

# Scaling: Using Advanced BOM's

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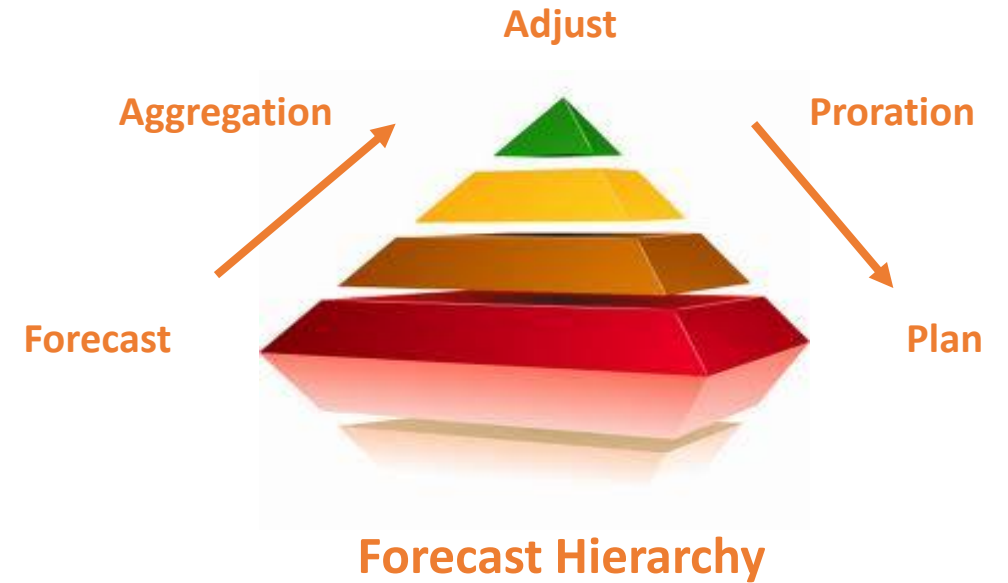
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# Typical Forecasting Process

- ▶ Import history at SKU level
- ▶ Statistical forecast at SKU level
- ▶ Aggregate to family
- ▶ Adjust family forecast
- ▶ Prorate adjustment to SKU
  - Proration on each SKU's % of the monthly sales forecast

## Forecast Proration Issues:

- Under forecasting low volume SKU's
  - 0 monthly SKU forecasts, receive no proration of family forecast adjustments
- Over forecasting low volume SKU's
  - Will that one-time spike in 3X sizes SKU repeat next year?



# Other Forecasting Challenges

▶ Typical Apparel Company Inventory Items:

- 25,000 SKU's (Style / Color / Size)
- 1,200 Style / Color combinations

▶ Problems many companies face:

- High number of SKU's
- Very sporadic sales history or fringe SKU's
- Demand spikes that will not repeat
- Marketing talks aggregate levels – Style or Style / Color, not SKU's
- Limited time for forecast review

<u>Product</u>	<u>SKU's per Style / Color</u>	<u>Typical Sizes</u>
T-Shirts	6	S, M, L, XL, 2X, 3X
Running Shoes	14	6, 6.5, 7, 7.5, 8, 8.5, etc.
Men's Pants	40+	30 X 30, 30 X 32, 30 x 34, etc.

# What Advanced BOM Does

- ▶ Uses data generated for Aggregate records to create a Parent / Child relationship

- Example:

<b>Child records:</b>	<b>13673-BLK-S</b> <b>13673-BLK-M</b> <b>12673-BLK-L</b>
<b>Parent records:</b>	<b>13673-BLK</b>

- ▶ Allows user to select a period of time to compute the % that each child record is of the parent record
  - Uses time periods such as 12 months of Adjusted History or 6 months of Adjusted Forecast to compute the %'s
- ▶ Use the % to “explode” or “prorate” the Aggregate Forecast to the SKU Forecast

# Advanced BOM Procedure

1. Import sales history at SKU level
2. Aggregate sales history to:
  - Style / Color – Mizuno
  - Style / Color / DC – Delta Apparel
3. Generate statistical sales forecast at Aggregate level
4. Conduct forecast review / adjustment at Aggregate level

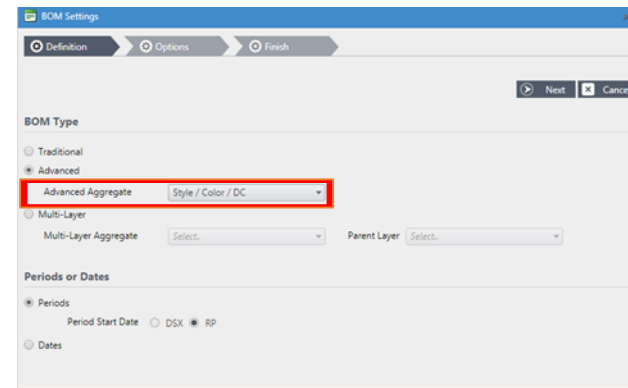
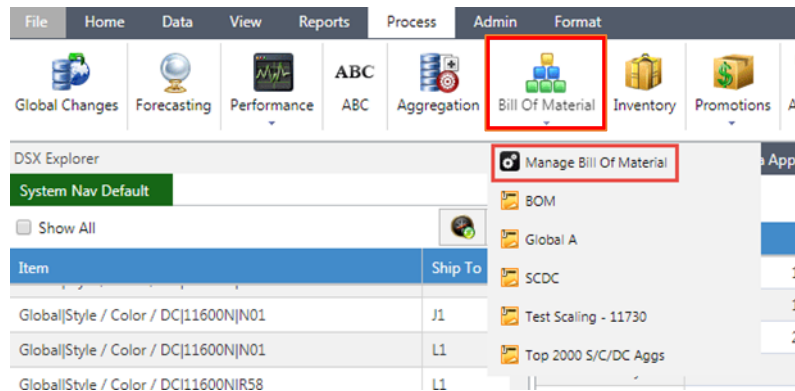
The screenshot shows a software interface with a menu bar (File, Home, Data, View, Reports, Process, Admin, Format) and a toolbar with icons for Global Changes, Forecasting, Performance, ABC, Aggregation, Bill Of Material, Inventory, Promotions, Allocator, Manage Performance Summary, Order Plan, Overstock Transfers, and Substitute Items. Below the toolbar is a 'DSX Explorer' pane with a tree view showing 'System Nav Default' and 'SCDC'. A red box highlights the 'Manage Bill Of Material' icon in the toolbar and the 'Apparel' folder in the DSX Explorer. The main area displays a table with the following data:

Item	Ship To	Customer	Division	January	February	March	April	May	June	July	August	September	October	November
GlobalStyle / Color / DC[11730]B02	J1													
GlobalStyle / Color / DC[11730]B02	W1													
GlobalStyle / Color / DC[11730]B02	L1													
GlobalStyle / Color / DC[11730]B02	K1													
GlobalStyle / Color / DC[11730]B02	Q1													
GlobalStyle / Color / DC[11730]B02	PLT													
GlobalStyle / Color / DC[11730]B02	A1													
Non RL History Y2				863	1,151	623	1,948	880	1,061	1,205	839	2,468	1,945	560
RL History Y2				361	396	50	306	455	1,214	2,358	642	316	420	1,461
Total History Y2				1,224	1,547	673	2,254	1,334	2,275	3,563	1,481	2,785	2,365	2,021
Non RL History Y1				696	689	1,252	3,407	1,073	861	1,320	720	1,035	1,370	532
RL History Y1				264	84	438	833	0	176	840	528	54	492	6,963
Total History Y1				960	773	1,690	4,240	1,073	1,037	2,160	1,248	1,089	1,862	7,495
System Forecast Y1				3,408	2,002	1,476	4,547	1,398	1,806	3,892	1,996	2,213	4,963	2,368
Adjusted Forecast Y1				3,408	1,000	1,476	4,547	1,398	1,806	3,892	1,996	2,213	4,963	2,368

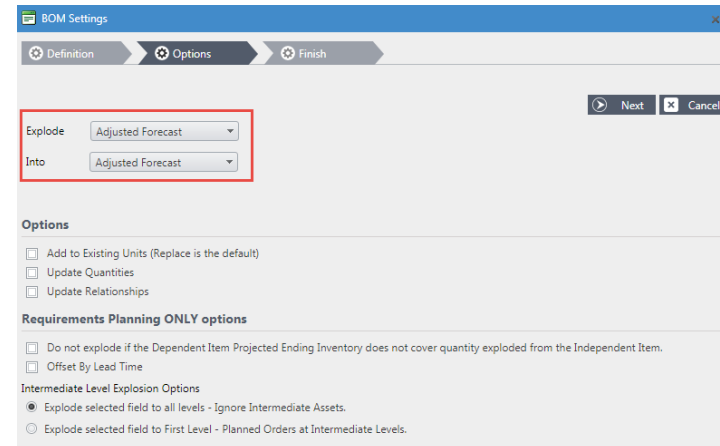
# Advanced BOM Procedure

## 5. Create Advanced BOM setting

- Select Aggregation setting that created aggregate records



## 6. Select Explosion Fields (Explode Adjusted Forecast into Adjusted Forecast)



# Advanced BOM Procedure

## 7. Enter BOM Setting – Select Appropriate Aggregation setting

Item	Ship To	Customer	Division	January	February	March	April	May	June	July	August	September	October	November	
Global[Style / Color / DQ]11730802	J1			Non RL History Y2	863	1,151	623	1,948	880	1,061	1,205	839	2,468	1,945	560
Global[Style / Color / DQ]11730802	W1			RL History Y2	361	396	50	306	455	1,214	2,358	642	316	420	1,461
Global[Style / Color / DQ]11730802	L1			Total History Y2	1,224	1,547	673	2,254	1,334	2,275	3,563	1,481	2,785	2,365	2,021
Global[Style / Color / DQ]11730802	K1			Non RL History Y1	696	689	1,252	3,407	1,073	861	1,320	720	1,035	1,370	532
Global[Style / Color / DQ]11730802	Q1			RL History Y1	264	84	438	833	0	176	840	528	54	492	6,963
Global[Style / Color / DQ]11730802	PLT			Total History Y1	960	773	1,690	4,240	1,073	1,037	2,160	1,248	1,089	1,862	7,495
Global[Style / Color / DQ]11730802	A1			System Forecast Y1	3,408	2,002	1,476	4,547	1,398	1,806	3,892	1,996	2,213	4,963	2,368
Global[Style / Color / DQ]11730802				Adjusted Forecast Y1	3,408	1,000	1,476	4,547	1,398	1,806	3,892	1,996	2,213	4,963	2,368

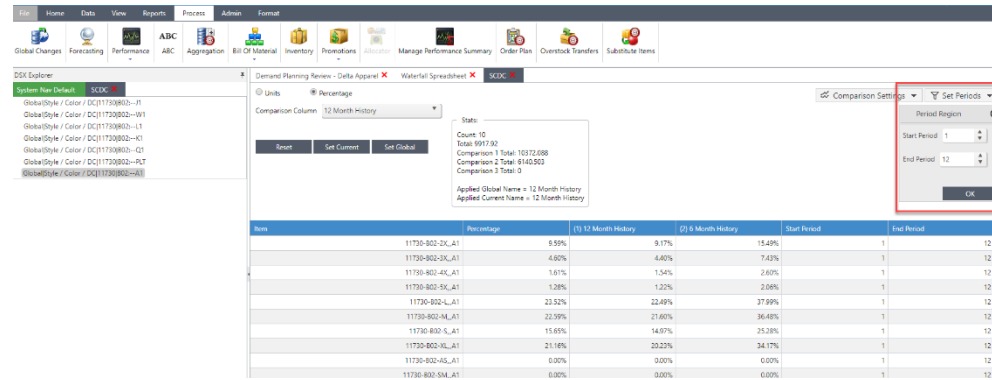
## 8. Select Aggregate record

- Set up comparison field (12 months history, 6 months history, etc)
- Percentage of each SKU to the total displays

Item	Percentage	(1) 12 Month History	(2) 6 Month History	Start Period	End Period
11730-802-2X_A1	9.59%	9.17%	15.49%	1	12
11730-802-3X_A1	4.60%	7.43%	1	12	12
11730-802-4X_A1	1.61%	2.60%	1	12	12
11730-802-5X_A1	1.28%	2.06%	1	12	12
11730-802-L_A1	23.52%	22.49%	37.99%	1	12
11730-802-M_A1	22.59%	21.60%	36.48%	1	12
11730-802-S_A1	15.65%	14.97%	25.28%	1	12
11730-802-XL_A1	21.16%	20.23%	34.17%	1	12
11730-802-AS_A1	0.00%	0.00%	0.00%	1	12
11730-802-SM_A1	0.00%	0.00%	0.00%	1	12

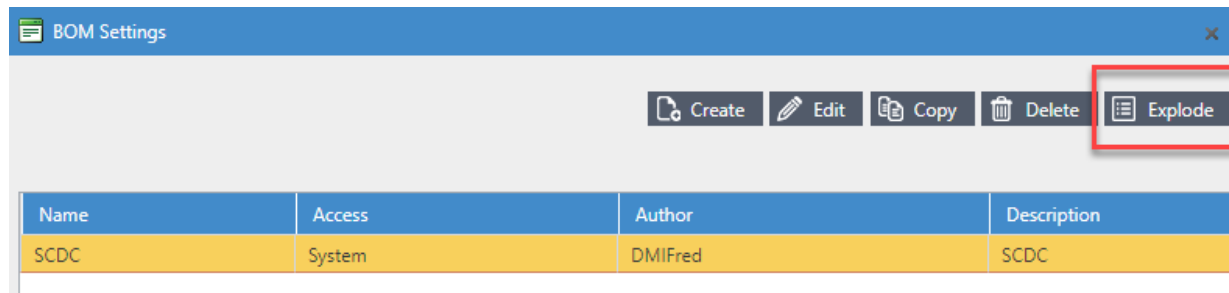
# Advanced BOM Procedure

9. Assign number of periods to explode ( 1 to 12 or 1 to 24)



10. Explode Advanced BOM: Generate statistical sales forecast at Aggregate level

- Generally Adjusted Forecast – Aggregate to Adjusted Forecast SKU







# Comparison of Aggregation / Proration and Advanced BOM

	Aggregation / Proration	Advanced BOM
<b>Level History Imported</b>	SKU	SKU
<b>Statistical Forecast Level</b>	SKU	Aggregate (Style / Color)
<b>Forecast Proration Basis</b>	SKU % of Aggregate Sales Forecast for each month	SKU % of Aggregate Sales history over an extended period of time (6 to 12 months)
<b>Advantages</b>	<ul style="list-style-type: none"> <li>• Simplicity</li> <li>• Little data maintenance</li> </ul>	<ul style="list-style-type: none"> <li>• Forecast more accurate at Aggregate level</li> <li>• Forecast review concentrated on Aggregate records, not SKU records</li> <li>• Size curves stable and predictable over 6 – 12 month period</li> <li>• Spikes level out over time</li> <li>• Low volume SKU's still get their % proration of the aggregate forecast</li> <li>• Can base proration on any desired periodic array</li> </ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"> <li>• Requires SKU forecast review</li> <li>• SKU's forecasts impacted by demand spikes</li> <li>• 0 SKU forecast months receive 0 proration of forecast adjustments</li> </ul>	

# Advanced BOM Case Study: Mizuno Apparel Company

- ▶ Prior to DS, exported the SKU forecast to Excel for size/scale explosion
- ▶ Imported Adjusted Forecast back into DS
- ▶ Forecast by Style/Color, use RP to plan at Style/Color/Size
  - Used Advanced BOM feature to manage size scale
  - User selects time periods to use to calculate size %s (example – 6 months Adjusted History)
- ▶ Advanced BOM “explosion” takes Style/Color forecast down to the SKU (style/color/size/ship-to) level of detail for RP



The screenshot shows a software interface for an Advanced BOM explosion. It displays a tree view on the left and a detailed table on the right. The table has columns for Item, Qty, % of Parent, and other metrics. The data is organized into a hierarchy of items, with the top-level item being the parent and subsequent rows representing its sub-components.

Item	Qty	% of Parent	Other Metrics
Item 1 (Parent)	100	100%	...
Item 2 (Child)	20	20%	...
Item 3 (Child)	15	15%	...
Item 4 (Child)	10	10%	...
Item 5 (Child)	5	5%	...
Item 6 (Child)	5	5%	...
Item 7 (Child)	10	10%	...
Item 8 (Child)	10	10%	...
Item 9 (Child)	10	10%	...
Item 10 (Child)	10	10%	...
Item 11 (Child)	10	10%	...
Item 12 (Child)	10	10%	...
Item 13 (Child)	10	10%	...
Item 14 (Child)	10	10%	...
Item 15 (Child)	10	10%	...
Item 16 (Child)	10	10%	...
Item 17 (Child)	10	10%	...
Item 18 (Child)	10	10%	...
Item 19 (Child)	10	10%	...
Item 20 (Child)	10	10%	...

## Advanced BOM Case Study: Tencate Protective Fabrics

- ▶ Replaced an Excel-based collaboration process with DS
- ▶ Aggregate SKU history to Planning Style Aggregate
- ▶ Generate statistical forecast at Planning Style level
- ▶ Sales reps collaborate to adjust forecast and budget through DS
- ▶ Aggregate Planning Style / Rep forecast to Style level for management review
- ▶ Two levels of Advanced BOM
  - Style to Planning Style
  - Planning Style to SKU
- ▶ SKY level forecast exported to ERP



## Advanced BOM Case Study – Siemens Healthineers

- ▶ Has 100,000 demand history records by country for about 9,000 items
- ▶ Individual SKU annual historical volumes by country range from 100 units to 100,000 units
- ▶ Advanced BOM used to statistically forecast at aggregate level and spread forecasts down to country level based on each country's share of the annual volume by item over the last 12 months of history

## Advanced BOM Case Study: Retail Company

- ▶ Customer wants store level detail records available tied to a distribution center but also allow the distribution center record be capable of having forecast of demand generated from a upper hierarchy grouping such as family or group code level
- ▶ They do not want to statistically forecast at the store level record, but allow the demand projections at the distribution center to prorate to the store level based on forecasts adjusted at the product family level.
- ▶ 2 types of parent/child aggregation relationships need to be established.
  - The first type is the relationship of the distribution center record to the family group.
  - The second type accomplished with the 'advanced BOM option' which would use another type of aggregate this representing the relationship of the stores to the DC.
- ▶ Important that the correct sequence of steps is followed, by process, so that the end result delivers what is expected.

# QUESTIONS?

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THANK YOU