

SALES AND OPERATIONS PLANNING: TRENDS AND OR IMPACT

Consumer connected supply chains

Freek Aertsen

This is EyeOn:

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- Consultants with **specific functional** backgrounds
- All consultants have **line management** experience and are university educated
- Cross functional & **hands-on** mentality
- Strong focus on **design** and **implementation**
- **System independent**

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- Forecasting
- Account planning
- Collaborative planning and forecasting
- Sales and Operations Planning (S&OP)
- Budgeting
- Rolling Financial Forecast
- Management information systems
- Master planning
- R&D planning
- Material planning

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EyeOn Customers



High Tech



Food/FMCG



Proces



Lifescience



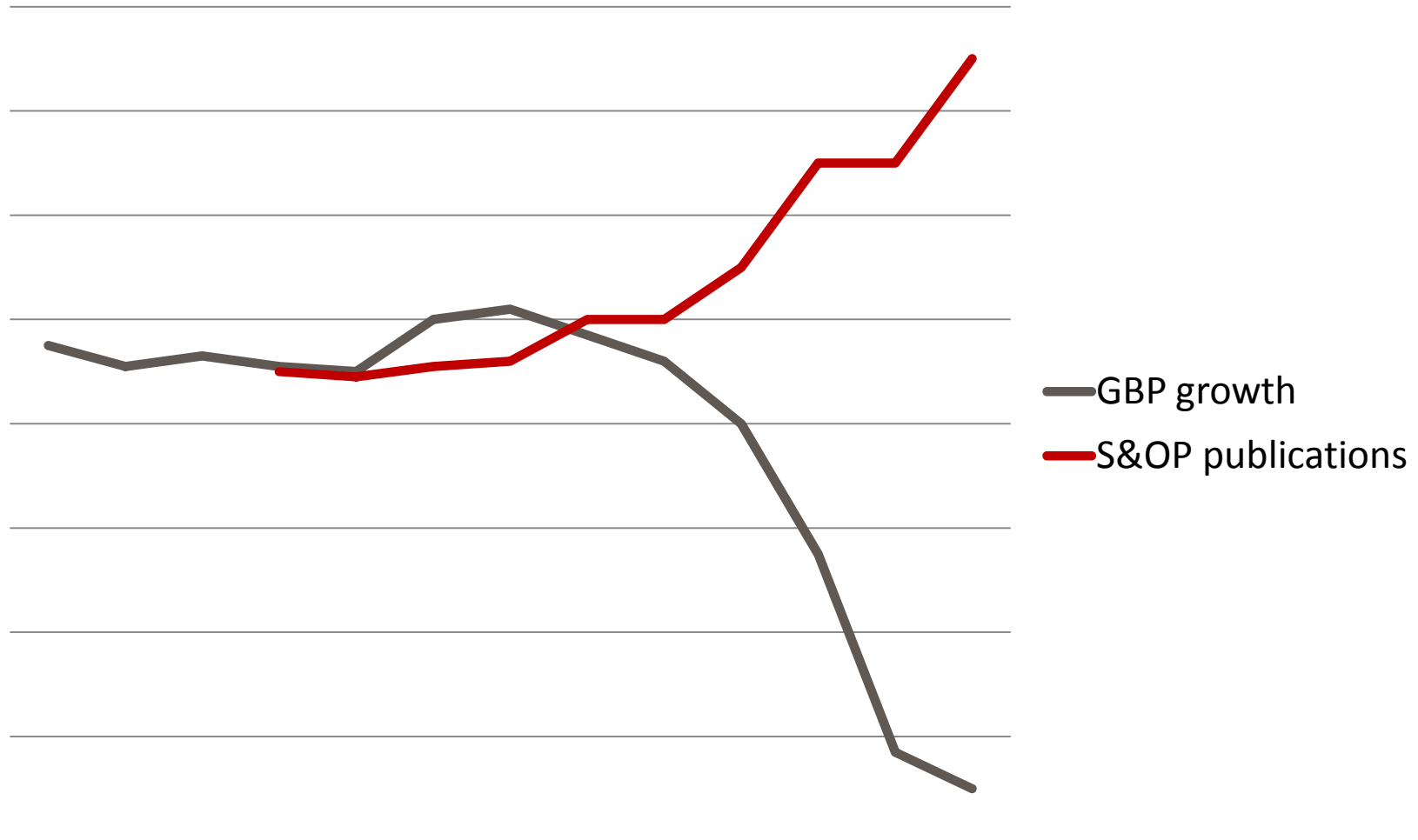
others



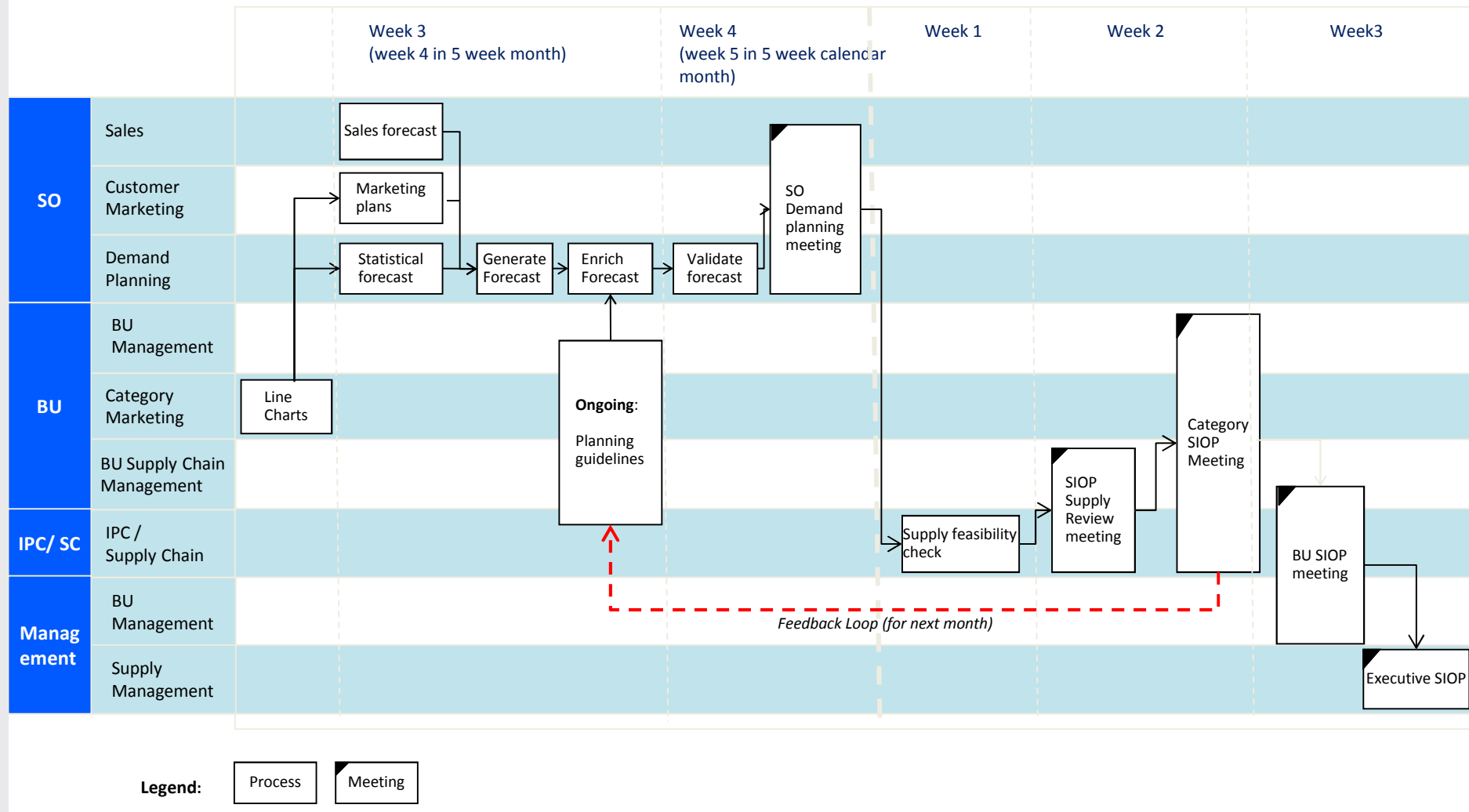


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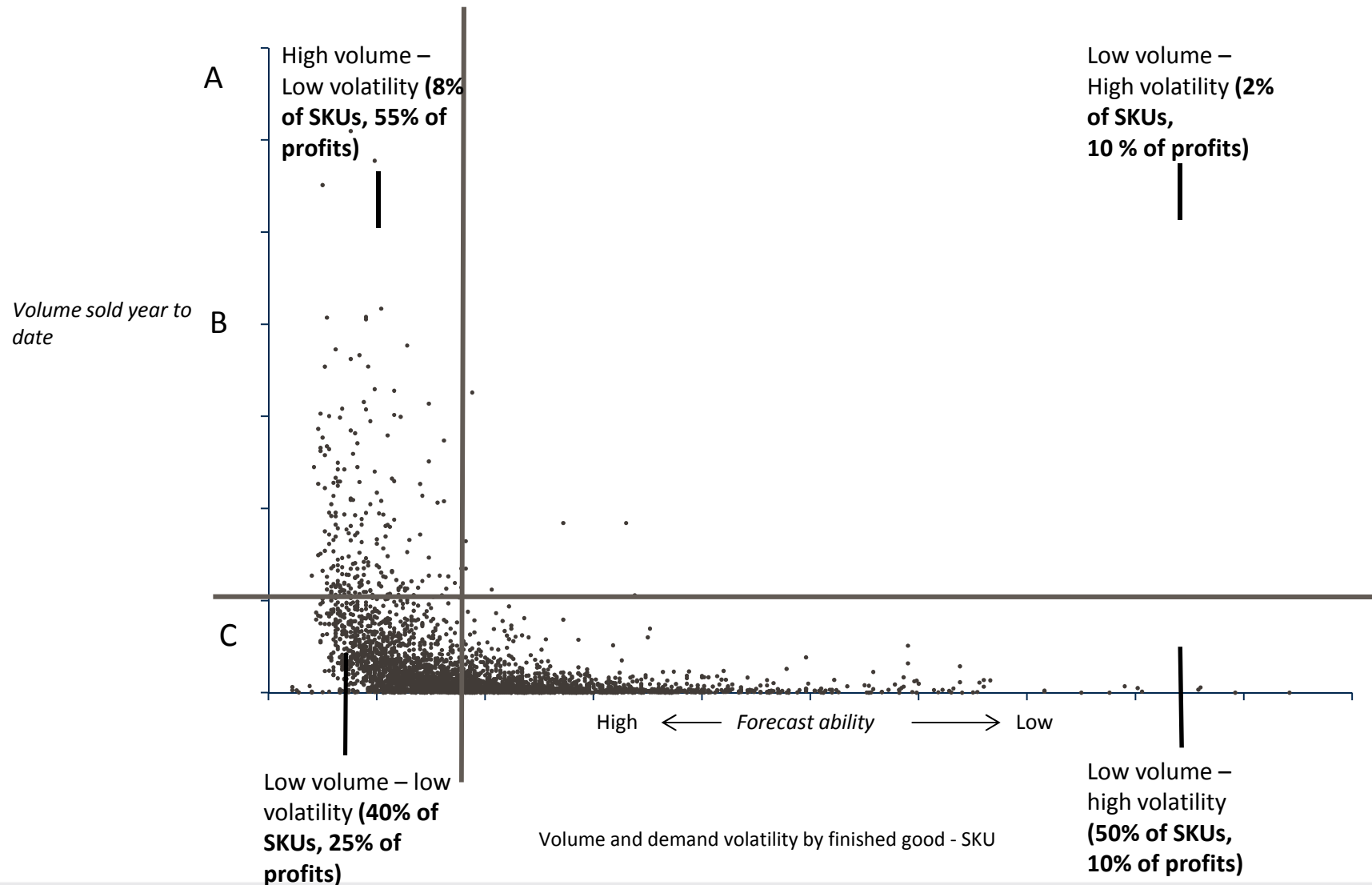
S&OP: Relevance

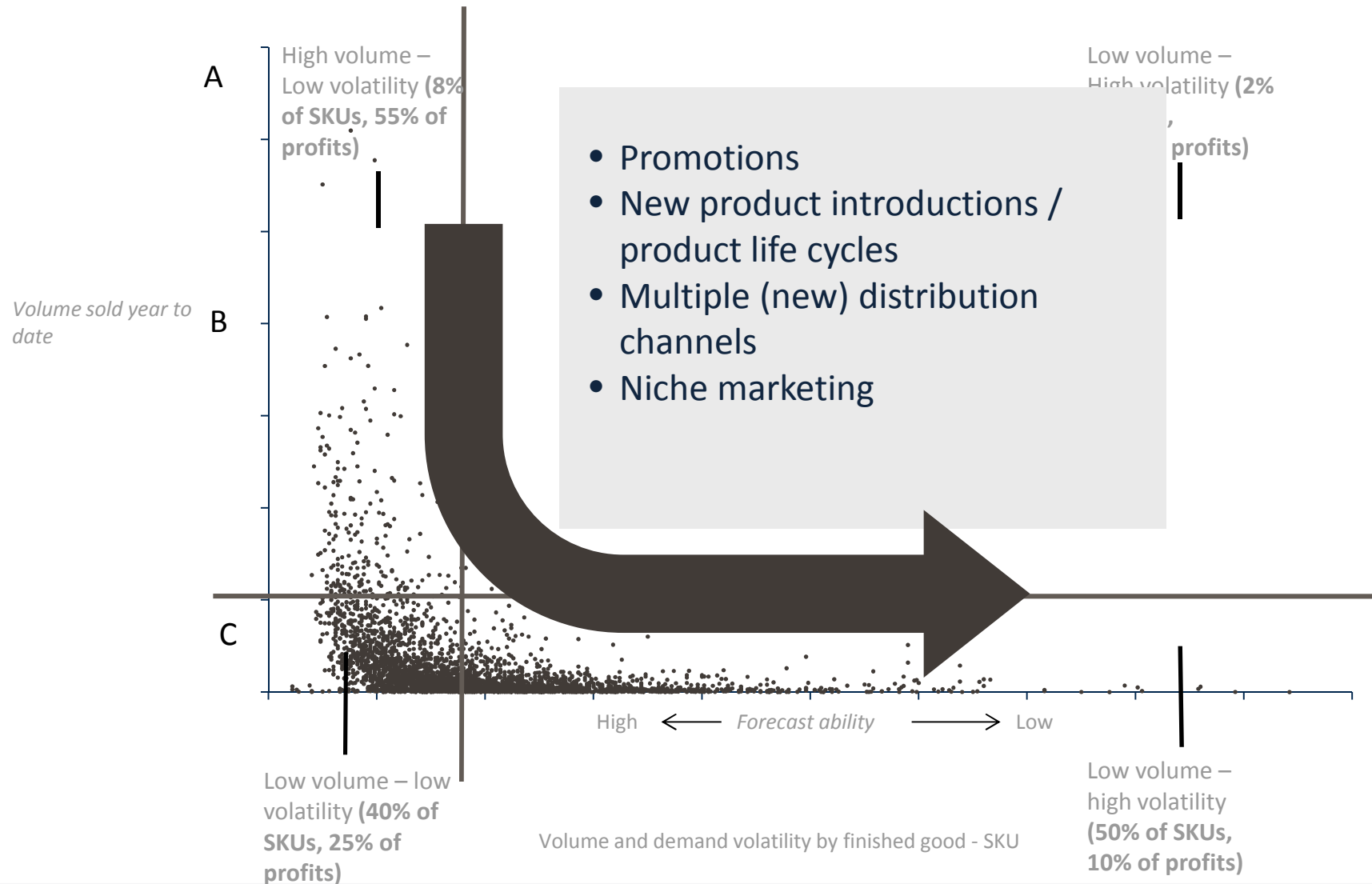


Forecasting and planning at Electronics



Trends: Scattered product portfolio

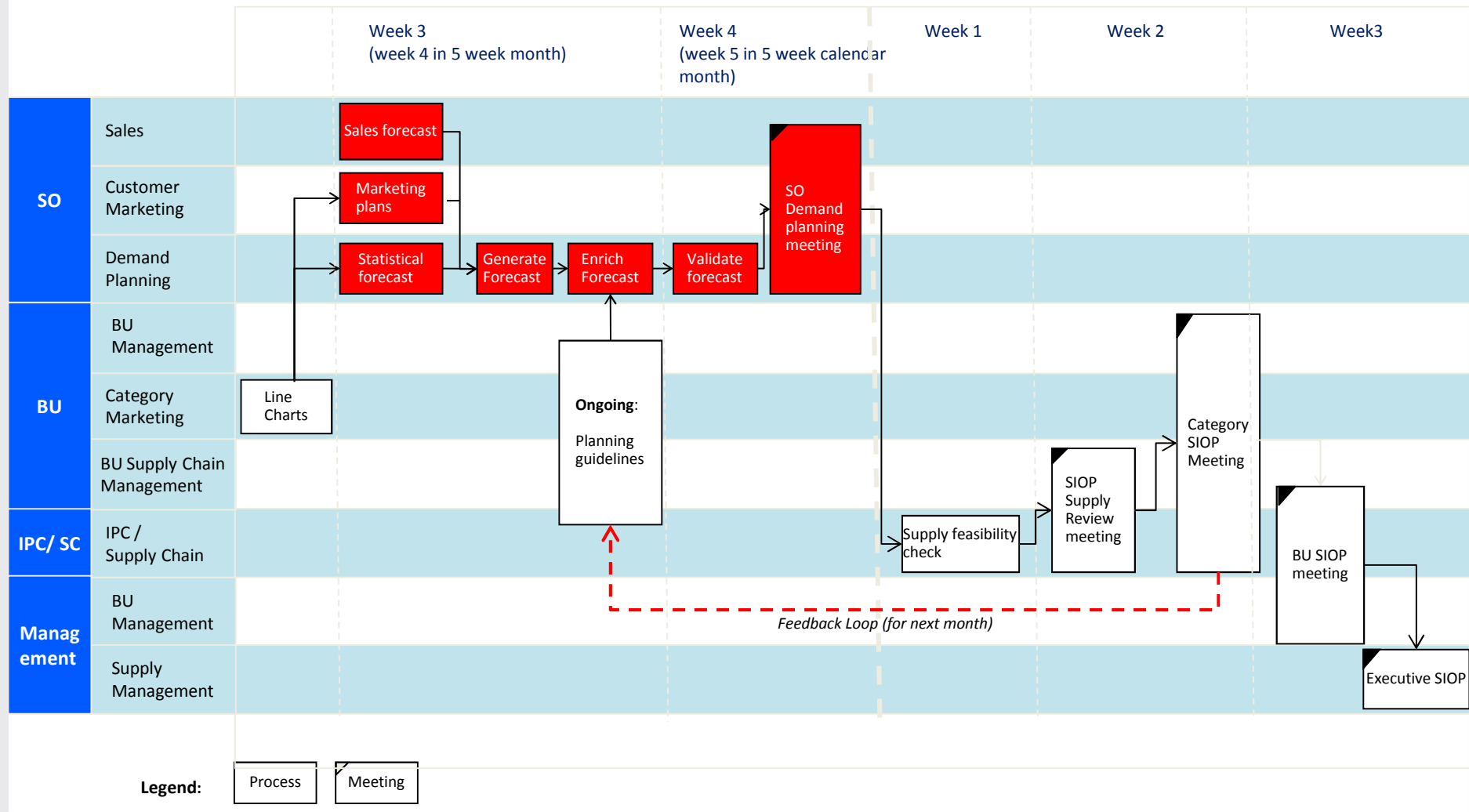




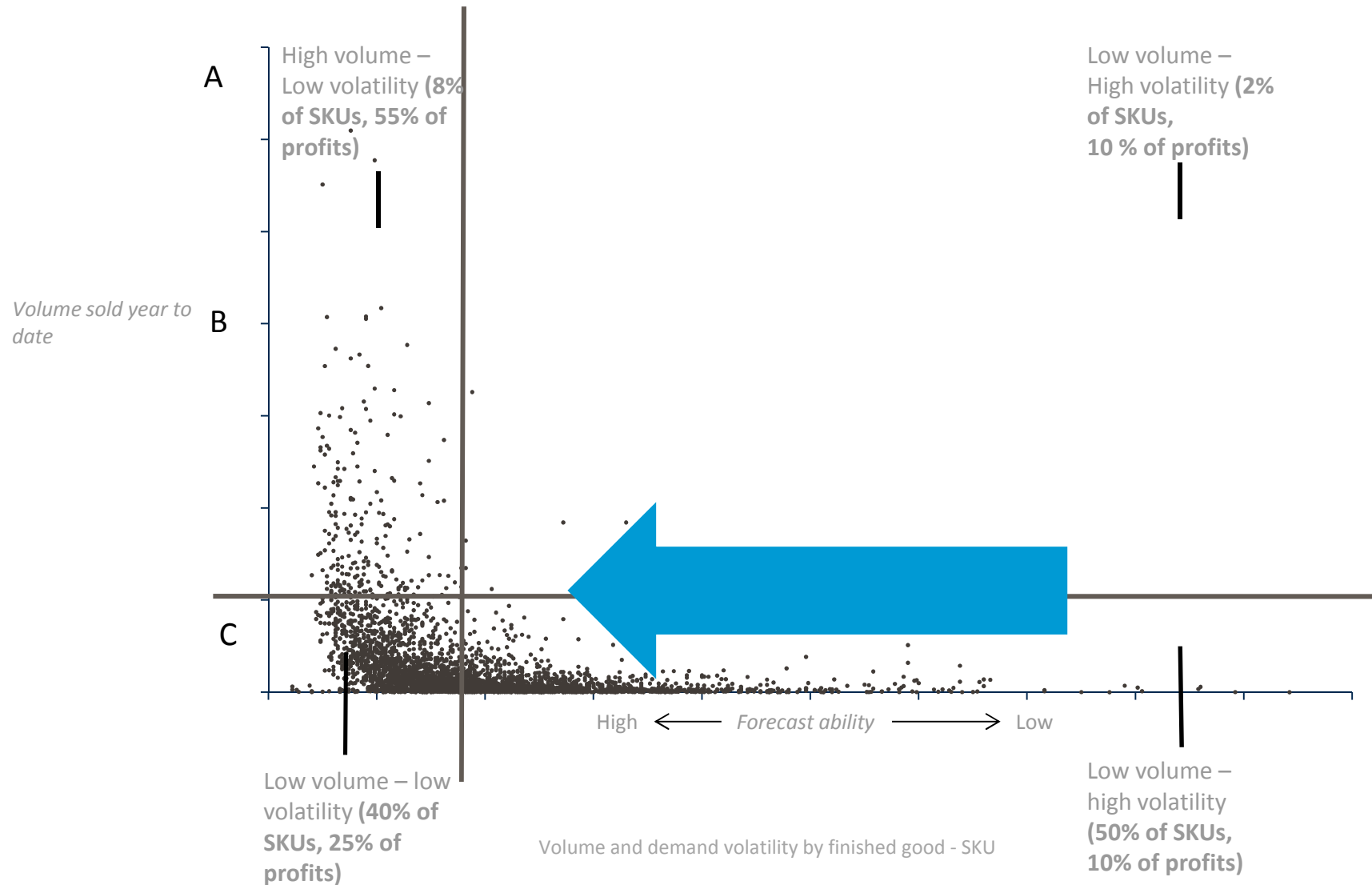


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Forecasting and planning at Electronics



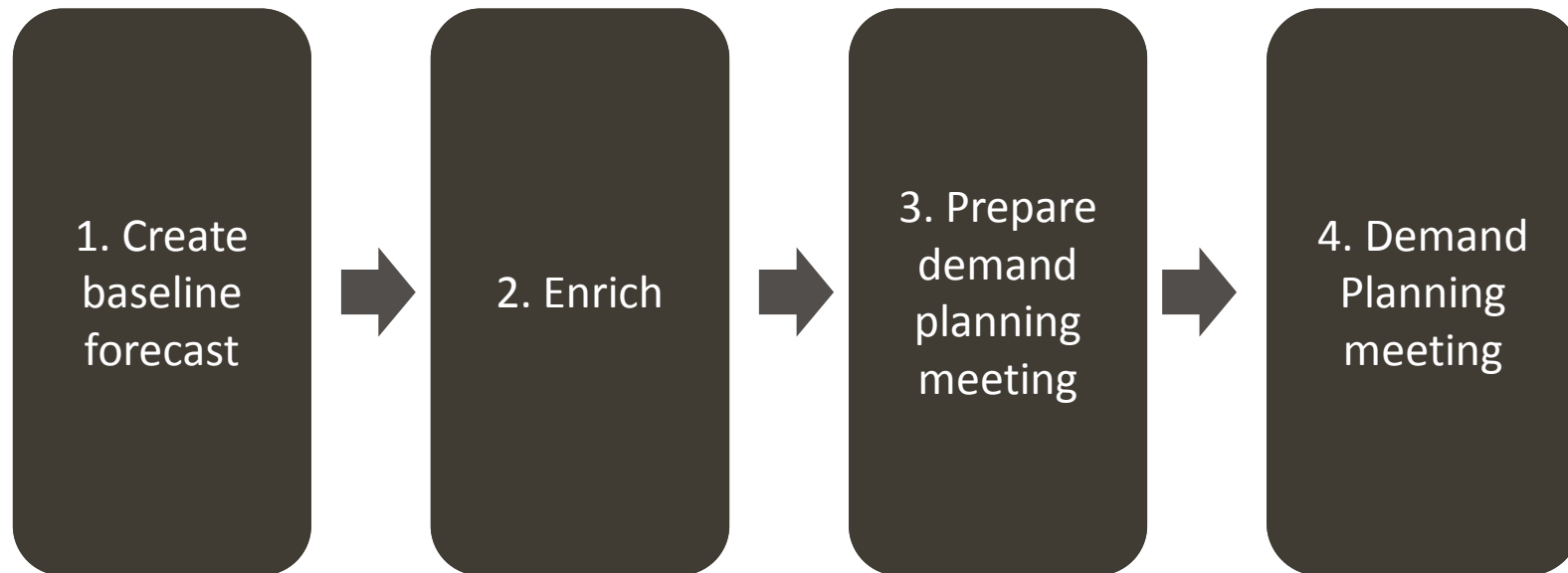
Response: increase forecast ability



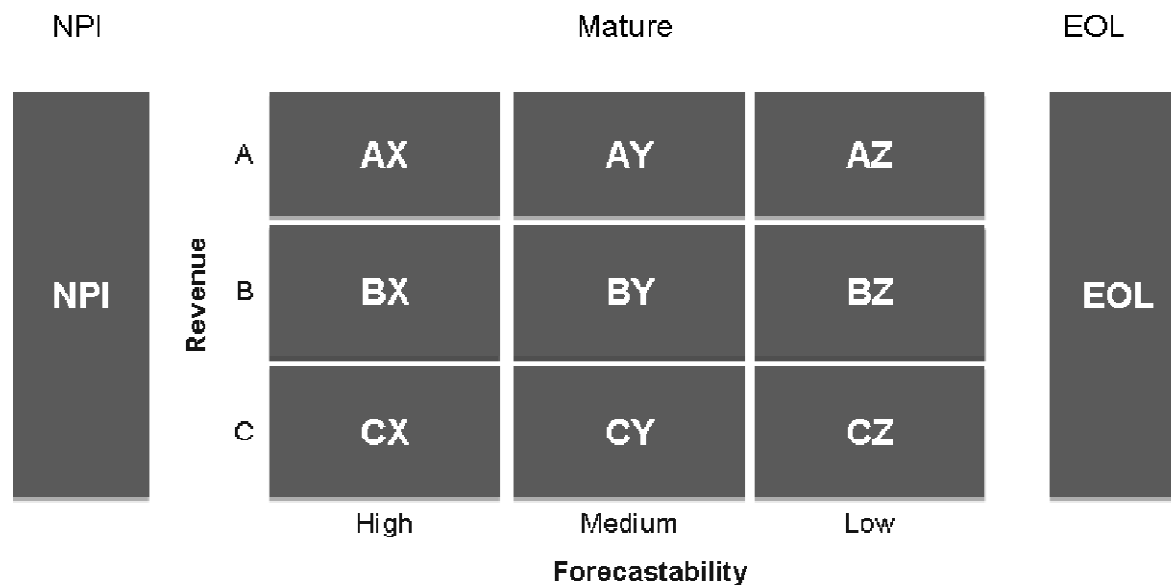


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Forecasting process



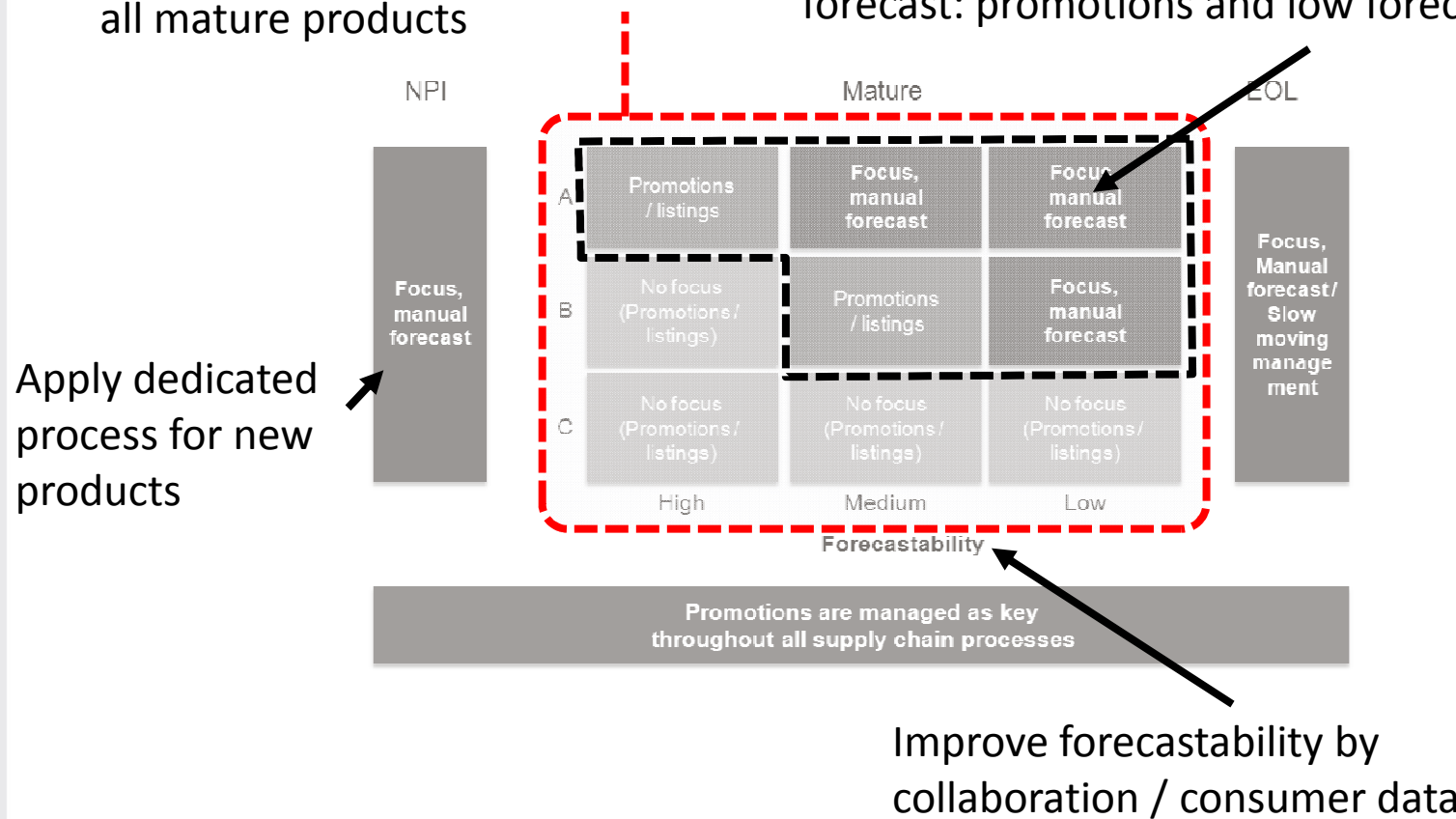
Forecasting differentiation



Promotions are managed as key
throughout all supply chain processes

Start with statistical baseline for all mature products

Focus on what is important: Enrich the baseline forecast: promotions and low forecast-able items



1. Social media forecasts to optimally deploy stocks in a region
2. Google Searches to improve new product forecasting
3. Use communities to forecast demand for new products
4. Control towers: joined forecasting and planning
5. Statistics does not mean a high quality plan!

Terabytes of information are available to manage the supply chain

LinkedIn®

115 million users
(100% growth on last year)

YouTube



Crowd forecasting



twitter



250 million users

facebook

750 million users, 50% log in every day



POS data

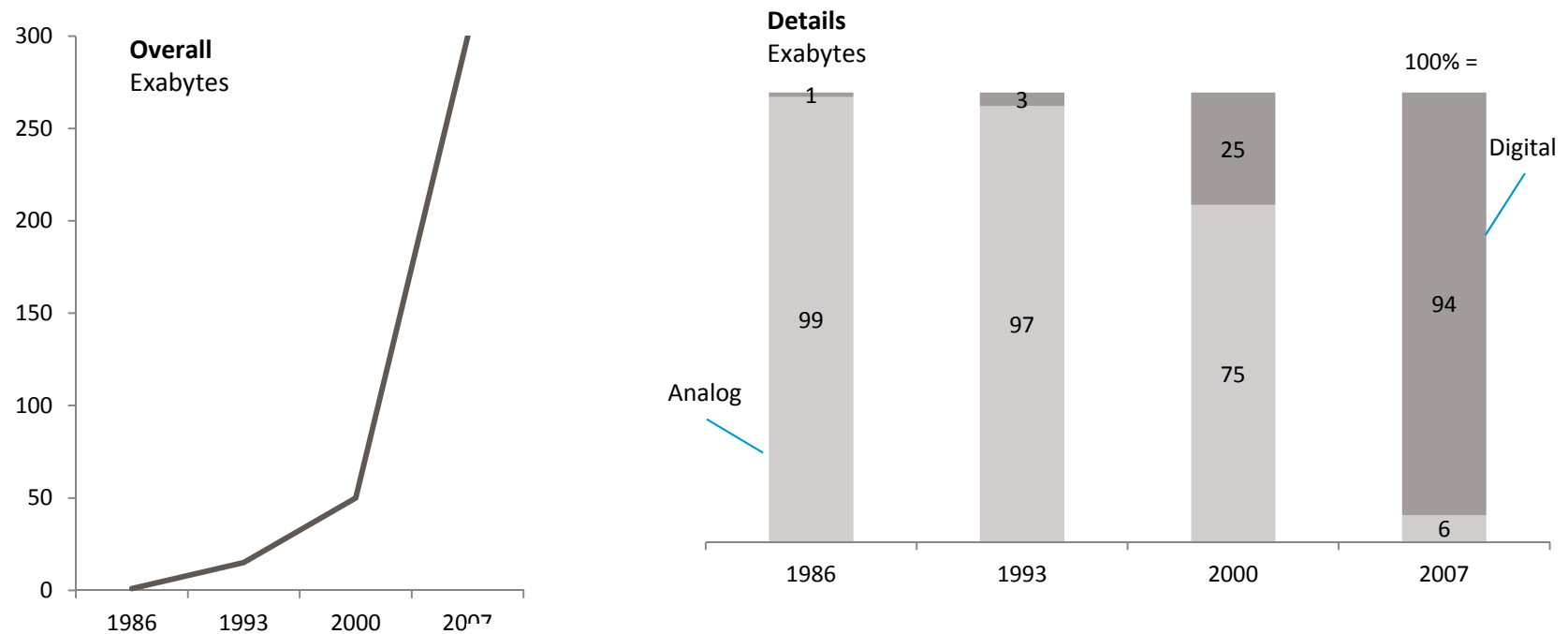


Loyalty program



More information will become available to manage supply chains. Retailers providing POS information, consumer participating through social media. Estimated 45GB of data currently exists for each person on the planet, that's a mind-blowing 281 Billion Gigabytes in total.

The amount of data available to manage supply chains increases



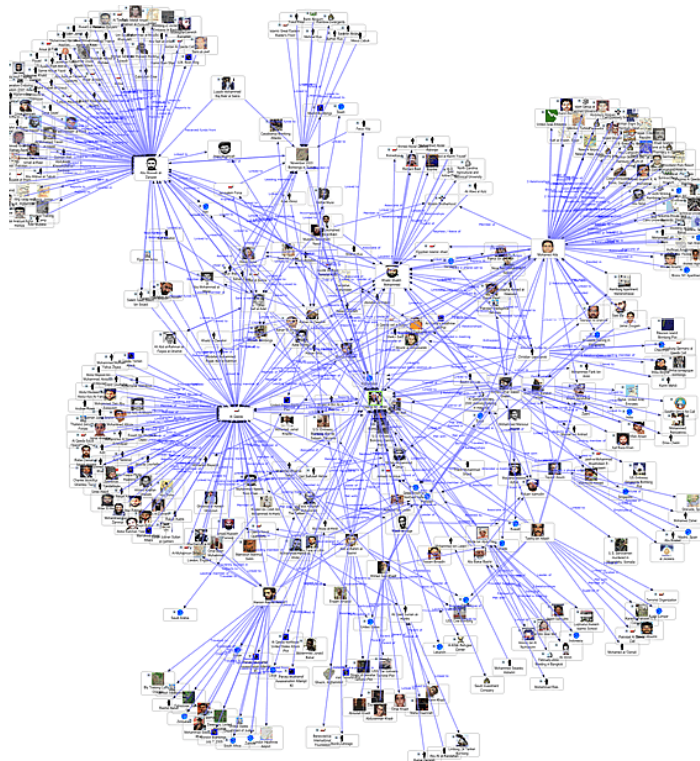
SAP Hana

NETEZZA
an IBM Company

TERADATA

Source: Hilbert and López, "The world's technological capacity to store, communicate, and compute information, Science 2011"

1. Social media forecasts to optimally deploy stocks in a region



Google searches and **Twitter** communication have predictive value and can be used to deploy goods from a central stock keeping point. This lowers safety stocks and increases customer service.

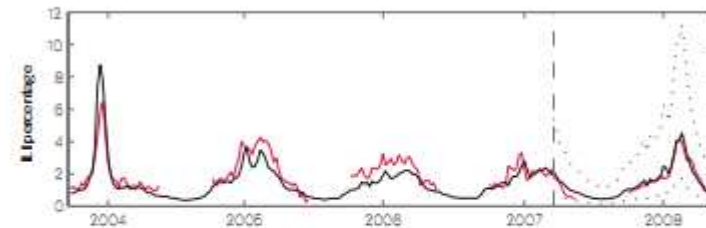
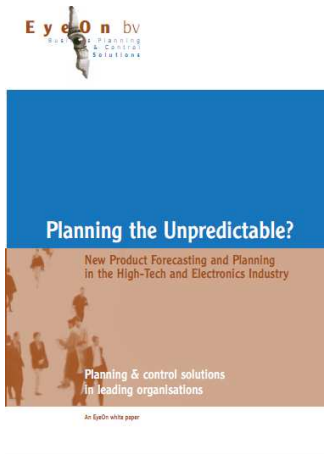


Figure 2: A comparison of model estimates for the Mid-Atlantic Region (black) against CDC-reported ILI percentages (red), including points over which the model was fit and validated. A correlation of 0.85 was obtained over 128 points from this region to which the model was fit, while a correlation of 0.96 was obtained over 42 validation points. 95% prediction intervals are indicated.

Managing new products key success factor for High Tech Companies

- Decreasing product life cycles and more frequent product introductions
- Traditional statistical forecasting techniques
- Forecast typically prepared by product marketer that developed the product (will always be a success!)



46% of product development \$ is spent on products that fail in the marketplace

Average forecast accuracy NPI new products 40%, line extensions 50% (Kahn, 2002)

Getting NPI forecasting improved has the highest priority in the High Tech and Electronics industry (4.8 on a scale of 5) (Aertsen, 2008)

2. Google Searches to improve new product forecasting

- Use searches for a new product to predict the sales of that product
 - High levels of pre-launch marketing activity
 - Heavily advertised launch dates

Google Insights for Search beta [Help](#) | [Sign in](#) | [Download as CSV](#) | [English \(US\)](#) +1

Compare by <input checked="" type="radio"/> Search terms <input type="radio"/> Locations <input type="radio"/> Time Ranges	Search terms Tip: Use quotation marks to match an exact phrase. ("table tennis") <input type="text" value="borat"/> + Add search term	Filter Web Search Worldwide 2006 All Categories
--	---	--

Web Search Interest: borat

Worldwide, 2006

Categories: [Arts & Entertainment \(75-100%\)](#), [Reference \(0-10%\)](#), [Online Communities \(0-10%\)](#), [more...](#)

⚠ The categorization taxonomy of Google Insights for Search has been updated during December 2011. [Learn more](#)

⚠ An improvement to our geographical assignment was applied retroactively from 1/1/2011. [Learn more](#)

Interest over time



See worldwide top rising searches by c

- [A Hebrew in 'Borat' has Israel in stitches](#)
- [B 'Borat' victims upset at being duped](#)
- [C Review -- Borat](#)

Kulkarni et al, 2011

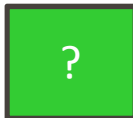
	4 weeks calibration	No pre-launch search
No search covariates	7.19	
No advertising effect	7.28	
With advertising effect	7.66	
With only movie covariates		11.97



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3. Use communities to forecast demand for new products



SUCCESS



FAILURE

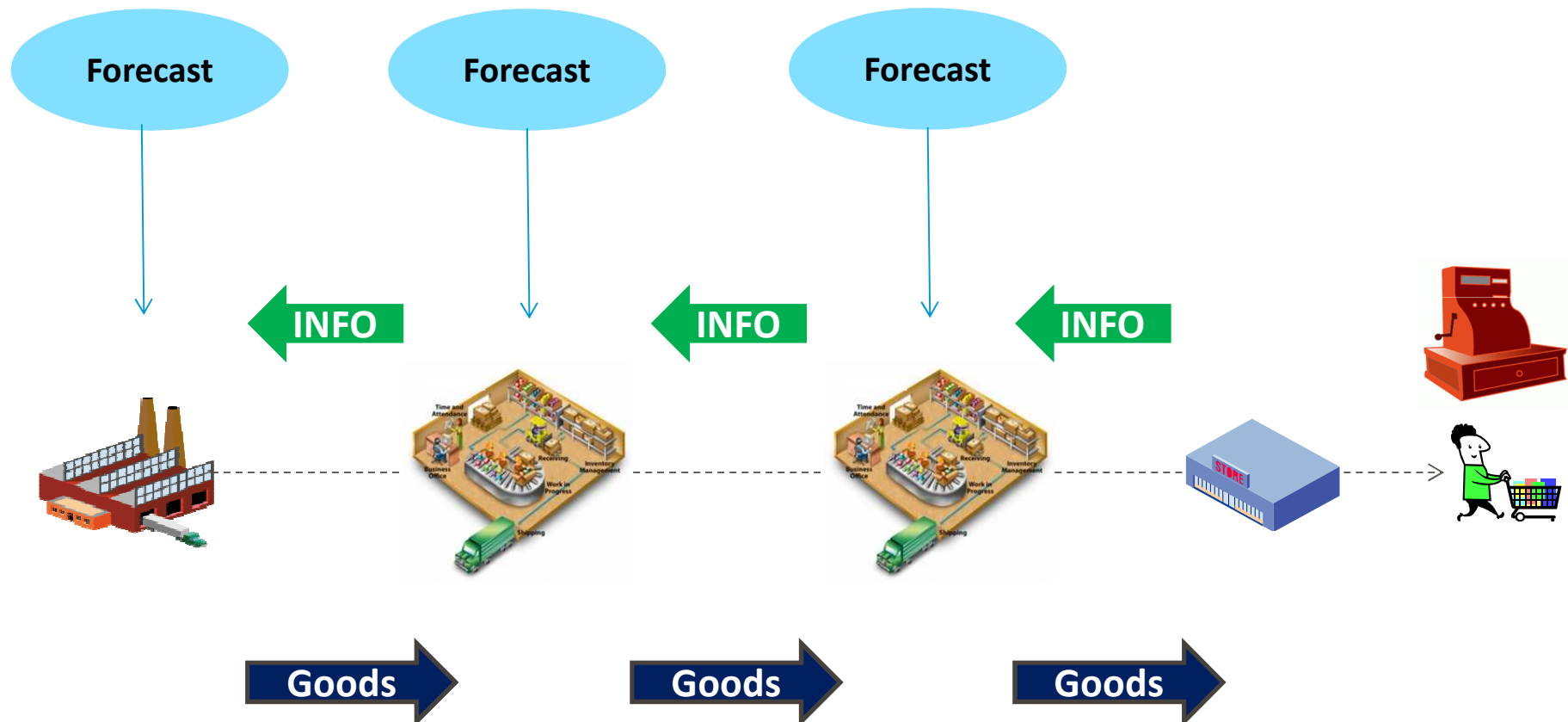
3. Use communities to forecast demand for new products

By motivating the team to answer questions, share insight and make accurate predictions about new products you receive an analytical, real-time view into the true state of your new products.



Crowd forecasting

4. Control towers: joined forecasting and planning

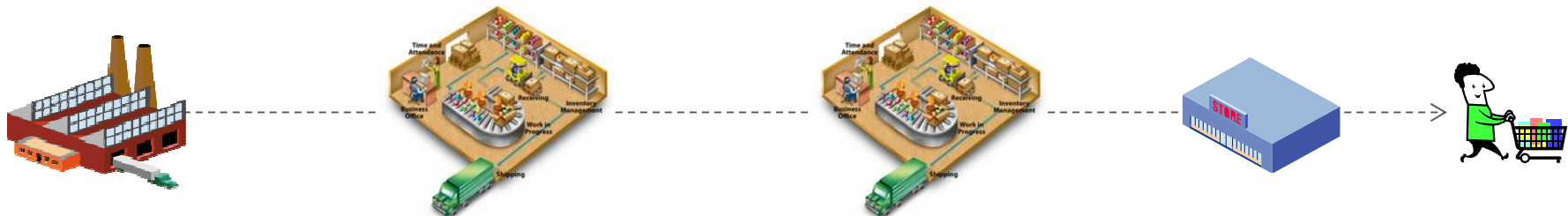


4. Control towers: joined forecasting and planning



Value chain Dashboard

Customer Forecasting



Goods

Goods

Goods

4. Control towers: joined forecasting and planning

Promotions



Phase in



Point of sales



Seasonality



Events



Phase out



Cross-influences between
products & categories

Specialised baseline &
event algorithms

$$y_t = \beta_0 + \sum_{i=1}^n \beta_i dSEASON_{i,t} + \beta_{11} TEMP_t + \beta_{12} SUNHDAY_t + \beta_{13} dHOLIDAY_t + \beta_{14} dEVENT_t + \beta_{15} dTHEME_t \\ + \beta_{16} dMBS_t + \beta_{17} CPI_t + \beta_{18} CPI2_t + \beta_{19} PROMPRES_t + \sum_{i=1}^n \beta_{20+i} dPROMWEEK_{i,t} \\ + \sum_{i=1}^n \beta_{21+i} dBRAND_{i,t} + \beta_{22} dFOLDERFRONT_t + \beta_{23} dMULTIBUY_t + \beta_{24} dTV_t \\ + \sum_{i=1}^n \beta_{25+i} dRETAILER_{i,t} + \sum_{i=1}^n \beta_{26+i} dCBRAND_{i,t} + \sum_{i=1}^n \beta_{27+i} dSCRBAND_{i,t}$$

5. Statistics does not mean we end up with a high quality plan!













3. Forecast Accuracy: 201108

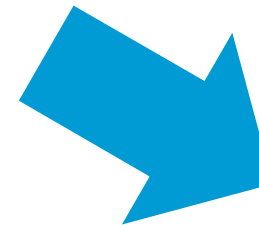
SO 0070

Periode sep-11

Note this is baseline forecast made

Forecast Accuracy 60%

A	 72%	 63%	 49%	 66%
B	 64%	 60%	 2%	 40%
C	 75%	 31%	 -26%	 0%
	X	Y	Z	















3. Forecast Accuracy: 201108

SO 0070

Periode jul-11

Note this is final forecast made i

Forecast Accuracy 49%

A	 66%	 46%	 17%	 54%
B	 57%	 56%	 -9%	 33%
C	 76%	 35%	 -25%	 2%
	X	Y	Z	

Understanding humans

- Anchoring
- Seeing systematic patterns in randomness, and the human race is brilliant in 'explaining' these random movements in hindsight
- Decision making in groups
- Politics



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Politics!



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Understanding humans

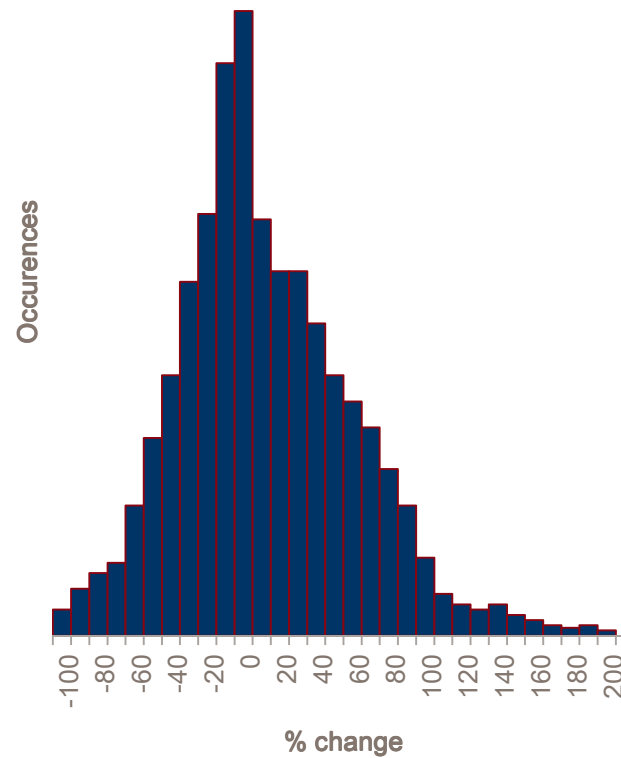
- Anchoring
- Seeing systematic patterns in randomness, and the human race is brilliant in 'explaining' these random movements in hindsight
- Decision making in groups
- Politics
- Role of the planner



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Planners tend to make adjustments because it is their job!

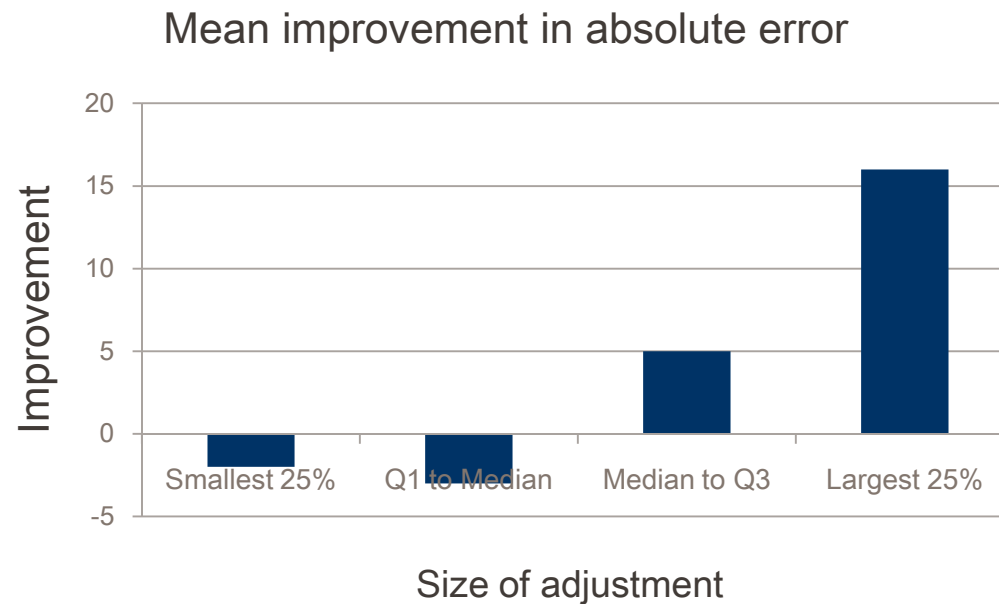


Many small adjustments,
Very few large adjustments

Goodwin et al, 2010

Their job does not necessarily mean improving the forecast!

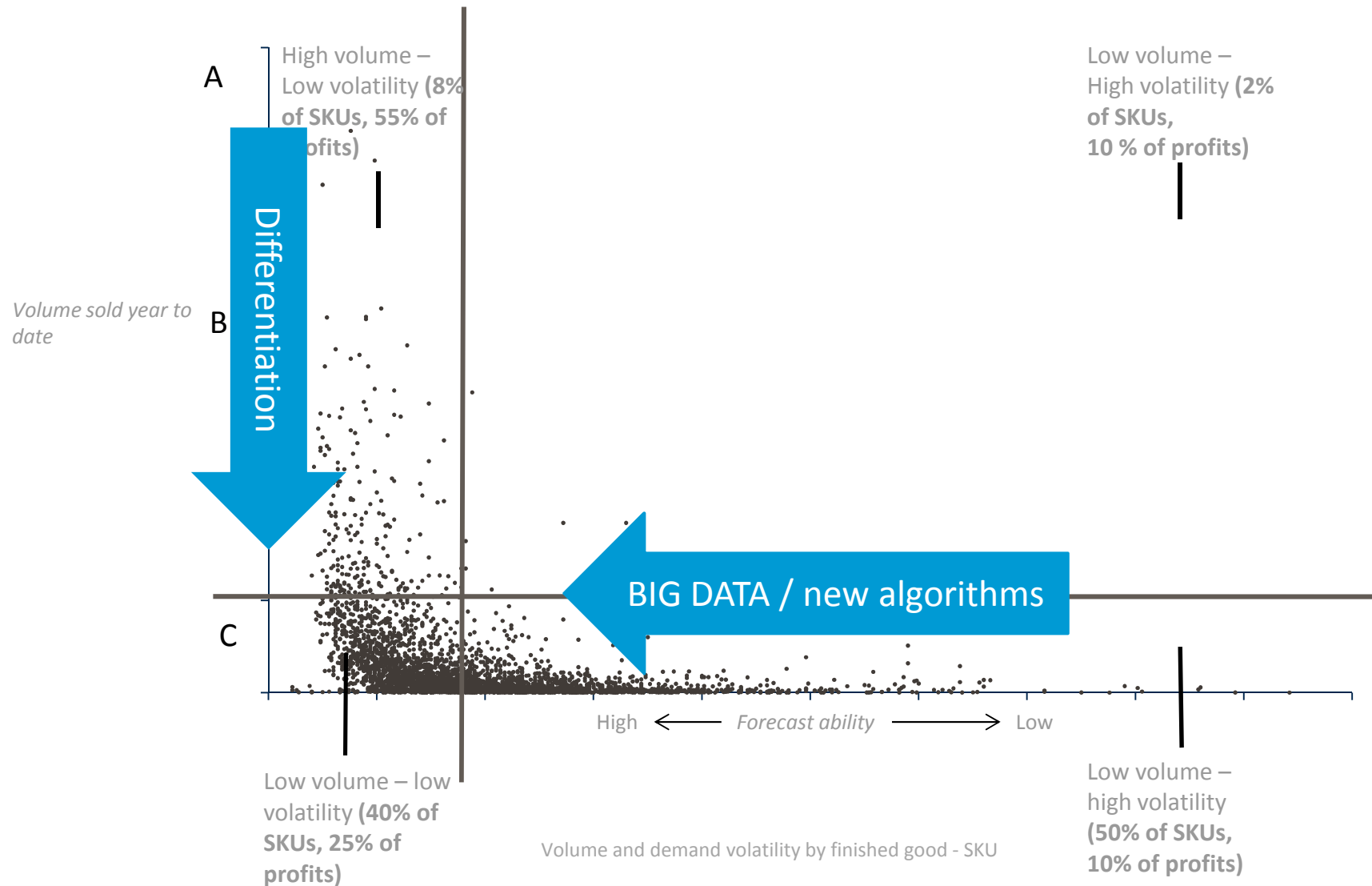
- Predominance of small adjustments suggests forecasters were tweaking forecasts just to show they were doing their job



- Only adjust for important reasons ...and document these reasons

Goodwin et al, 2010

In summary: increase forecast ability through consumer connected BIG DATA





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Croylaan 14

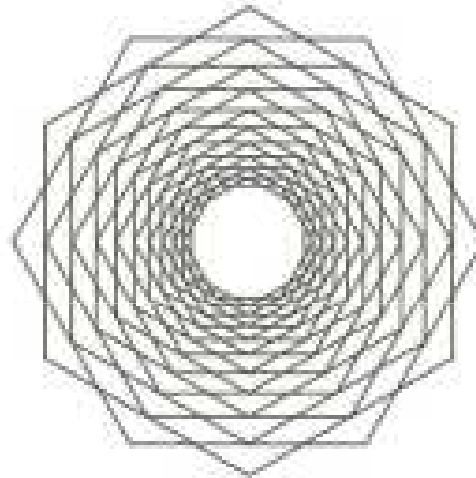
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