Resiliency in Supply Chain Planning: A Supplier's View

Peter Bennett

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Faculty

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Disclosure of Relevant Financial Relationships

- The following faculty of this continuing education activity has financial relationships with commercial interests to disclose:
  - Pete Bennett
    - Cardinal Health, Inc. – Dividend – Stockholder
    - Medtronic – Dividend – Stockholder

Learning Objectives

- Identify how collaborative planning, forecasting and replenishment improves the supplier/provider relationship
- Review industry practices in demand and supply planning
- Examine resiliency blueprinting from a manufacturer's perspective
- Explain supply chain visibility, what it means and why it is important in today's planning environment

Agenda

Supply Chain Resiliency

What is Supply Chain Resiliency?

- Resistance
  - System has the framework to mitigate supply chain disruptions through avoidance
- Recovery
  - Measured by the time it takes to return to effective supply chain management

Resiliency Considerations

- **Modern digital universe** using advanced planning systems (APS), augmented intelligence, machine learning and robotic process automation
- Formal sales and operations planning, **sales and operations execution** and collaborative planning, forecasting and replenishment
- Business continuity plans with **redundant** supply chains
- **Well-trained employees** in medical supplies manufacturing industry, identifying gaps early

What have we learned from COVID-19?

- Understanding customer demand fluctuations are critical to inventory management
- Technology is needed to understand variability and proactively manage
- There are other variables that can be leveraged from providers that can improve forecast accuracy
- Supplier score carding must be collaborative with shared goals between suppliers and distributors
- The pandemic exposed gaps in supply chain visibility (first, middle, last mile)
- Need for multi-echelon inventory optimization planning
- Need to reconsider manufacturing strategy (location, volume, safety stock of raw materials)

Have a Resiliency Blueprint

Today we will cover transparency through continuity

Transparency

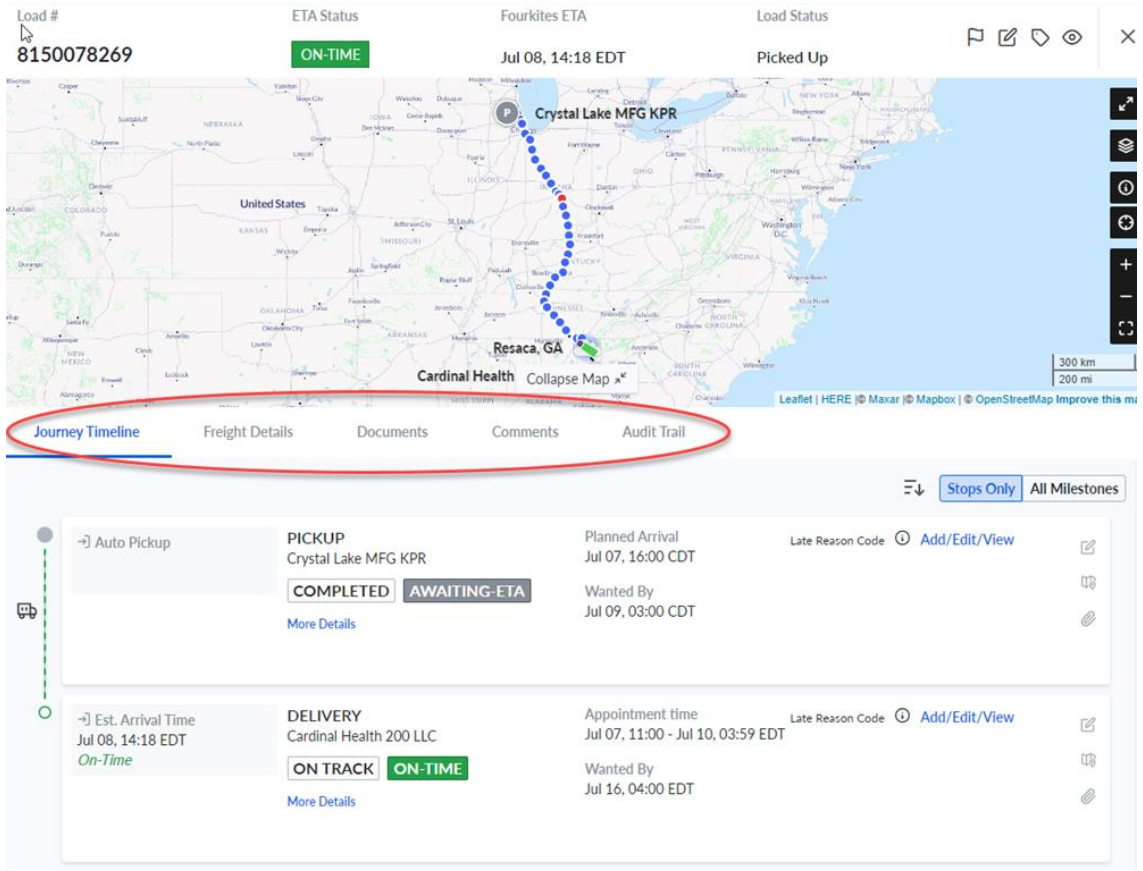
Transparency

- End-to-end planning visibility
- Accurate estimated time of arrivals
  - First, middle and final mile tracking
- Import and export management
- Supplier scorecards (dual score carding)
- Third-party risk management

Transparency

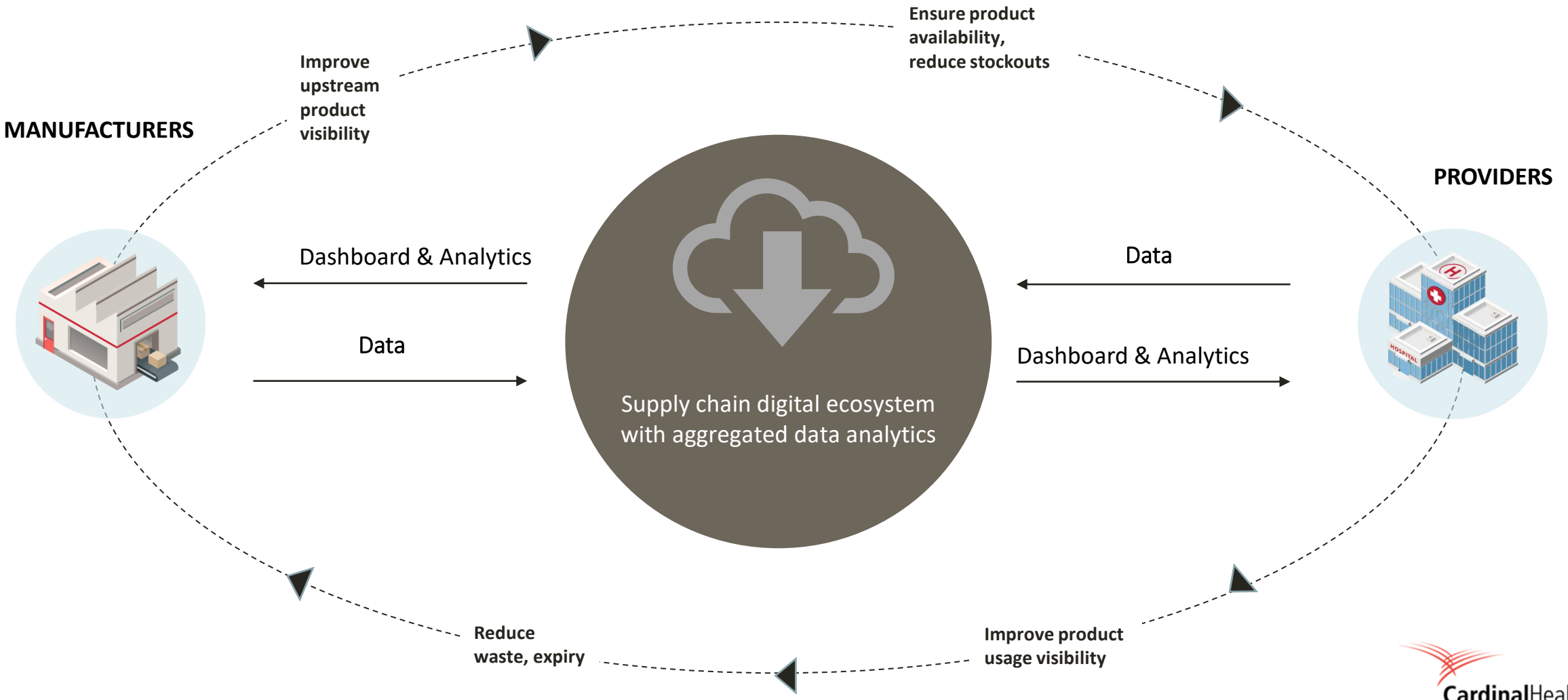
- Centralize data into a data lake
  - Consider cloud-based storage solutions and digital twins
  - Leverage **machine learning** for data cleansing activities
- All relationships as collaborative
- Automation opportunities to provide proactive alerts
  - Consider solutions

Transparency



- Shipment visibility
  - Real-time shipment milestones give providers visibility to shipments in transit
  - Enhanced shipment visibility across the enterprise
  - Increased data and reporting fuel predictive analytics and machine learning
  - Grant access to providers for self service options

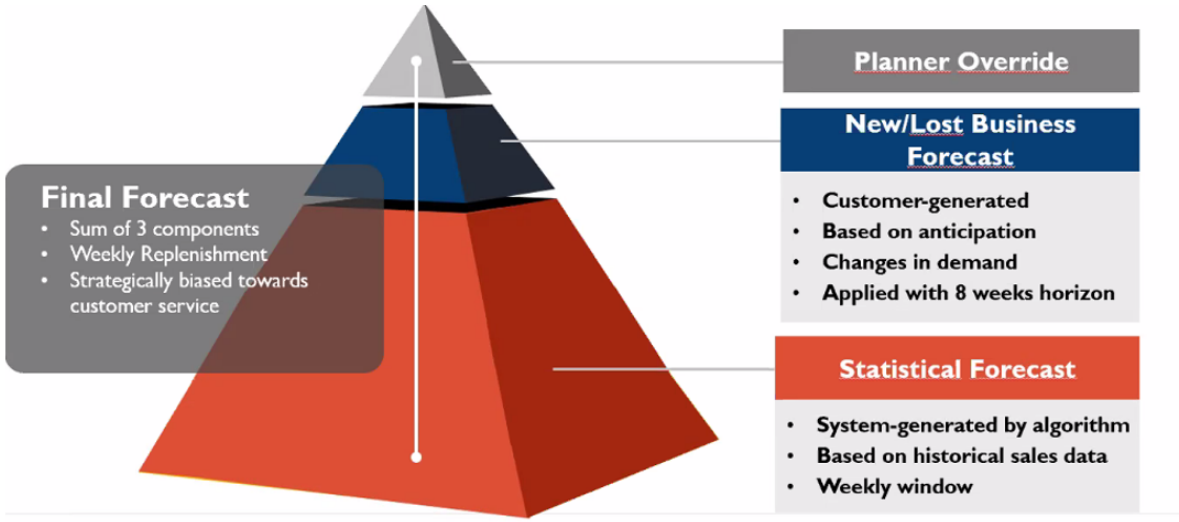
Transparency

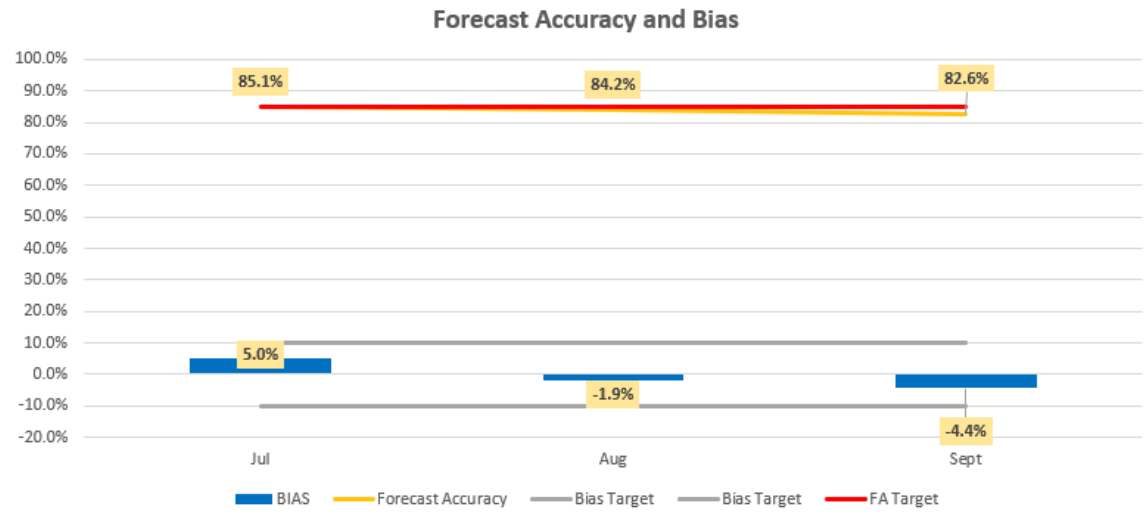


Demand Planning

Demand Planning

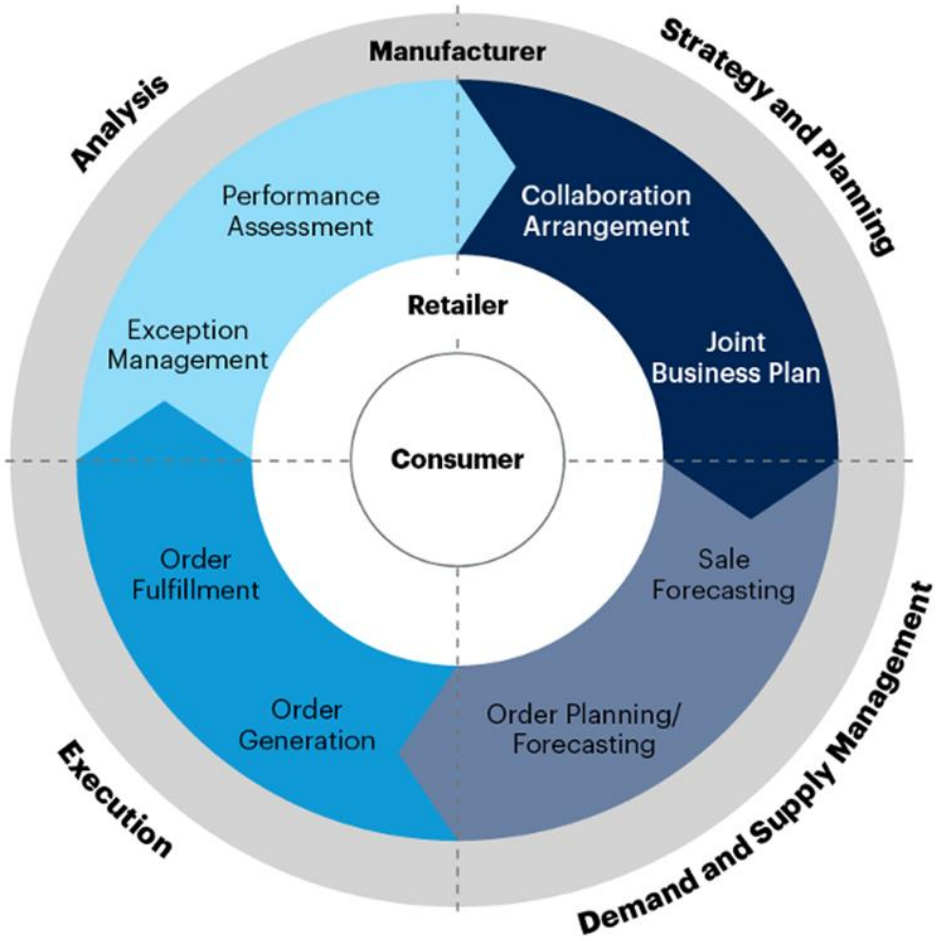
- Collaborative demand planning with providers
- Planning hierarchies
  - Operational, tactical and strategic
- Demand sensing
- Forecast accuracy, bias, forecast value add
- North star: Multi-variable demand planning





Demand Planning

- CPFR seeks cooperative management of inventory through joint visibility and replenishment of products throughout the supply chain
- Information shared between suppliers and customers in planning and satisfying customer demands through a supportive system of shared information.
- This process allows for continuous updating of inventory and upcoming requirements, making the end-to-end supply chain process more efficient



*Content sourced from Gartner

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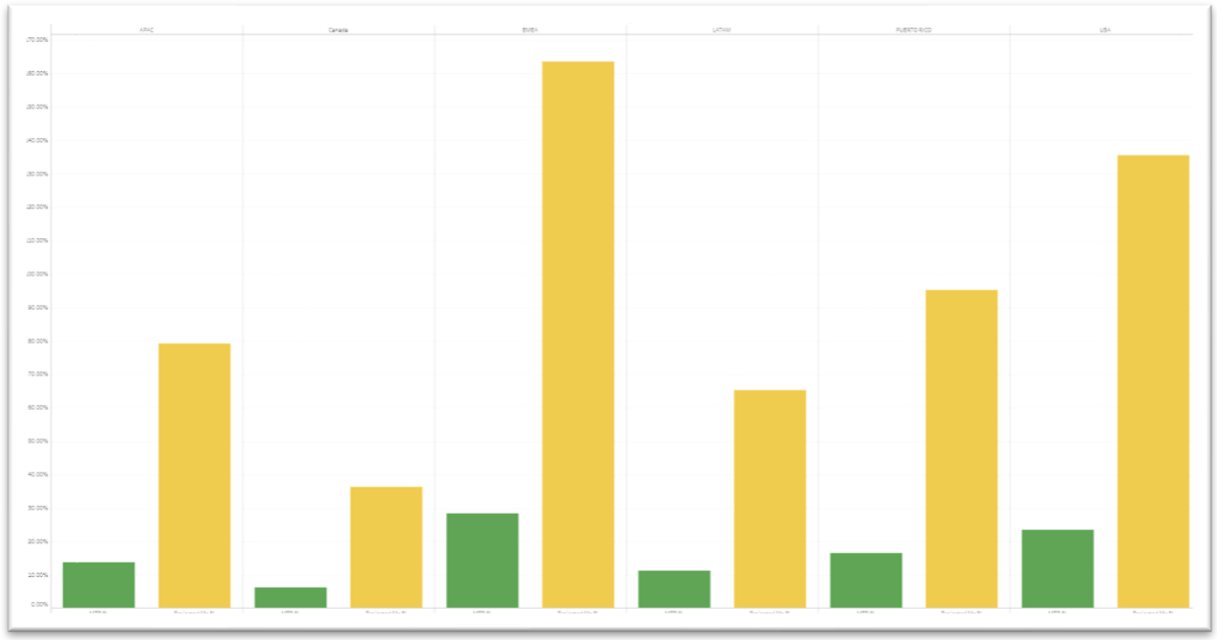
Demand Planning



- Demand Sensing
  - MTD pace by region, category, provider
  - Track oversells and validate information from ERP
  - Project month-end results
  - Review exceptions

Material	Classification	Product	Avg daily forecast	Average Daily Sales	Current Month Forecast	Run Rate End QTY	Over/Under QTY	Projected Mo %
112233	Respiratory	Vent	12	11	286	242	-44	84.44%

Demand Planning

- Automate demand waterfalls

		Forecast/Sales History Month									
Waterfall S..	Snapshot.	Jul-21	Aug-21	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22
ANATOMIC PATHOLOGY	FCDR Snapshot..	88,386	89,462	90,637	90,357	90,273	89,886	89,833	90,075	90,177	90,100
	Sales History T..	48,024	83,236	67,211	33,932	66,526	121,280	56,434	39,198		
	November-20	206,798	206,725	206,897	147,199	148,634	148,497	148,097	147,714	147,559	147,949
	December-20	205,373	205,215	205,319	134,655	136,137	136,604	136,010	135,507	135,299	135,703
	January-21	130,699	127,905	123,570	124,974	126,213	126,638	126,667	125,994	125,677	126,027
	February-21	106,047	110,545	105,223	105,787	106,419	106,559	106,764	106,883	106,273	106,447
	March-21	88,387	89,461	90,636	90,359	90,274	89,886	89,834	90,075	90,176	90,100
	April-21	91,238	92,792	94,520	93,093	93,164	92,908	92,955	93,237	93,312	93,112
	May-21	95,192	97,400	99,901	99,369	97,581	97,578	97,835	98,278	98,423	98,176
	June-21	144,303	154,700	166,745	177,356	188,567	161,634	165,551	169,091	171,469	172,283
	July-21	107,923	108,253	96,430	79,396	88,836	113,714	78,370	83,810	86,006	83,680
	August-21		109,674	98,181	78,390	85,298	70,438	76,503	78,303	82,785	87,630
	September-21			89,227	88,743	88,827	88,703	88,627	88,562	88,415	88,525
	October-21				67,315	66,127	64,820	63,582	62,369	61,089	59,864
	November-21					73,216	69,632	71,443	66,935	66,270	59,774
	December-21						59,186	48,577	58,011	53,799	40,446
	February-22								54,025	102,052	101,608

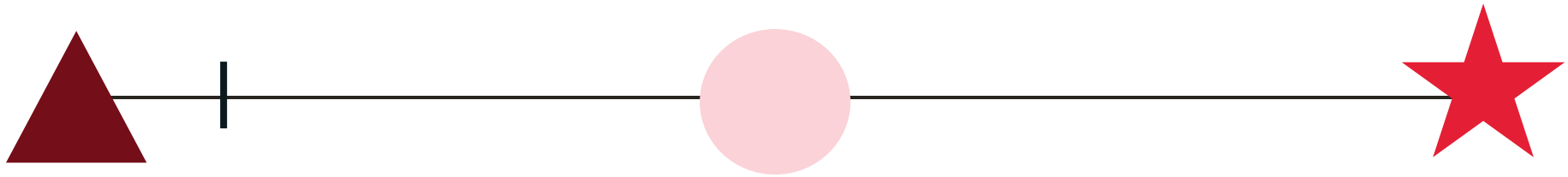
Demand Planning

- Multi-variable demand planning
  - Foundational demand planning financial capability aligned to unit level traditional demand planning activity did not adequately predict market fluctuations and price elasticity
  - Traditional – univariate demand planning (time horizon)
  - Univariate approach offered minimal correlation and data was either noisy/unavailable
    - Customer win/loss
    - Order attributes/types/patterns
    - Safety stock consumption and lead time changes

Demand Planning

Where are health industry manufacturing companies?

Where do we think we are?



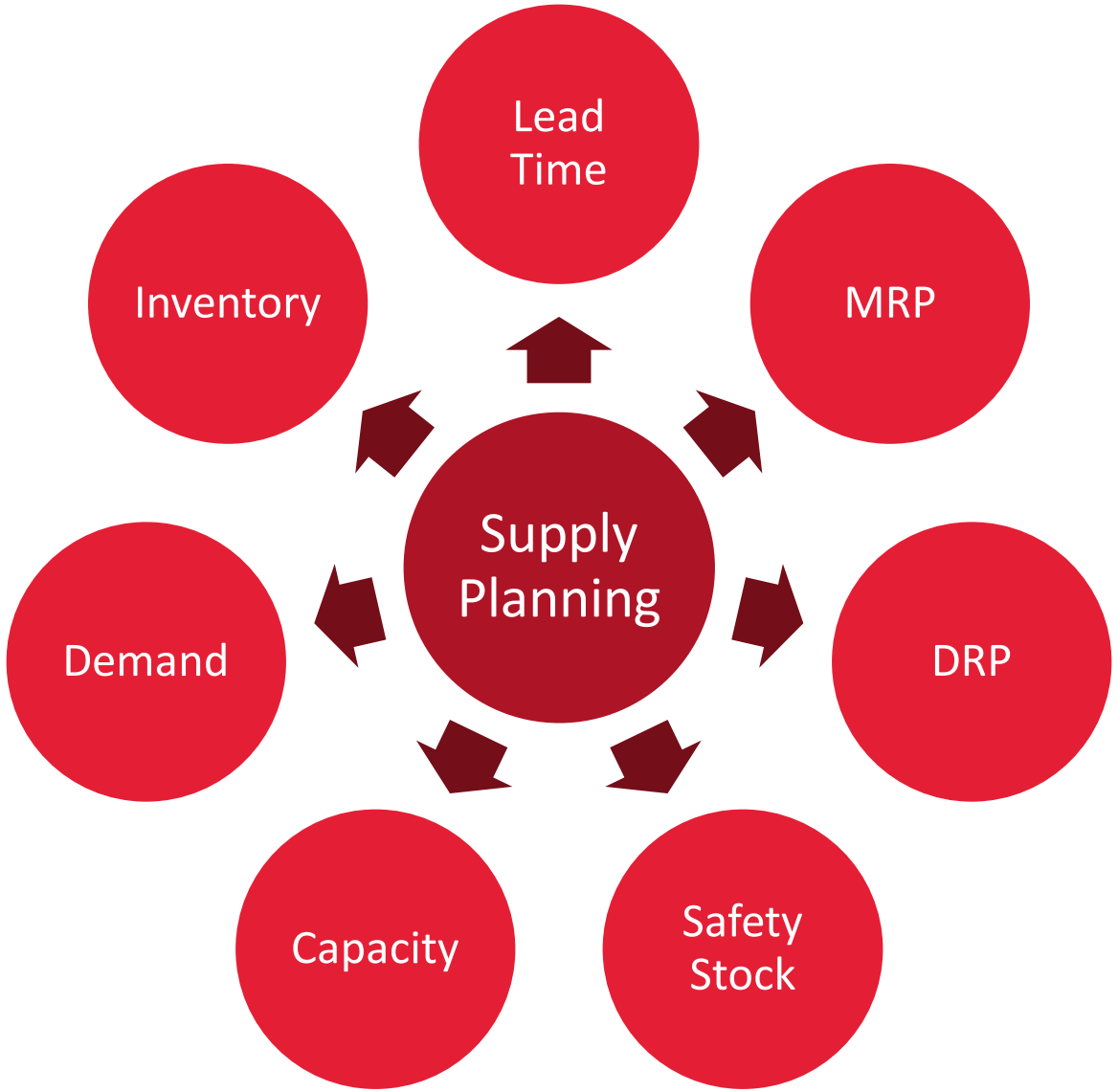
Univariate demand planning
-time phase horizon
-standard stat forecasting models
-measure standard KPIs (FA, Error, Bias)
-observations are manually entered

Multivariate demand planning
-ability to gather qualitative variable
-test variables and provide constant feedback into performance
-industry strives to plan using multivariable
-needs data scientists

AugIntel/machine learning
-data consolidation
-cost variables, inflation
-connect to financial planning systems

Supply Planning

Supply Planning



Supply Planning

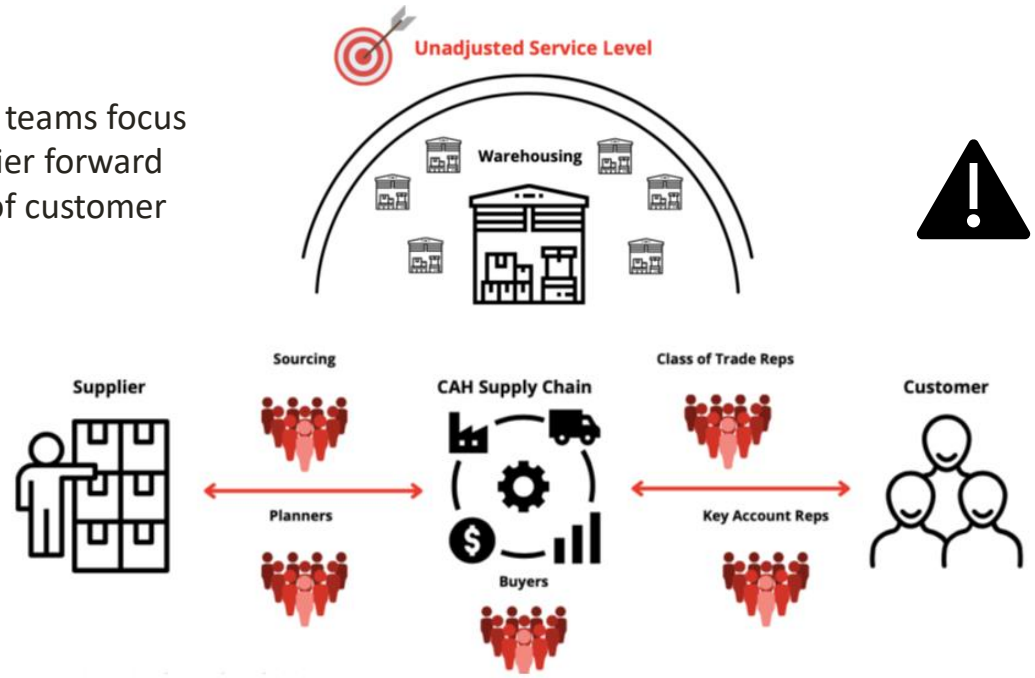
- Concurrent planning
  - Manage contingencies
  - Balance supply and demand
- Obtain real time ETAs for E2E supply chain
- Scorecards designed to provide operational support
- Integrate all supply chain nodes
- Inventory optimization programs
  - Cover all planning echelons

Supply Planning

- Adapt to dynamic environments
  - Expand global production where it makes sense
  - Shorten supply chains through proximity and reduced logistics requirements
  - Stand up multi-sourcing options to mitigate risk and encourage broad competition
  - Expand total manufacturing capacity in reserve for future expanded requirement periods

Supply Planning – Better ETAs

Planning teams focus on supplier forward instead of customer back



Reduce team spending time on post-buying activities; manual processes

Opportunity to use data to drive decision making, mitigate impacts to supply chain

Opportunity to drive standardization and eliminate duplication

Using data, analytics, machine models, and intelligent automation, we aspire to build a digital integrated supply chain platform that delivers best-in-class customer experience

Key benefits:

- End-to-end visibility (digital twin)
- Predict disruptions and improve service levels
- Increased speed of response
- 'Customer first' approach to data
- Access to data to make value-added decisions
- Minimal human-touch and friction

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Supply Planning – Better ETAs

Phase One

Supplier Websites

Scope: automate manual work collecting ETAs

Baseline: 15k records/week

15k records/week covered:

Supplier ASNs

Automate ETA Dates from shipping info sent by suppliers using APIs whenever available

Result is about 8k ETAs/day after go live

Supplier Emails

Bots contact suppliers via email for ETA information on open POs

Phase Two

Expand to supplier website bot to cover additional volume that was not previously being performed manually.

Supplier Websites

Scale up bot infrastructure, moving to APIs wherever possible

Add additional suppliers and volume (all channels)

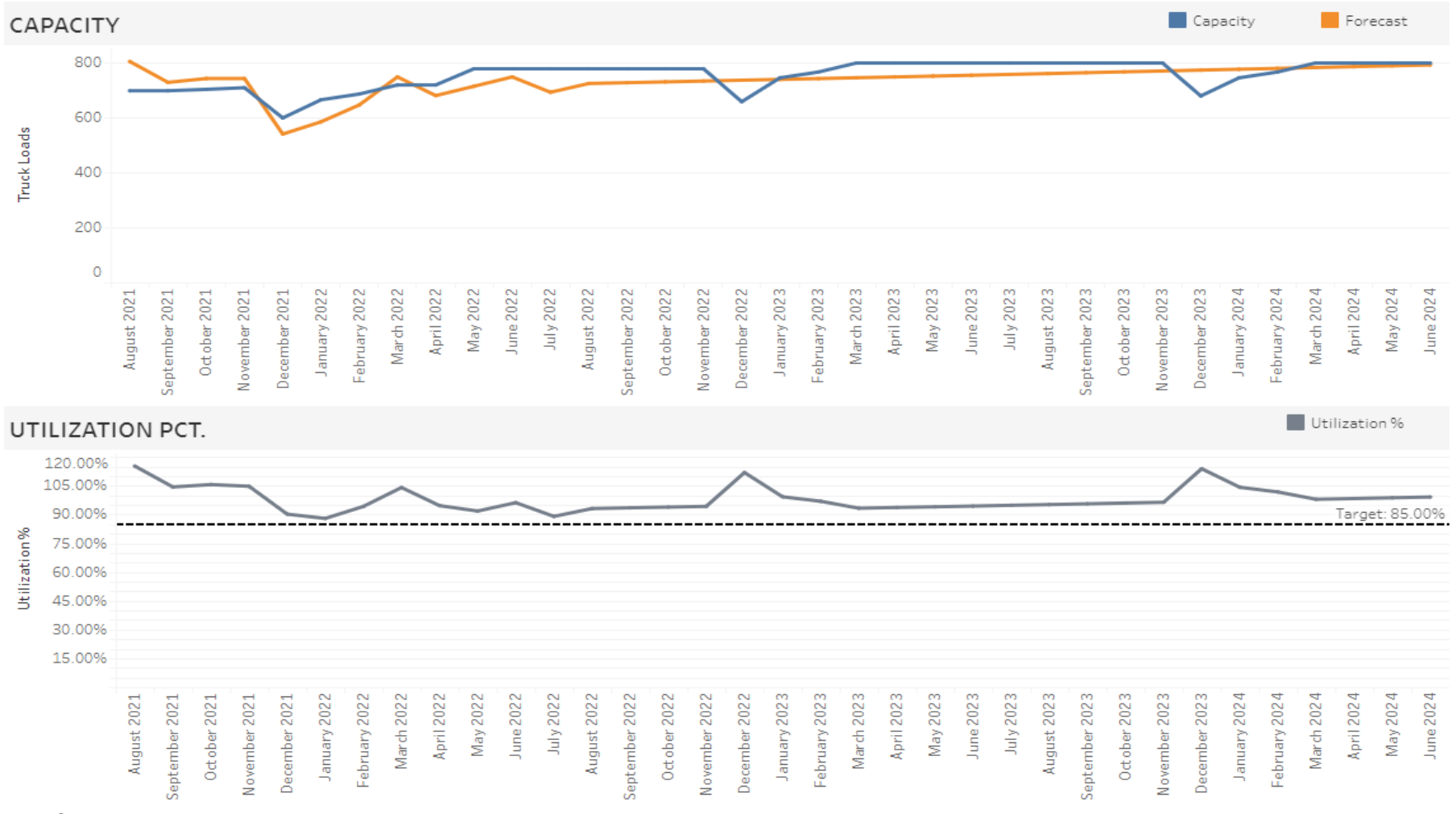
Have the bots check ETAs more frequently to ensure accuracy

Plan to deliver 2.6M ETAs per year.

Update supply chain notes with ETAs
*used by customer-facing teams

Supply Planning

- Proactive and predictive



Business Continuity Plan

Business Continuity Plan

- Risk planning
  - Documented prevention and recovery plans
- Incident management and real time scenario planning
- Shift mindset from cyber security to cyber resiliency
- Internal control towers
  - Real time updates, operations visibility, digital process automation
  - Incorporate augmented intelligence
- Criticality assessments – smart decision making

Business Continuity Plan

Global Logistics

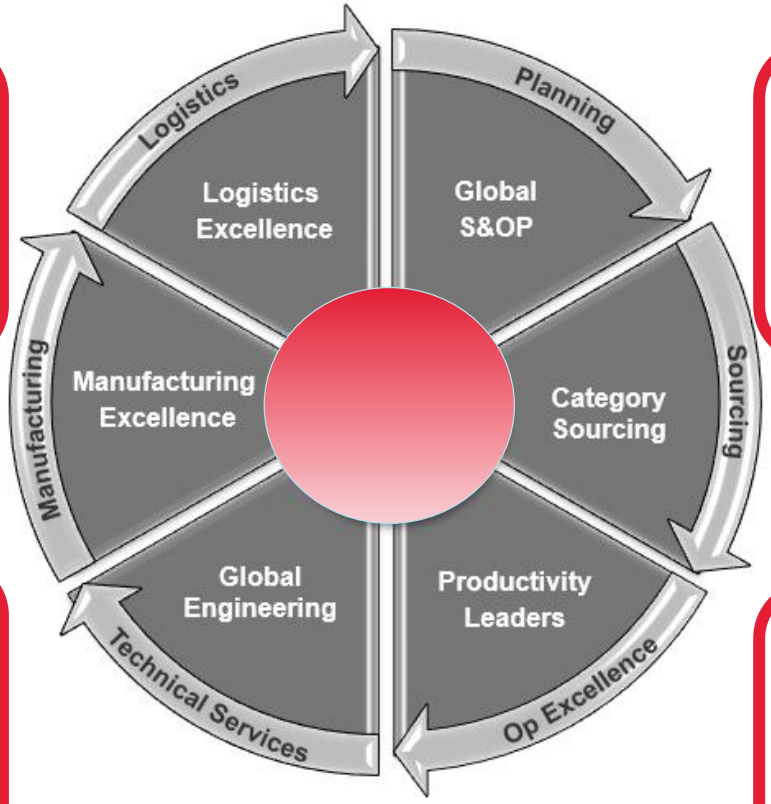
Efficient Supply Chain

- Improved product flows

Global Planning

Accurate and Efficient S&OP

- Order / line service
- Efficient working capital / CAPEX
- Improved supply chain execution



Global Manufacturing

The Right Footprint

- Balanced supply risk

Global Procurement

- Deep global category capability
- Robust supplier development

Business Continuity Plan

- Supply risk dashboarding
- ID issues by type
  - Major
  - Moderate
  - Low
- Advanced warning score
- Open vs. closed status

Q & A

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Supplier Name
Supplier Numbers

Cardinal Health Medical Distribution
FY21 National Brand Supplier Scorecard

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Essential to care™

		Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
	Total Score	59	50	29	78	78	65	69	77	70	51	36	44
Delivery	Total Expected Qty	6,384	75,428	26,381	4,093	813,172	34,765	134,566	74,064	26,674	25,193	17,536	30,711
	Total SL Qty	2,542	48,326	3,849	4,084	320,729	16,175	72,000	67,329	15,777	12,141	6,849	14,547
	Service Level %	56.44%	74.76%	39.32%	99.83%	65.87%	56.22%	91.03%	92.9[illegible]%	61.18%	80.52%	48.34%	66.17%
	Service Level Score (10)	2	4	0	10	4	2	8	[illegible]	2	6	0	4
	Total PO Lines	720	11,221	1,983	186	34,104	1,192	5,[illegible]22	15,578	1,224	1,157	712	2,625
	# of Open PO Lines	71	2,050	839	1	2,556	[illegible]85	[illegible]87	189	24	307	118	427
	Open PO %	8.44%	7.50%	42.31%	0.54%	5.15%	[illegible]4.42%	[illegible]8.74%	2.95%	1.96%	22.72%	16.57%	16.27%
	Open PO Score (10)	2	2	0	10	4	[illegible]	2	8	8	0	0	0
	LT Avg	15.35	9.775	12.3	5.6[illegible]	9.[illegible]075	11.55	9.705	7.12	8.36	5.28	16.66	11.52
	Lt Std Dev	10.53	9.17	6.14	4.[illegible]8	[illegible].18	4.75	3.72	6.03	3.12	5.85	12.59	5.12
	LT Cov	0.690	0.965	0.50[illegible]	0.790	0.640	0.393	0.325	0.830	0.370	1.125	0.760	0.440
	Lt CoV Score (10)	6	0	6	4	6	8	8	4	8	0	4	8
	PAR Score (10)	10	0	2	6	8	8	2	4	8	10	0	4
EDI Compliance	EDI 810 Compliance %	[illegible]60%	99.80%	76.26%	97.96%	98.29%	99.38%	99.40%	99.47%	99.28%	97.83%	87.23%	95.86%
	EDI 810 Score (10)	[illegible]	10	0	8	8	10	10	10	10	8	0	6
	EDI 845 Compliance %	88.99%	100.00%	0.00%	0.00%	99.78%	95.12%	99.47%	99.85%	100.00%	99.03%	100.00%	0.00%
	Sum of EDI 845 Score	4	10	0	0	10	6	10	10	10	10	10	0
	EDI 855 Compliance %	11.36%	97.73%	72.19%	100.00%	98.52%	83.11%	75.34%	99.95%	68.07%	61.60%	80.17%	2.81%
	EDI 855 Score (10)	0	8	2	10	10	4	4	10	2	2	4	0
	EDI 856 Complaince %	99.10%	72.03%	3.71%	100.00%	90.15%	96.70%	90.68%	99.94%	95.76%	6.86%	79.75%	0.00%
	EDI 856 Score (10)	10	0	0	10	8	10	8	10	10	0	2	0
Partnership	**Partnership Score (20)**	15	16	19	20	20	17	17	13	12	15	16	22

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Faculty Biography & Contact Info

- Peter Bennett is the Vice President of U.S. Demand and Supply Planning for Cardinal Health. In this role, he is accountable for all U.S. demand planning, supply planning, field inventory management/deployment, and key customer collaborative planning, forecasting and replenishment (CPFR) teams. He supports Cardinal Health's U.S. product brands, national brands, Presource, Aero-Med and at-Home Solutions businesses. Bennett earned a bachelor’s degree from the United States Military Academy at West Point, and a Master of Science from Central Michigan University. He continues to serve as a Major as the J4 Logistics Officer in the United States Army Reserve in support of the European Command’s J4 Logistics Section. He is a member of APICS, sits on the board of the Healthcare Industry Resilience Collaborative, and currently services as a co-chair of the Healthcare Industry Distributor Association supply chain visibility council.
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