward

1. Rethink your engagement model and negotiation strategy
2. Filter out noise
3. Prepare jointly for different scenarios
4. Enhanced analytics of customer and supplier behaviors
5. Transparency
6. Build up trust along supply chain
7. Reduce time lags



Thank you!

