# Sales Forecasting: A New Approach

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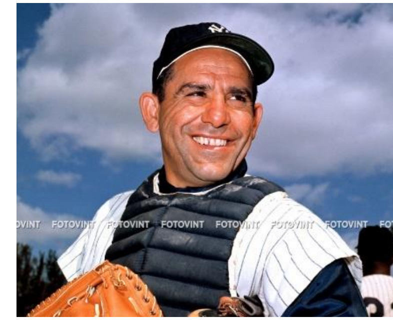
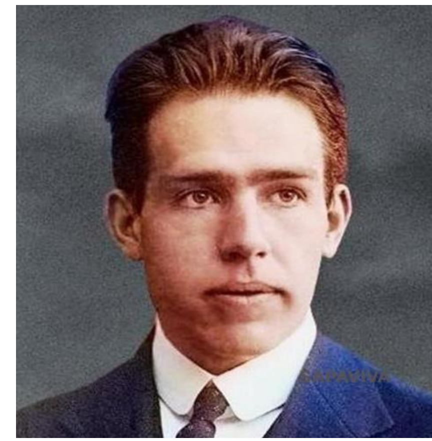
# Predicting the Future



“I don’t like forecasting . . .
particularly when the future is involved!”- Yogi Berra



“Prediction is very difficult. . .
especially about the future!”- Niels Bohr



“All models are wrong. . .
some are useful!”- George E.P. Box

# Supply Chain & Demand Headlines- 2021

- Supply Chain Execs Respond as Pandemic Creates E-Commerce Surge - *AreaDevelopment.com*

- Malaysian Semiconductor Plant To Shut Down After Covid Deaths - *AutoSpies Auto News*

- Due to ongoing pressures from e-commerce and post-pandemic demand, ocean carriers are operating at crisis-driven velocity for the foreseeable future - *Supply Chain Management Review*

- Industry Moves To Rid Itself Of "Just In Time" Supply Chain Weaknesses *- Auto Spies*

- COVID-19: Millions Of J&J Doses Thrown Away After Factory Mixup- *Clarkstown Daily Voice*

- Consumer Price Index up 8.3%, August 2021 vs. August 2020

# Supply & Demand Impacts-2022

- J.B. Hunt saw demand for its truckload services skyrocket after challenges with rail velocity restricted the carrier's intermodal operations – *Supply Chain Dive, April 20*

- Sherwin-Williams has deployed its private fleet of trucks and railcars to speed up suppliers' raw materials deliveries as logistics bottlenecks constrain their ability to produce paint. –*Supply Chain Dive, May 3*

- Due to soaring fertilizer costs and chemical shortages, and protracted drought conditions, farmers are now planting different and smaller quantities of certain crops. Some experts believe forecasts for the 2022 growing season may outstrip existing production resources and may be overly ambitious. – *Epoch Times, May 4*

- In Shanghai, ships awaiting berth increased 34% over the past month and take 74 days longer to arrive in a warehouse in the U.S*. – LMA Consulting, May 6*

- 66% are making significant changes to driving habits due to fuel *prices- Yahoo/Maru survey, May 1*

# Inaccurate Forecasts


## What do we do about them?

- Complain
- Blame Sales/Marketing people
- Use complex algorithms & formulae
- Buy new forecasting software
- Look for better mathematics
- Keep increasing safety stocks and lead times

## What should we do about them?

- Change approach, methods, & processes
- Focus on supply chain agility, because inaccuracy is here to stay

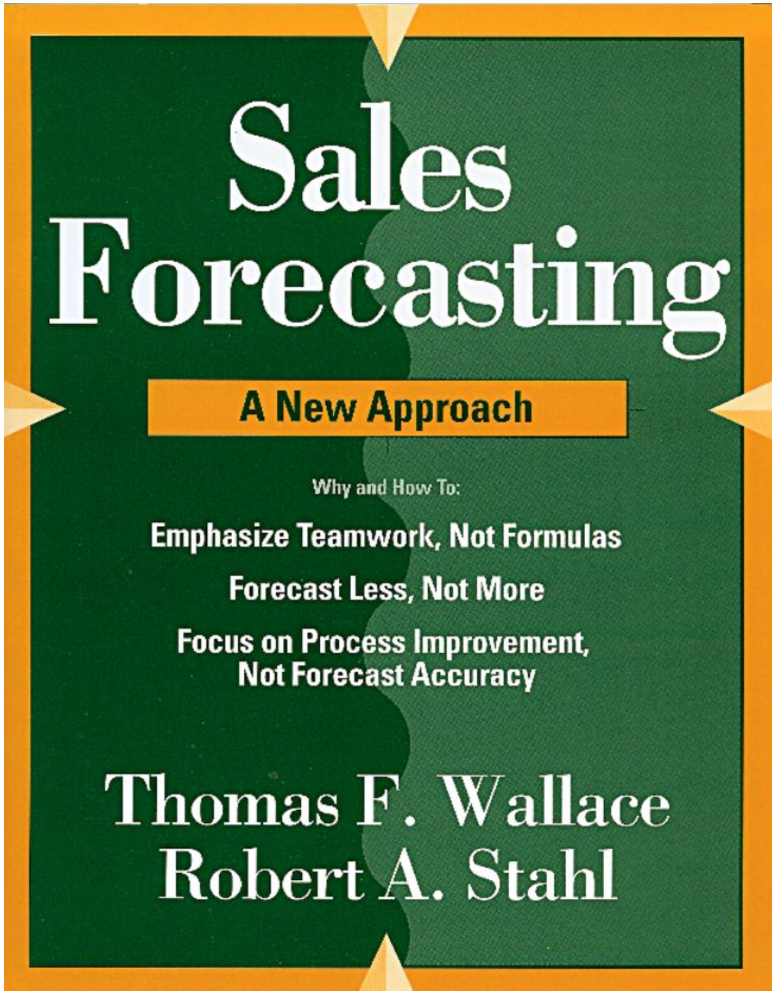
# Supply Chain Goals

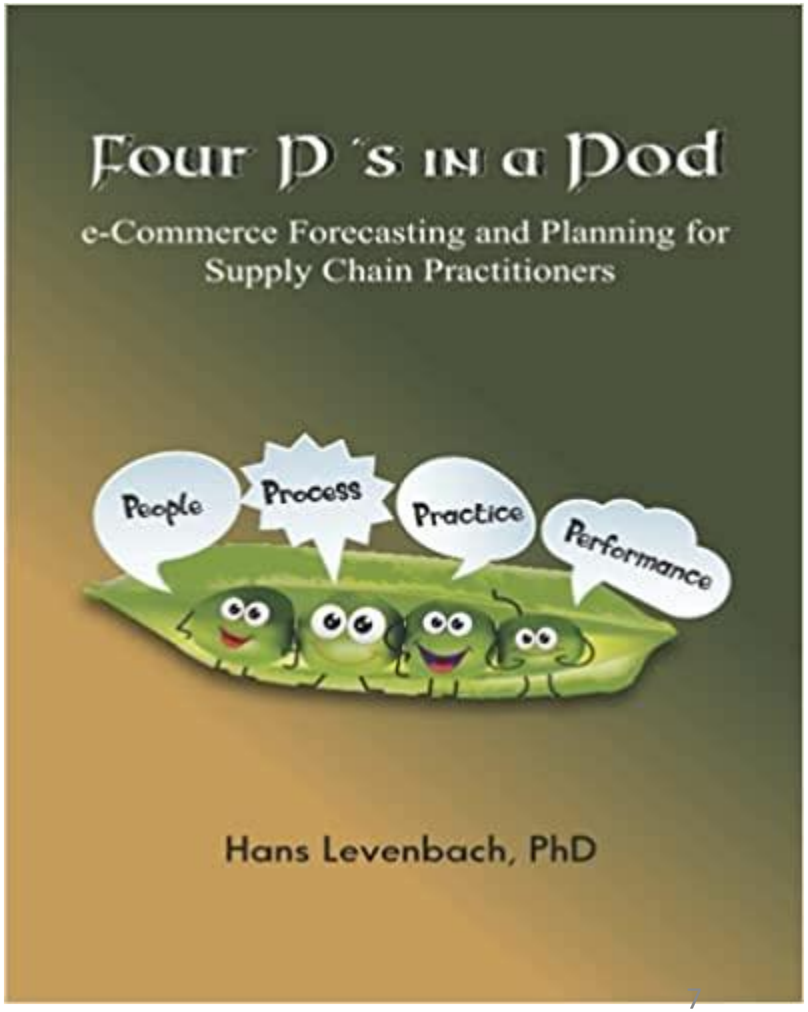
## Achieve World Class Standards in

- Cost
  - ✓ Operations expenses
  - ✓ Inventory carrying costs
- Quality
  - ✓ Product
  - ✓ Processes
- Delivery
  - ✓ Reliability
  - ✓ Responsiveness

According to a supply chain survey by Gartner and SCDigest, “forecast accuracy and demand variability" were cited as the top barriers preventing businesses from achieving their supply chain goals.

# The Reference Books



# Gripes & Myths

- You can’t forecast this business.
- My job is to sell, not to forecast sales.
- We need more detail in our forecast.
- Forecasting is a waste of time around here; nobody ever reads the forecasts.
- We know the forecast is always going to be wrong. There’s nothing we can do about it except hold more inventory.

- An accurate forecast would solve all our problems.

Reference: Foresight Magazine article, Bob Stahl

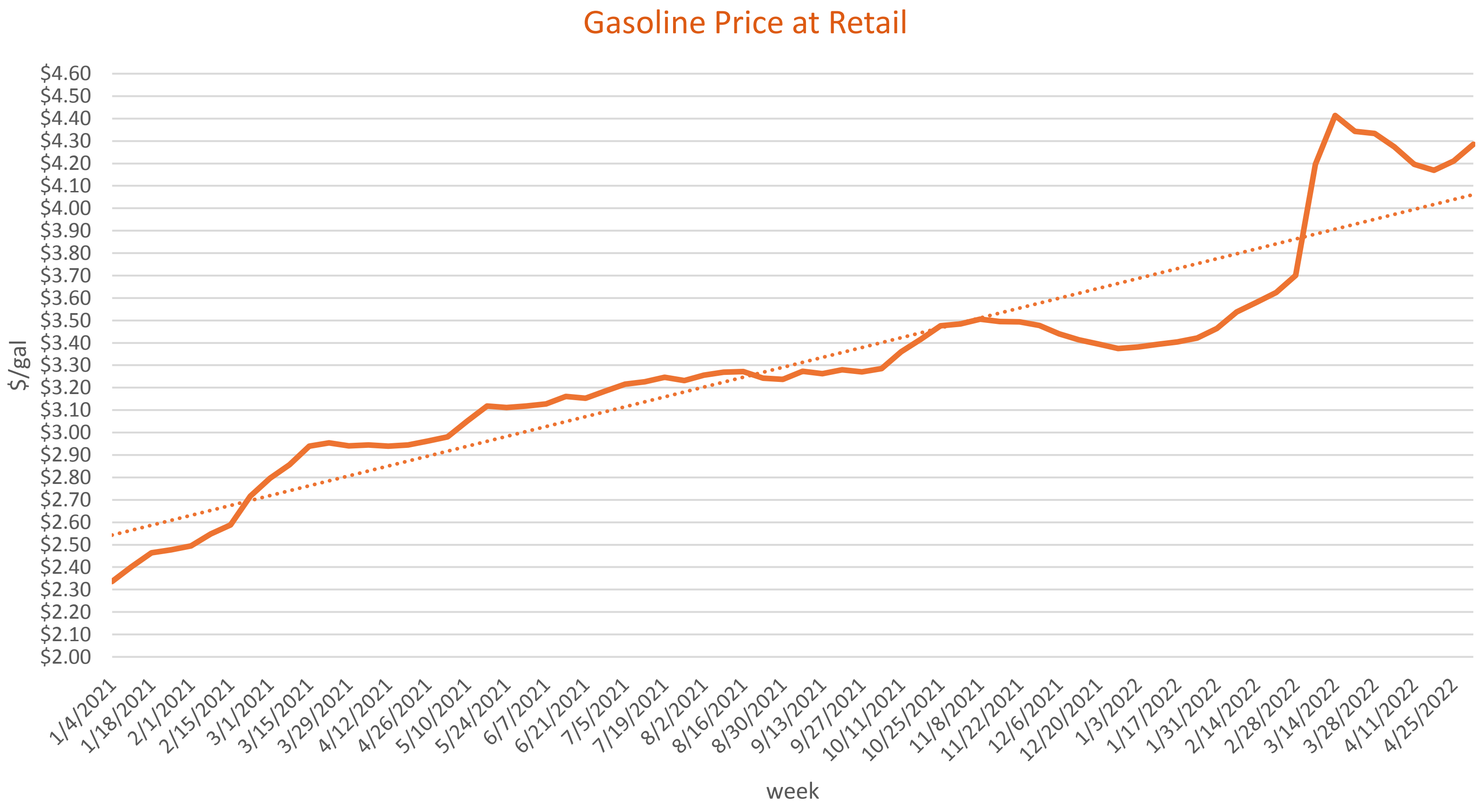
# Forecasting's Purpose

"Techniques such as agent-based modeling, nonlinear dynamics or network theory can be used to simulate systems, visualize data and detect weaknesses or suggest improvements [but] . . .

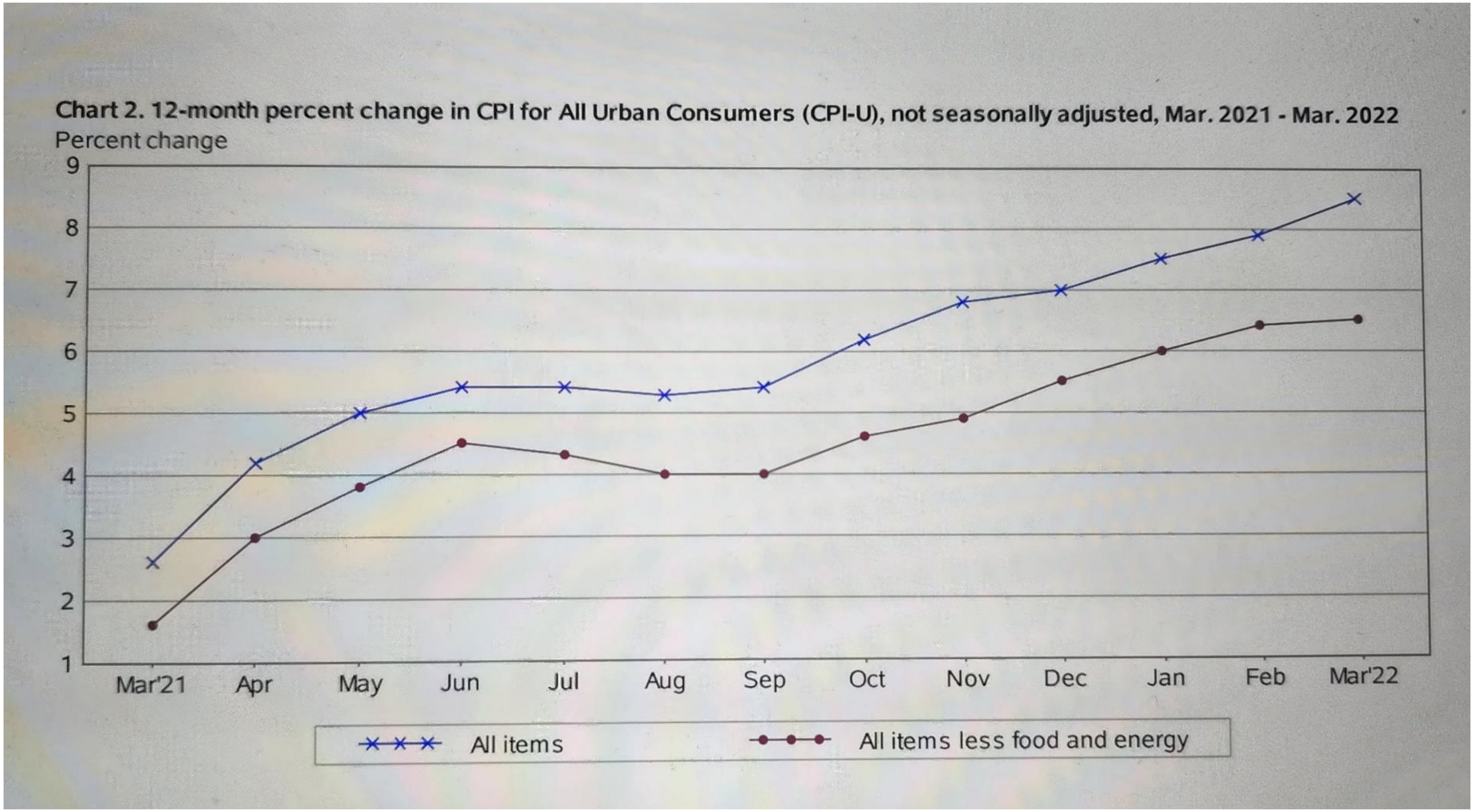
*The aim is less to predict the future, than to prepare for it.*"

**David Orrell, PhD**
**The Future of Everything, 2007**

# U.S. Gasoline Prices
## -U.S. Energy Information Administration



# Consumer Price Index
## -Bureau of Labor Statistics

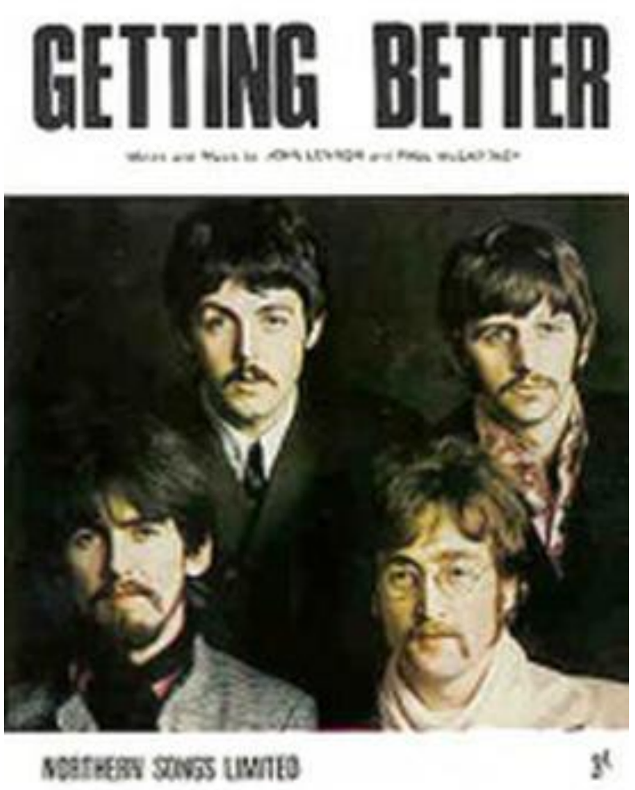


# A new approach

Not doing what you do, only better…

but, rather…

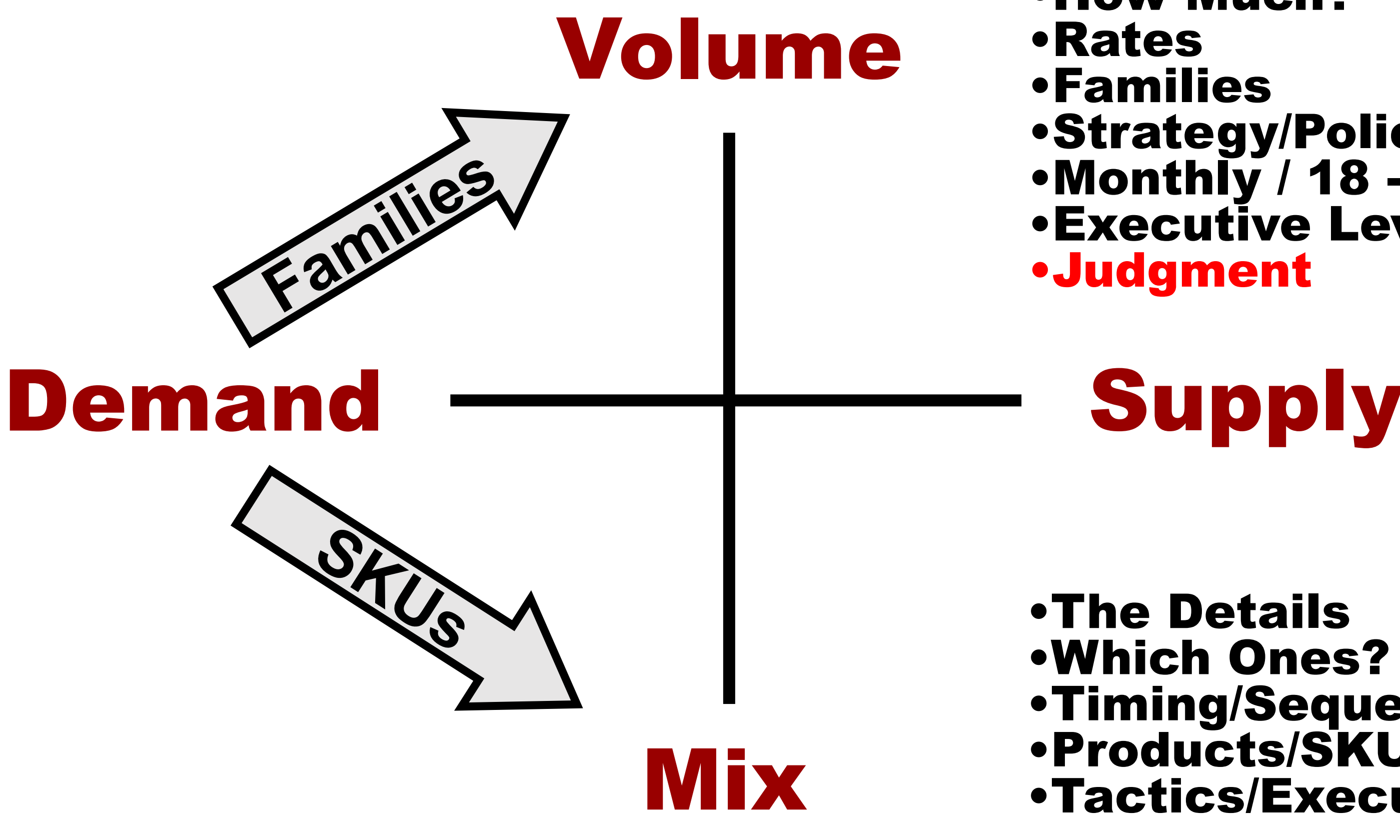
Doing something different to be better




Done well, this approach is:

*Simpler* (not necessarily easier)
and *Better*

# The Fundamentals




- The Big Picture
- How Much?
- Rates
- Families
- Strategy/Policy/Risk
- Monthly / 18 - 36 Mos
- Executive Level
- Judgment

- The Details
- Which Ones?
- Timing/Sequence
- Products/SKU' s/Orders
- Tactics/Execution
- Weekly/Daily 1-3 Mos
- Management Level
- Mathematics

Ref.: Wallace and Stahl

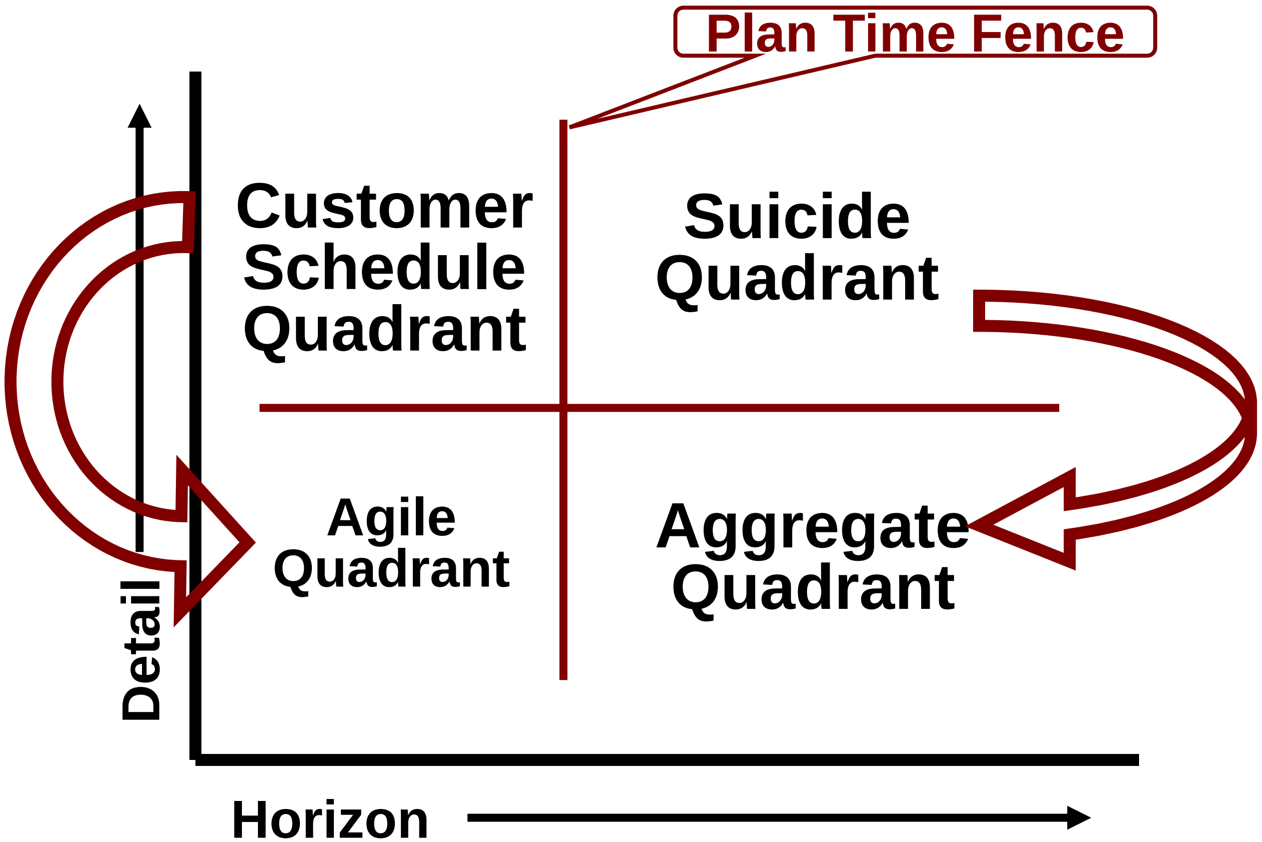
# Mix Problems vs Volume Problems

- <u>Mix</u> problems <u>scream</u> for attention
  - *No rental cars available at the airport today*

- <u>Volume</u> problems barely <u>whisper</u> for attention (until they show up in the mix)
  - *Won't have sufficient semiconductor capacity 18 months from now*

***<u>If you get the VOLUME forecast wrong, it can't be solved by a focus on MIX</u>***

# Quadrants




Ref.: Wallace and Stahl

# How to get better

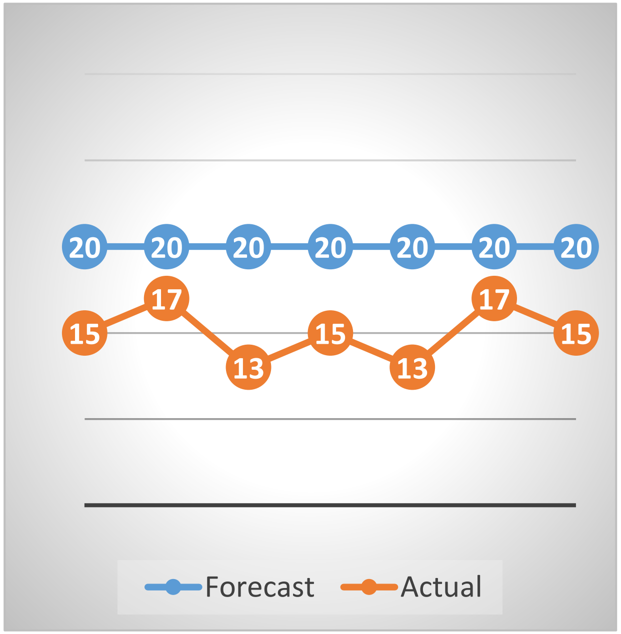
Focus on:

- *Process improvement, not just forecast accuracy*
- *Forecasting less, not more*
- *Teamwork, not formulas*

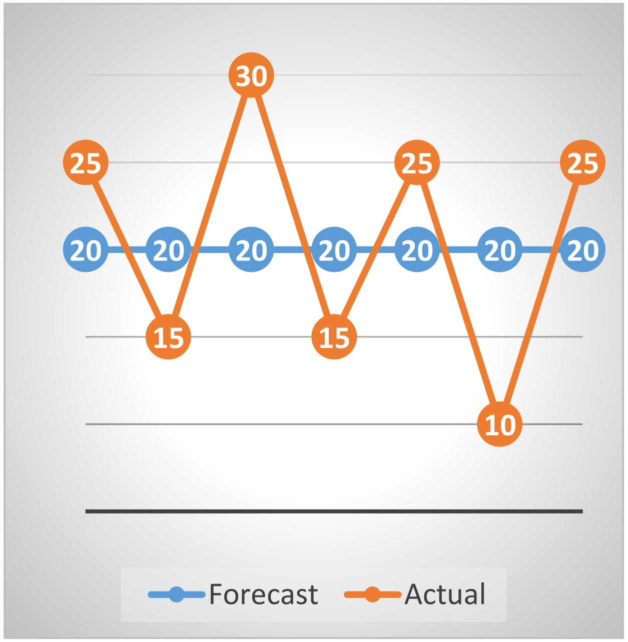
*Let's look at them one at a time.*

# Forecast Accuracy

**RSFE = -35**




**RSFE = +5**




Which is more accurate?
Which can be improved more easily?

# Stamp Out Bias!


- Bias occurs when there is a consistent directional difference between actual sales and the forecast.
- Bias= the sum of (actual – forecast) over time.
- Bias can be reduced more readily than non-directional errors.

# Process Focus

## The ***Production*** Process

**Raw Materials → Conversion → Finished Products**

**1. Manpower**
**2. Machinery**
**3. Methods**

## The ***Forecasting*** Process

**Inputs → Conversion → Forecasts**

**1. People**
**2. Forecasting Software**
**3. Structured Steps**

# The Forecasting Process

## Inputs → Process → Output

### Forecasts:

**Current Customers**
**New Customers**
**Competition**
**Economic Outlook**
**New Products**
**Pricing Strategy**
**Promotions**
**Bid Activity**
**Management Directives**
**Intra-Company Demand**
**Historical Data**
**Software**

1. Data must be validated
2. Are reviewed frequently
3. Represent total demand
4. Present a range of possible outcomes
5. Are integrated with documented assumptions

# Monitor changes in sales forecasts

Waterfall chart

Actual compared to Plan/Fcst

| | Jan | Feb | Mar | Apr | May | Tot |
|---|---|---|---|---|---|---|
| Plan | 10 | 10 | 10 | 10 | 10 | 50 |
| J Act/Fcst | 9 | 10 | 10 | 10 | 10 | 49 |
| F Act/Fcst | 9 | 8 | 9 | 9 | 9 | 44 |
| M Act/Fcst | 9 | 8 | 7 | 8 | 10 | 42 |
| A Act/Fcst | 9 | 8 | 7 | 8 | 8 | 40 |

**Plan**

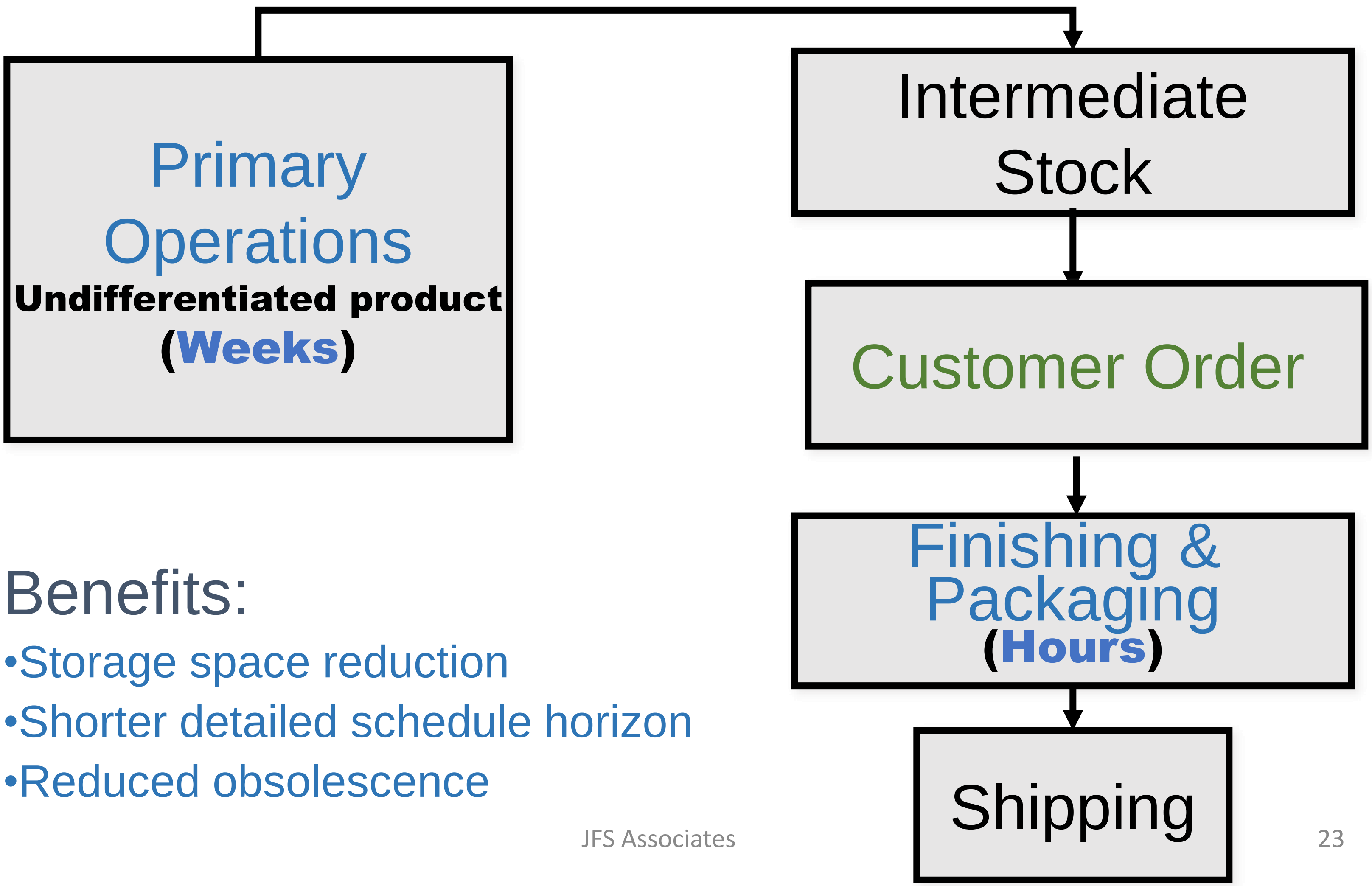
**Act**

**Fcst**

# Forecast Less, Benefit More

- 20% Items = 80% Volume
  - Demand is constant and uniform
  - Forecast Finished Goods
  - Make-to-Stock
- 80% Items = 20% Volume
  - Demand is highly variable
  - Forecast Components
  - Finish-to-Order (Postponement)

# Postponement




## Benefits:

- Storage space reduction
- Shorter detailed schedule horizon
- Reduced obsolescence

# Simplifying Demand Assumptions: Market Facing Families

Proper definition of families promotes the best forecasting!

**Product**

**Fire Retardant Chemicals**

**Market**

- **Automotive**
- **Furniture**
- **Electronics**
- **Construction**
- **and more**

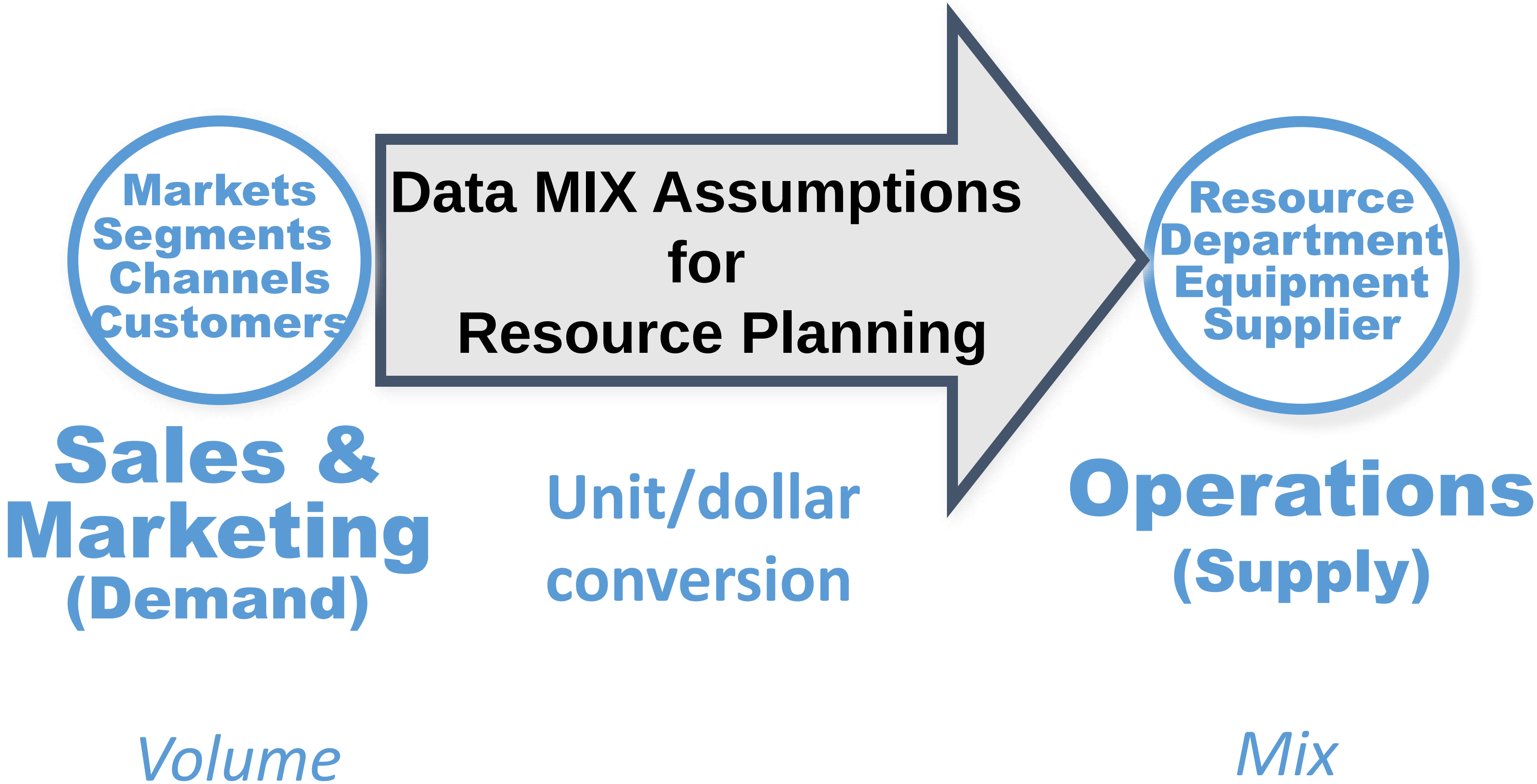
**Customer**

-**Ford**
-**Penna House**
-**Sony**
-**Acme Lumber**
- **and more**

Markets can be tied to extrinsic leading indicators;

Products and Customers can not!

# Simplifying Supply Assumptions: Mix Percentages



# When Sales & Marketing Realize…

1. Maintaining full granularity for the entire planning horizon is a huge wasted effort **(Get out of the Suicide Quadrant)**
2. Family definitions enable the correlation of family-level demand to extrinsic factors that are "leading indicators" **(Use "simplifying data assumptions" to deal with the Mix)**
3. No complex software cost or learning curve are needed to achieve this **(It's about the process, not the technology)**

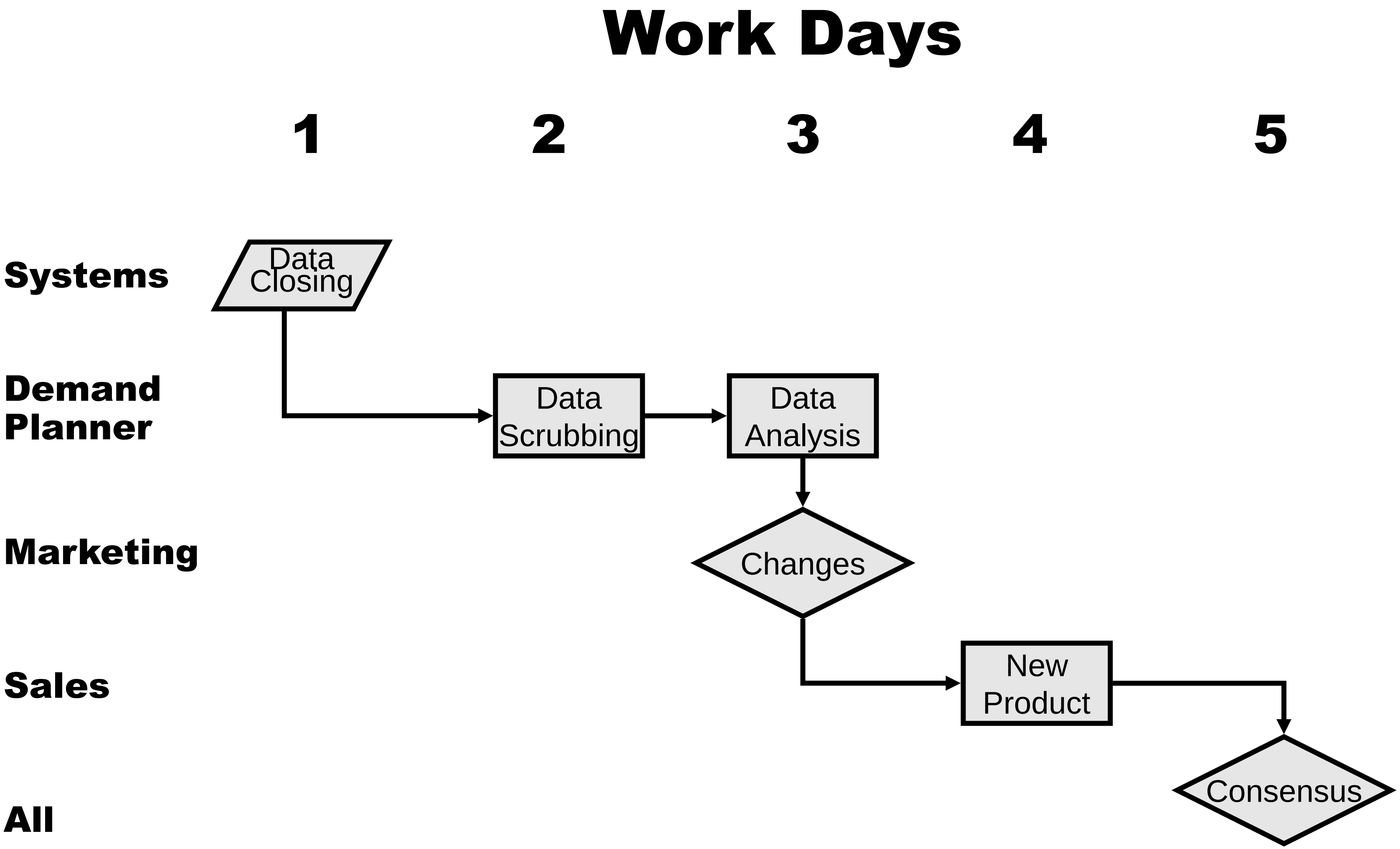
…They willingly and enthusiastically join in the effort!

# The Forecasting Team

- Team Leader/Project Manager
- Sales
- Marketing
- Demand Manager
- Customer Service Manager
- Forecast Analyst
- Systems Support
- Operations
- Finance

A properly functioning team will beat all of the advanced formulas and algorithms every time!

# “Swim-Lane” Chart



# Into the Future

- Less detailed forecasting

    Lean/Agile Manufacturing (flexibility & response)

    Postponement (designing the supply processes accordingly)

    Market facing families

- Teamwork blurring boundaries between

    Departments

    Companies

- Improved & simplified processes

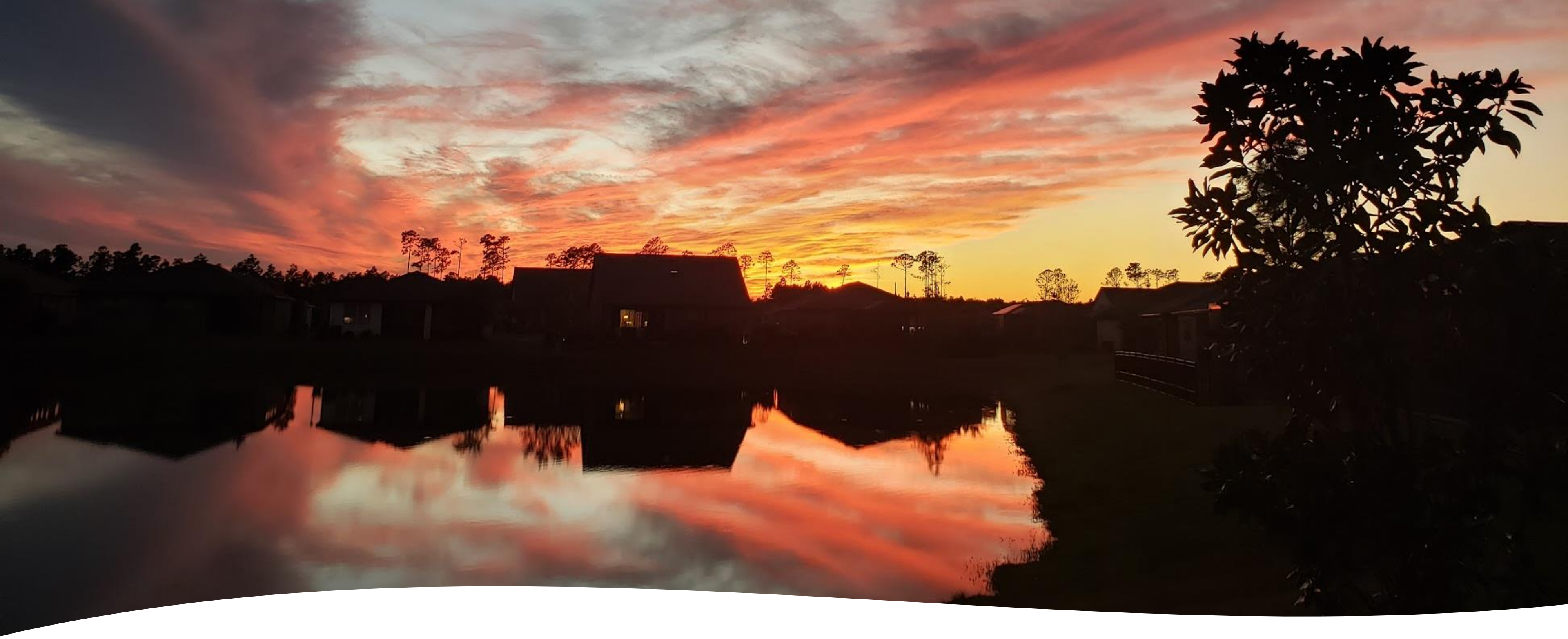
    Include an estimate of error

- Movement down through the ‘quadrants’

    Stay out of that Suicide Quadrant!


Forecasting becomes

simpler (not necessarily easier) and better!



# Thanks for Listening!

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