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President, CEO & Co-founder of Business Forecast Systems, Inc.

Co-author of Forecast Pro product line.

More than 33 years of dedicated business forecasting experience.

Served on the board of directors of the International Institute of Forecasters for 12 years. Is currently serving on the practitioner advisory board of *Foresight: The International Journal of Applied Forecasting*. 
20 years of experience with statistical consulting, sales forecasting, regression modeling and marketing analytics.

Experience across a broad range of industries, including Consumer Packaged Goods, Telecommunications, Technology, Retail, Automotive and Finance.

Undergraduate degree in Applied Mathematics from Harvard University and a Master’s of Science in Statistics from the University of Chicago, where she also served as a Lecturer.
What We’ll Cover

- Introductions
- Replacement & Line Extensions
- New to Company
- New to World
- Summary
- Q&A
Replacement Products and Product Line Extensions
Replacement Products and Product-Line Extensions

When forecasting replacement products or product line extensions you will often want to leverage the data that exists for the predecessor products.

Approaches can include:

- Judgment and Market Research
- Item Supersession (i.e., mapping histories)
  - Top-down Forecasting
  - Custom Component Model
You create a “forecast history” for the new product using the demand histories of predecessor products and the new product.

For a replacement product this may be as simple as merging the old product’s history with the new product’s history.

More complex mapping may be necessary depending on the circumstances.
Old Product

New Product
Forecast History
When forecasting replacement products or product line extensions you will often want to leverage the data that exists for the predecessor products.

**Approaches can include:**

- Judgment and Market Research
- Item Supersession (i.e., mapping histories)
- Top-down Forecasting
- Custom Component Model
Group-level data is higher volume, will often exhibit more structure and will have a longer demand history than the product line extensions and replacement products.

To generate a **top-down forecast**, you first forecast at the group level using the aggregated history. Then, you forecast at the lower levels. Finally, you apply proportionality factors to lower-level forecasts so that the forecasts sum to the top-level forecast.

Forecasting a product hierarchy is the subject of our next webinar.
When forecasting replacement products or product line extensions you will often want to leverage the data that exists for the predecessor products.

Approaches can include:

- Judgment and Market Research
- Item Supersession (i.e., mapping histories)
- Top-down Forecasting
- Custom Component Model
The Custom Component Model was developed by BFS and is allows you to judgmentally adjust one or more forecast components. It is useful when:

- Components are not easily extrapolated (e.g. trends for long term forecasting)
- Data series are short (e.g. new products)
- You need to model events that have not occurred historically
- You wish to enforce a “launch total”

For Replacement Products and Line extensions, Custom component model can “borrow” components from existing products.
Like Exponential Smoothing Models, Custom Component models allow for Level, Trend, Seasonal and Event components.

Unlike Exponential Smoothing, the components can be determined judgmentally or estimated from the data.
New to Company
When forecasting **new-to-company products** you obviously don’t have internal data—external data may or may not be available.

**Approaches can include:**

- Judgment and Market Research
- Custom Component Model
- Assumptions Based Models
- Market Share Forecasting
- Forecasting by Analogy (looks-like)
Assumption-Based Modeling

- Useful for new products with longer development cycles
- The forecast is the result of a set of assumptions.
- The assumptions are subject to periodic review and revision.
- The forecasts are never modified directly—*only the assumptions*.
When forecasting **new-to-company products** you obviously don’t have internal data—external data may or may not be available.

**Approaches can include:**

- Judgment and Market Research
- Custom Component Model
- Assumptions Based Models
- Market Share Forecasting
  - Forecasting by Analogy (looks-like)
When entering a new market, organizations will often focus on the market share they expect to capture rather than the unit sales.

Market research groups and data providers such as Nielsen, IRI and IMS can often provide considerable insight into the size of the current market and its composition.

Translating a market share forecast into a unit forecast is usually fairly straightforward.
New to Company

When forecasting **new-to-company products** you obviously don’t have internal data—external data may or may not be available.

**Approaches can include:**

- Judgment and Market Research
- Custom Component Model
- Assumptions Based Models
- Market Share Forecasting
- Forecasting by Analogy (looks-like)
Forecasting by Analogy

- Assumes the initial demand pattern will be similar to an analogous product’s initial demand pattern or to a “launch profile” that you’ve created.

- Can be used with or without historic demand data.
## The Launch Profile

### Analogy data for 101.xls [Compatibility Mode] - Microsoft Excel

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<th>Period</th>
<th>Analogy series</th>
<th>Relative Percentage</th>
<th>Cumulative Relative Percentage</th>
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</thead>
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<td>4.2%</td>
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<tr>
<td>12</td>
<td>190</td>
<td>8.1%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

![Analogy series graph](image)
Assumes the initial demand pattern will be similar to an analogous product’s initial demand pattern or to a “launch profile” that you’ve created.

Can be used with or without historic demand.

When used without historic demand, an estimate of the initial sales over a specific period of time (the “launch total” over the “launch horizon”) is required.

If historic demand exists, the launch total can be estimated using the analogy series’ cumulative relative percentage.
New-to-world forecasting is the most challenging of all.

Approaches can include:

- Judgment and Market Research
- Assumption-Based Models
- Forecasting by Analogy
- Custom Component Model
- Diffusion Models (e.g., Bass)
The Bass Model

- Used to forecast first time adoptions (not total demand) of new-to-world products.
- Captures adoption rates of innovators (early adopters) and imitators.
- Can be used with or without historic demand data.
Diffusion models forecast cumulative sales as an elongated S shape.
The Bass Model

- Requires three parameters

- Parameters can be set judgmentally or estimated once there are 5 or more data points

- There is a considerable body of literature on the model including coefficients for different types of technologies.
The type of new product will often dictate the approach.

Judgment and market research play an important role.

When forecasting replacement products and/or line extensions you can leverage the data for the predecessor products.

When forecasting new-to-company and/or new-to-world products you can leverage experience with similar products or take an assumption-based approach.

The above text is an overview of common new product forecasting methods. It is written to be very accessible to the practitioner.
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Effective Strategies for Forecasting Product Hierarchies

April 5, 2018 @ 1:30 pm EDT

Presented by Eric Stellwagen, CEO and Sarah Darin, Senior Consultant, Business Forecast Systems, Inc.

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March 7-9, 2018 in Orlando FL, USA

This comprehensive class surveys business forecasting methods

- explains how they work conceptually
- discusses their pros and cons
- demonstrates best practices for implementing these methods in a real-world environment

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Examples from today’s Webinar used Forecast Pro

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Thank you for attending!