

BT Supply Chain Demand Driven Journey

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Agenda

- First steps and the case for change
- Simulation and pilot
- Scaling to an enterprise level
- Developing DDS&OP
- Takeaways & next steps



A bit about us

We deliver home broadband equipment, set top boxes and mobile phones into the hands of about ...



...every day

We provide engineering consumables to over **28,000 engineers...**



...through fulfilment of **10-15,000 orders** every day

We have a mixed fleet of over **130 vehicles**, from small panel vans through to 44 tonne articulated lorries and specialist vehicles fitted with heavy lifting equipment



We also make...



...B2B deliveries and returns every year

We test and repair engineers equipment to meet H&S legislation



...with a total of **1.3 million items** tested every year

We undertake staging and configuration, preparing, configuring and shipping network equipment prior to installation at **any site in the world**



Where have we come from

Best practice transformation programme

Demand forecasting – statistical + business intelligence

DRP – PO's placed against planned demand

Inventory optimisation – FC error used in safety stock

S&OP – balance supply & demand, forecast accuracy

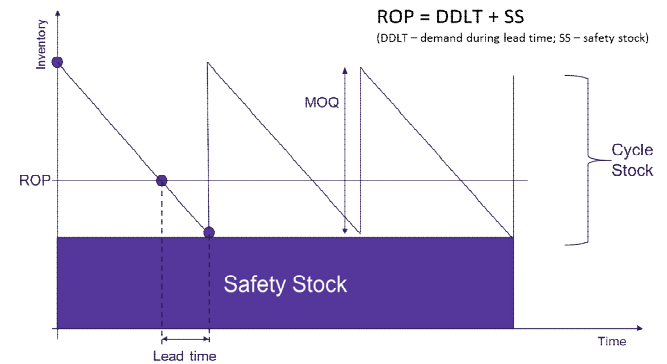
Delivered Improvements

Governance & control

But

Planning activities still reactive

Inventory performance below expectation, feast & famine

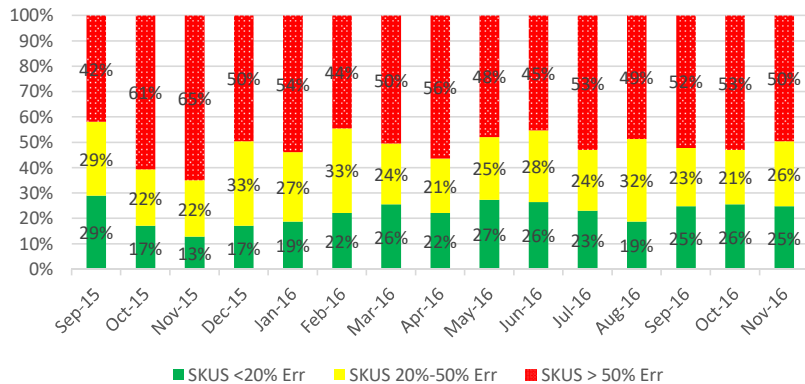


The case for change

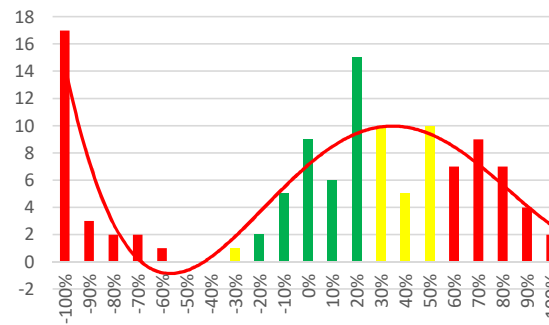
In a word – *FORECAST ACCURACY*

Manifested in two key areas; OTIF (availability) and inventory glide path

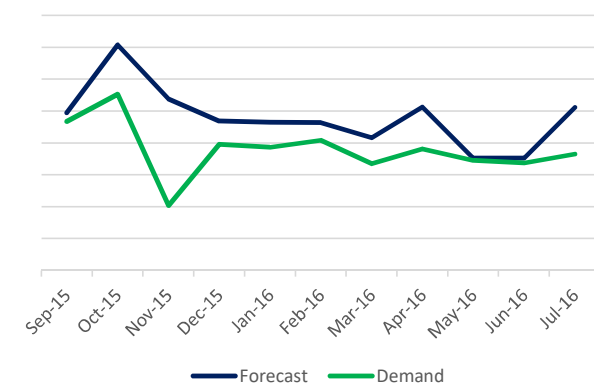
FC Error SKU Mix



Rolling 3 Month FC err %



Aggregate Demand vs Forecast



So what's the solution

Improve forecast accuracy.....

***“If I had asked people what they wanted, they would
have said faster horses”***

Henry Ford

Or.....

Attend a CDDP training course



Testing the theory with a simulation

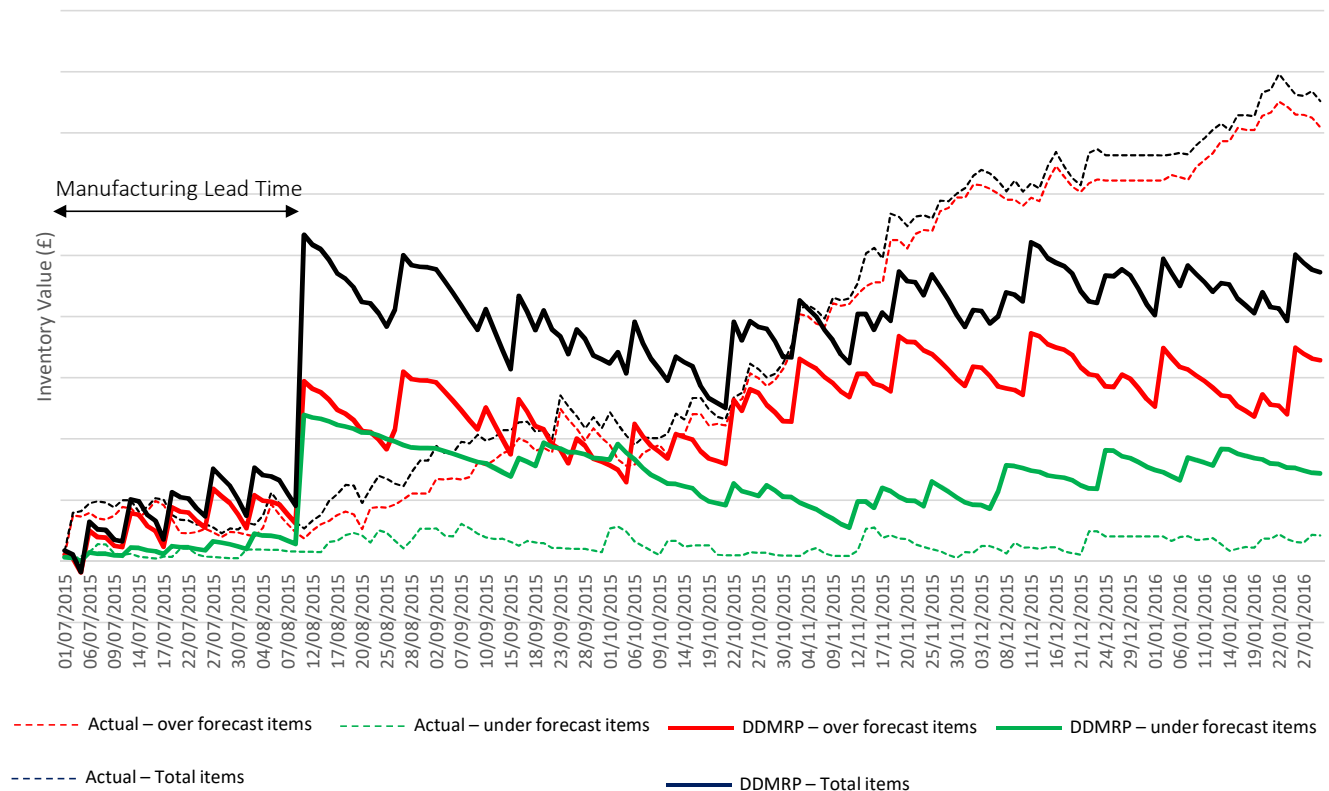
Simulation model built using 6 months history of actual daily orders

Two groups of SKUs from the same family modelled that had been historically over and under forecast but at the aggregate level had excellent accuracy

RESULTS

- **Stock is in balance and total inventory is halved**
- **NOT Dependant on Forecast so decoupled from forecast error**
- **NO Service issues**
- **LESS Inventory**
- **STABLE load on factory**
- **NO costs of failure**

Actual vs DDMRP Simulation – 6 month Inventory Evolution



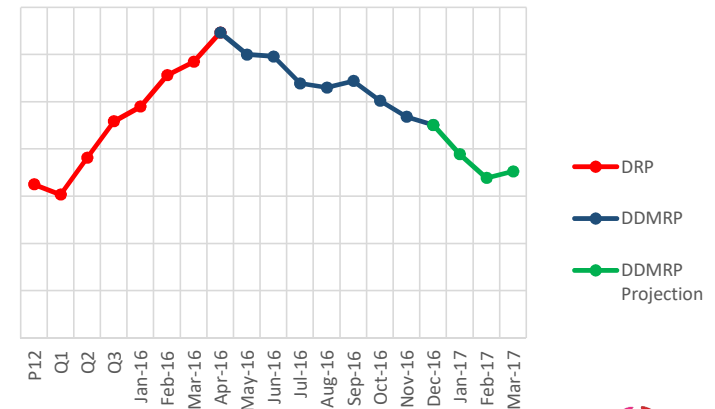
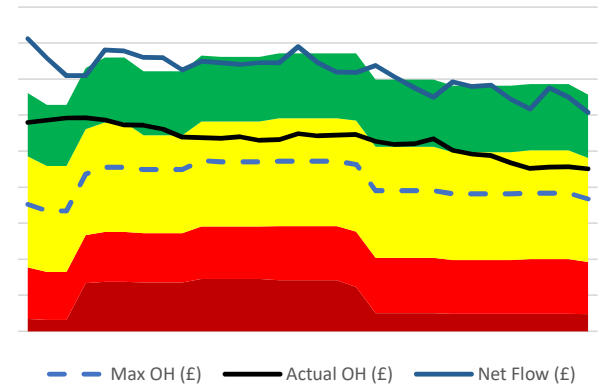
Full pilot – Copper cable

- Simple Excel model
 - Finished goods at factory only – 115 manufactured items, 119 bought in items
- Buffers refreshed monthly, ADU based on 3 months history
- Run from April 2016 – December 2016

Results

- 32% reduction in finished goods inventory
- 43% reduction in SKUs over top of green – we are not ordering product we don't need
- No reduction in service, availability at 99%+
- Expedites & schedule break ins reduced to almost zero

Aggregate Buffer Size & Inventory Performance



DDMRP Excel model – clear plan priorities

Potentially at risk items

- Monitor
- Check days of cover vs PO due date
- Call out any delays

Critical Items

- Expedite existing POs
- Call out any delays
- On Hand / ADU = Days of cover

Index	BT IC	Desc	ADU	MOQ	Order Cycle (days)	+ On Order	- Qualified Sales Orders	On Hand	=Available Stock	Recommended Order
1	Part1		601.08	8100	15	32,400	4,060	6,169	34,569	8100
2	Part2		58.69	6000	102	6,000	0	631	6,631	0
3	Part3		938.25	5030	15	45,270	0	10,542	55,812	15090
4	Part4		3417.14	8100	15	146,853	1,950	48,043	192,946	64800
5	Part5		347.85	8075	23	25,089	0	5,092	30,181	0
6	Part6		213.46	4840	23	10,502	1,560	4,491	13,493	0
7	Part7		8.63	12	15	415	13	194	596	0
8	Part8		2569.15	10100	15	125,193	2,500	67,041	189,734	0
9	Part9		190.77	10000	52	10,400	0	5,200	15,600	0
10	Part10		1670.35	4015	15	70,506	3,975	50,872	117,403	0
11	Part11		156.08	8100	52	8,100	790	4,951	12,261	0
12	Part12		6.66	50	15	250	10	221	461	0
13	Part13		711.98	3040	15	14,310	1,940	24,728	37,098	15200
14	Part14		10310.63	14050	15	315,961	13,635	360,075	662,401	0

BT IC	Desc	On Hand	ADU	OH Cover	PO NUMBER	PO DATE	QUANTITY ORDERED	QUANTITY DELIVERED	NEED BY DATE
Part1		6,169	601	10	xxxxxxxxxx	25/05/2016	8100	0	30/06/2016
					xxxxxxxxxx	29/06/2016	16200	0	31/07/2016
					xxxxxxxxxx	13/05/2016	8100	0	27/06/2016
Part2		631	59	11	xxxxxxxxxx	07/06/2016	6000	0	19/07/2016
Part3		10,542	938	11	xxxxxxxxxx	05/07/2016	15090	0	16/08/2016
					xxxxxxxxxx	17/06/2016	15090	0	29/07/2016
					xxxxxxxxxx	29/06/2016	10060	0	31/07/2016
					xxxxxxxxxx	29/06/2016	5030	0	15/08/2016
Part4		48,043	3,417	14	xxxxxxxxxx	07/06/2016	72900	7047	19/07/2016
					xxxxxxxxxx	29/06/2016	48600	0	31/07/2016
					xxxxxxxxxx	29/06/2016	32400	0	15/08/2016
Part5		5,092	348	15	xxxxxxxxxx	13/05/2016	8075	7211	27/06/2016
					xxxxxxxxxx	17/06/2016	8075	0	29/07/2016
					xxxxxxxxxx	05/07/2016	16150	0	16/08/2016

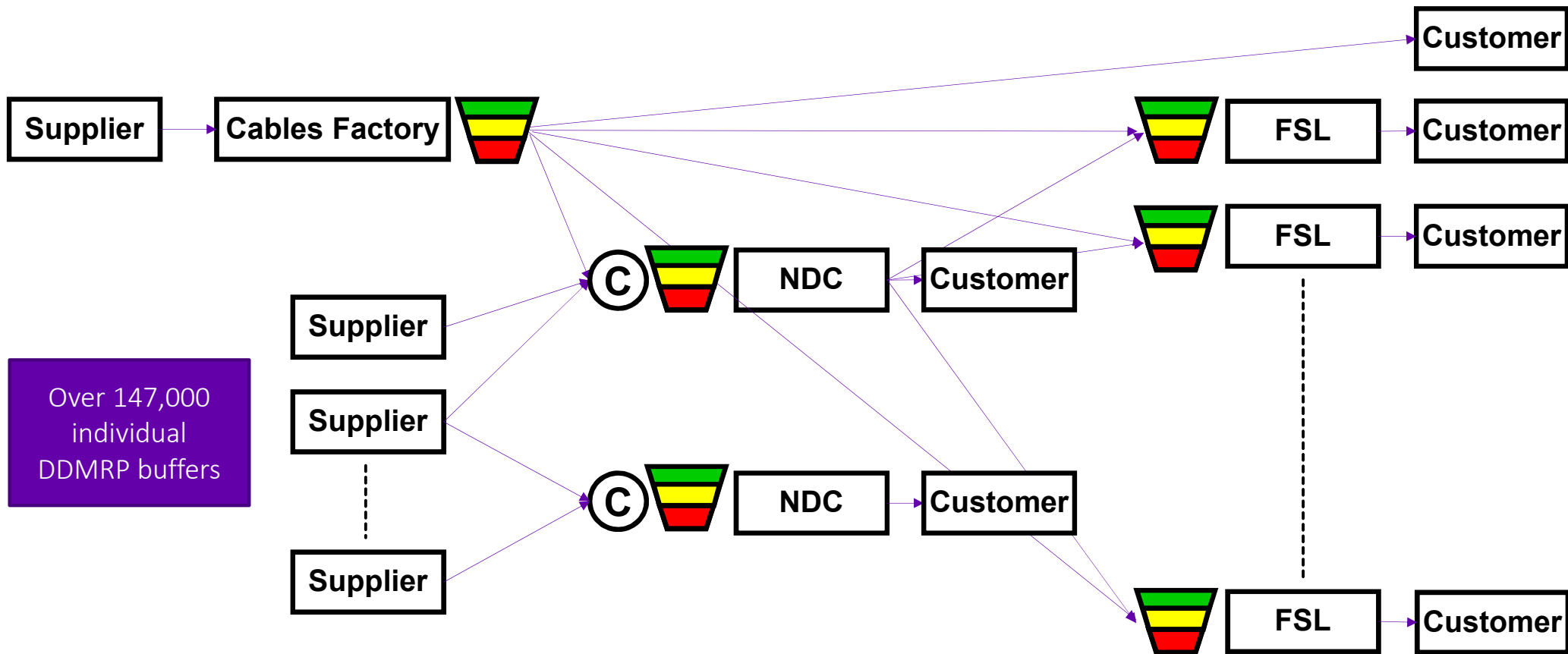
Expedite

Confirm delivery date



Scaling to an enterprise level

The plan



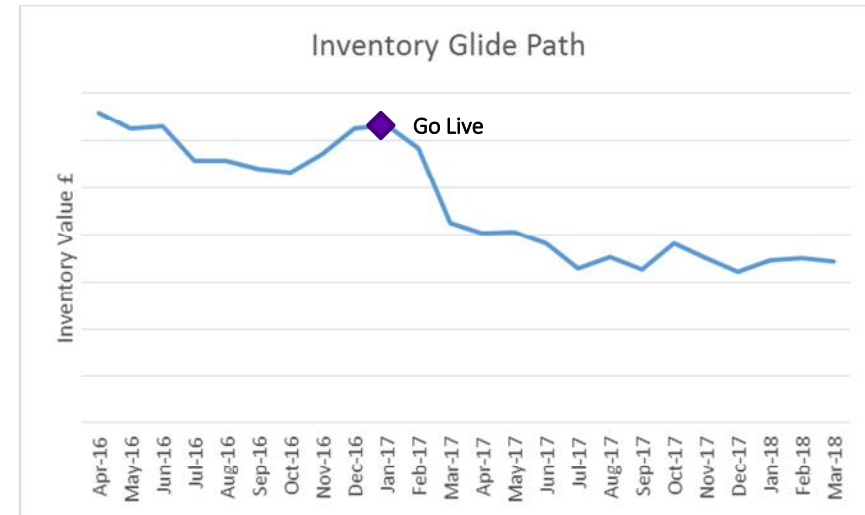
The solution

- Excel no longer a viable solution
- SaaS solution selected to enable quick deployment
- Kick off workshop July 12th 2016
Go live January 2017
- Internal interface development to get data in to and out of ERP system the longest development pathway

On Hand Qty	Number of days On Hand Inventory	Available Inventory Qty	Next Replenishment Date	Next Replenishment Qty	NSD	ADU	Yesterday's Available Inventory Qty	Replenishment Leadtime	Minimum Order Qty	Multiple Order Qty	DDMRP Current On Hand Alert	DDMRP Current On Hand Alert Percentage
0.00	0	0.00	28/03/2017	10000.00	0.35	48.78	0.00	60	10000.00	10000.00	0.00%	0.00
00.00	1	-20400.00	27/02/2017	39400.00	1.03	402.02	-20400.00	30	10000.00	10000.00	600.00%	6.00
09.00	3	29.00	13/03/2017	8100.00	0.29	195.63	29.00	30	8100.00	8100.00	399.00%	42.00
990.00	6	-2375.00	27/02/2017	8075.00	0.37	313.66	-2375.00	30	8075.00	8075.00	1990.00%	19.00
34.00	9	434.00	07/03/2017	1000.00	0.54	48.69	434.00	30	1000.00	1000.00	434.00%	16.00
428.00	6	-1197.00	27/02/2017	10950.00	0.42	255.89	-222.00	30	10950.00	10950.00	1428.00%	17.00
428.00	9	3626.00	27/02/2017	7098.00	0.31	400.57	3776.00	30	8075.00	8075.00	3626.00%	53.00
5600.00	10	25600.00	03/03/2017	70000.00	0.14	2497.56	25600.00	60	10000.00	10000.00	25600.00%	53.00
347.00	5	-1273.00	03/04/2017	32300.00	0.13	734.98	-6373.00	30	8075.00	8075.00	3347.00%	64.00
363.00	9	1363.00	03/04/2017	8075.00	0.33	146.82	1963.00	30	8075.00	8075.00	1363.00%	64.00
4000.00	12	37600.00	07/03/2017	4800.00	0.22	3521.86	50400.00	30	64000.00	64000.00	44000.00%	195.00
53400.00	27	253400.00	10/03/2017	340000.00	0.16	9395.85	253400.00	60	10000.00	10000.00	253400.00%	195.00

Go live strategy & results so far

- Vision was to agree buffers with stakeholders and then just get on and plan & execute to them – not quite that easy in reality
- Initial governance put in place to validate replenishment orders generated and then use the insight to feed back in to the model
- Buffers sized predominantly using historic ADU, forecasts are provided and used by exception either to adjust the ADU or to be added as an event
- Default reason for availability issues of demand higher than forecast is now neutralised – previously hidden lead time performance now firmly on the agenda

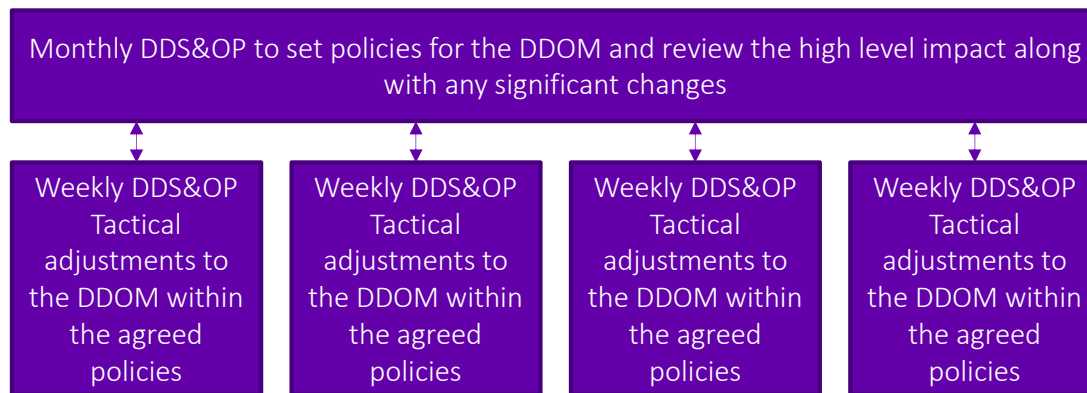


Developing DDS&OP

Developing DDS&OP

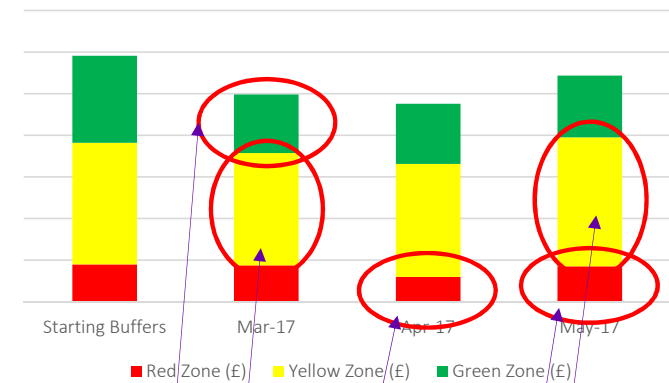
Vision was to review buffers monthly with finance and operations with signoff of buffers the governance & control for PO placement

Too many buffers and external stakeholders unsure of what or how to signoff



Monthly DDS&OP Policy Setting for the DDOM

Aggregate Buffer Evolution



MOQs addressed

Master data integrity
– lead times updated

Outliers excluded
from variability

Lead time variability
added in

New ADU rule between
forecast and actual



Takeaways & next steps

Takeaways & next steps

Demand Driven has and is delivering

- Supply chain 'de-risked' from forecast accuracy
- Strong positive impact on cash flow and ROCE
- Maintained or improved service levels
- Overall inventory reduction typically between 20%-30%
- Release of supply chain capacity by not producing, buying and storing the wrong stuff
- Cost reduction – lower planning effort with improved outcomes – lower expedite costs

Next Steps

- Continue to develop our flow based metrics and reporting
- Engage with suppliers – currently demand pull turns back to forecast push at the supplier / BT interface
- Orchestr8 and our DDS&OP process ensure we have the operational and tactical relevant ranges covered – next step is to link in to the strategic relevant range
- Continue to invest in education and development

