



Demand Driven Material Requirements Planning For Dynamics 365 Supply Chain Management

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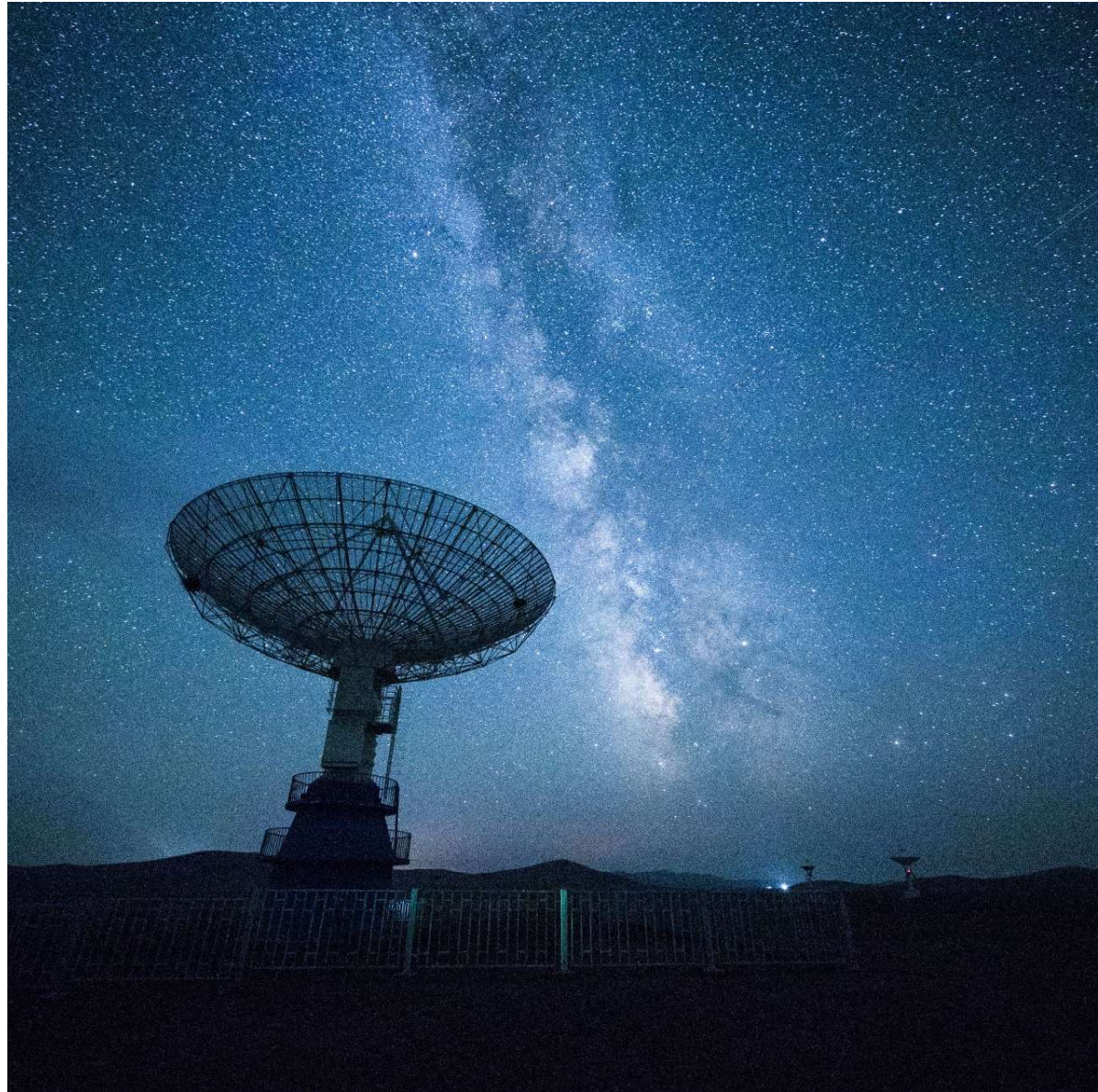


Upcoming series

- DDMRP Overview
- Manufacturing use case deep dive
- Distribution and Retail use case deep dive
- Live Q&A

Riddle of the day

How do you organize a party in space?



Agenda

- What is DDMP?
- Review DDMP components
- Discuss new configurations in Dynamics
- Demonstrate new functionality
- Review recommendations and resources
- Q&A

What is DDMRP?

Beatriz Nebot Gracia



The evolution of master planning



Current state: MRP

Long lead times

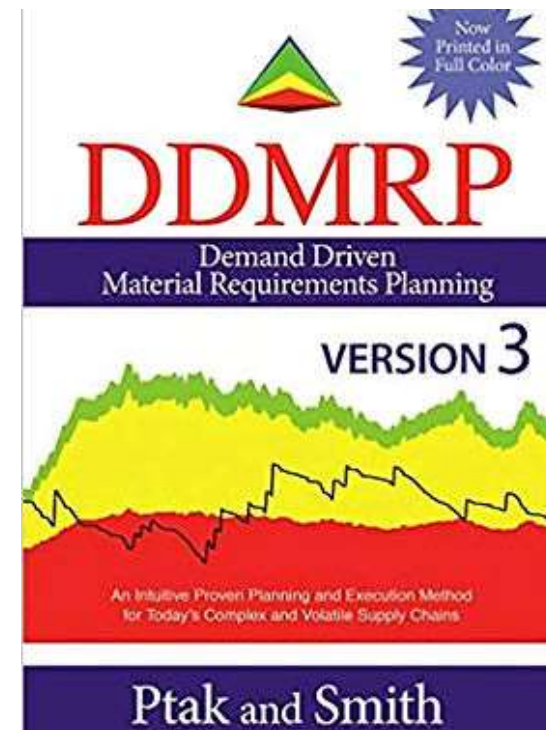
Stockouts and overstocks

High market fluctuation

Supply chain shortages

MRP tools are confusing

Demand Driven MRP



The five components of DDMRP

Strategic inventory positioning

Identify points in the supply chain to stock inventory and reduce order fulfillment times

Buffer levels

Use data-driven calculations of proper buffer levels for inventory

Dynamic adjustments

Adjust buffer levels based on expected market changes and other factors

Demand driven planning

Creation and prioritization of planned orders as a reaction to expected demand

Visible and collaborative execution

Use system tools to support interactive planning experiences and visual indicators to trigger actions

Applications of DDMRP



Manufacturing



Distribution



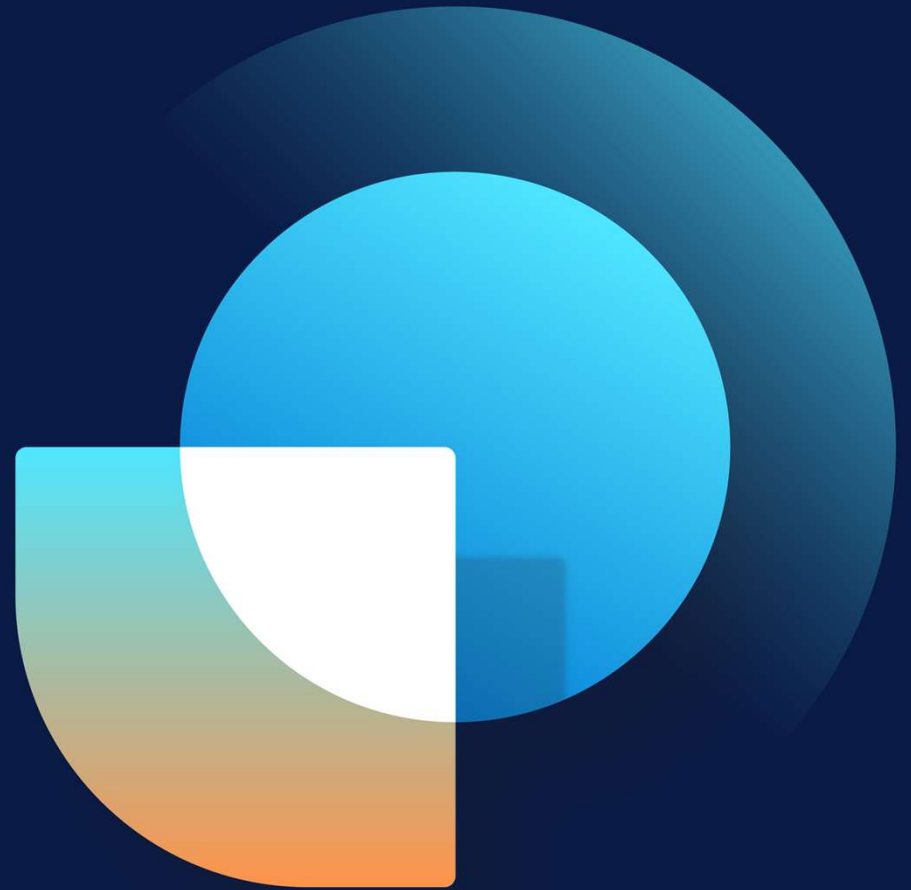
Retail

DDMRP in Dynamics 365 Supply Chain Management

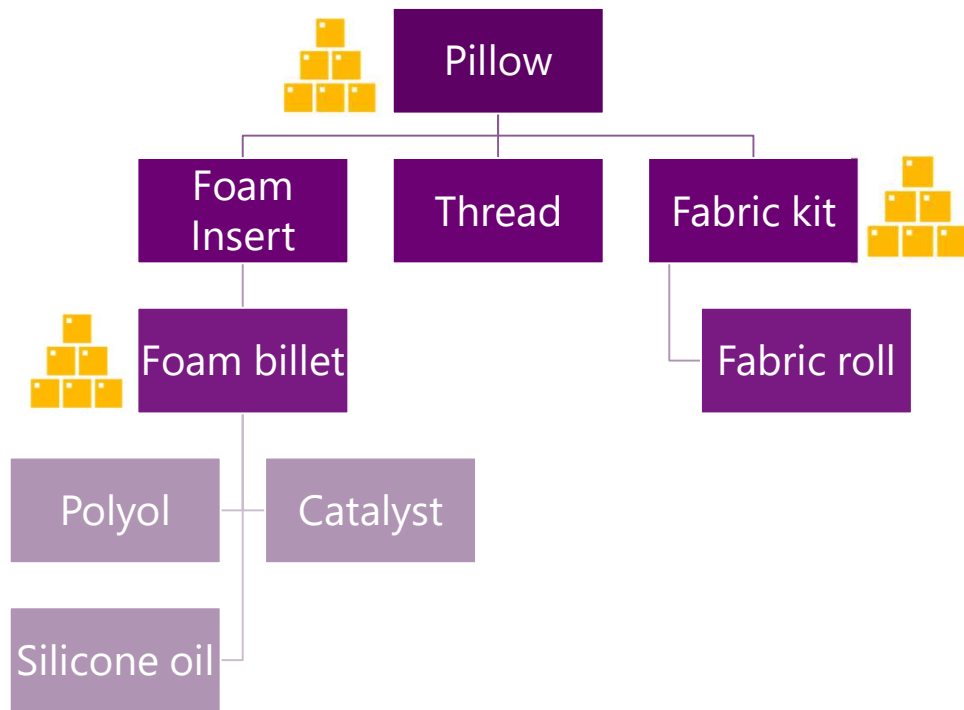
- Additional functionality in Master planning module
- In 10.0.28 (Preview)
 - Feature name: [\(Preview\) DDMRP for Planning Optimization](#)
- Coming in 10.0.29:
 - Average daily usage – forward and blended
 - New decoupled lead time form
- Only compatible with Planning Optimization
- No additional cost to use

Strategic inventory positioning

Anne Krupke



Decoupling points



External variability

Inventory leverage and flexibility

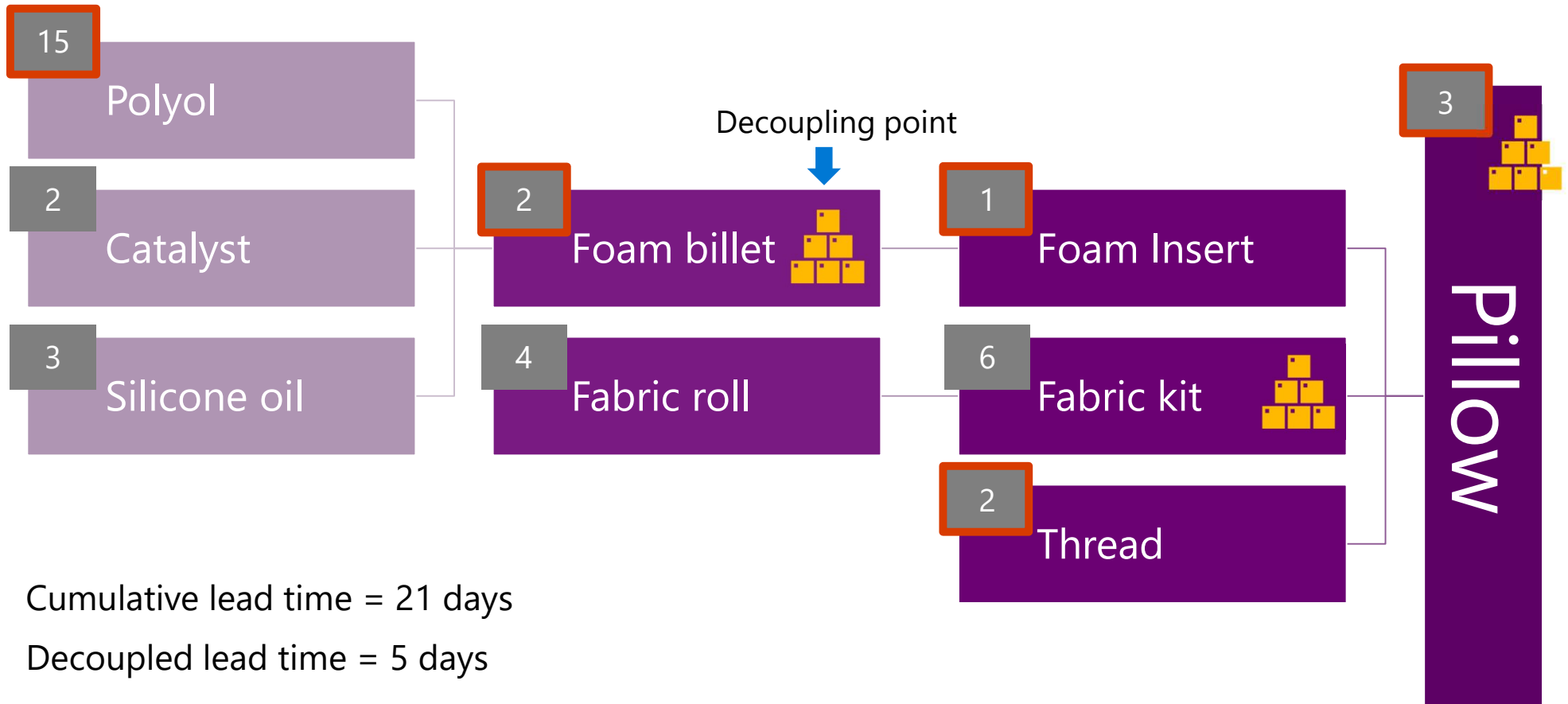
Critical operation protection

Customer tolerance time

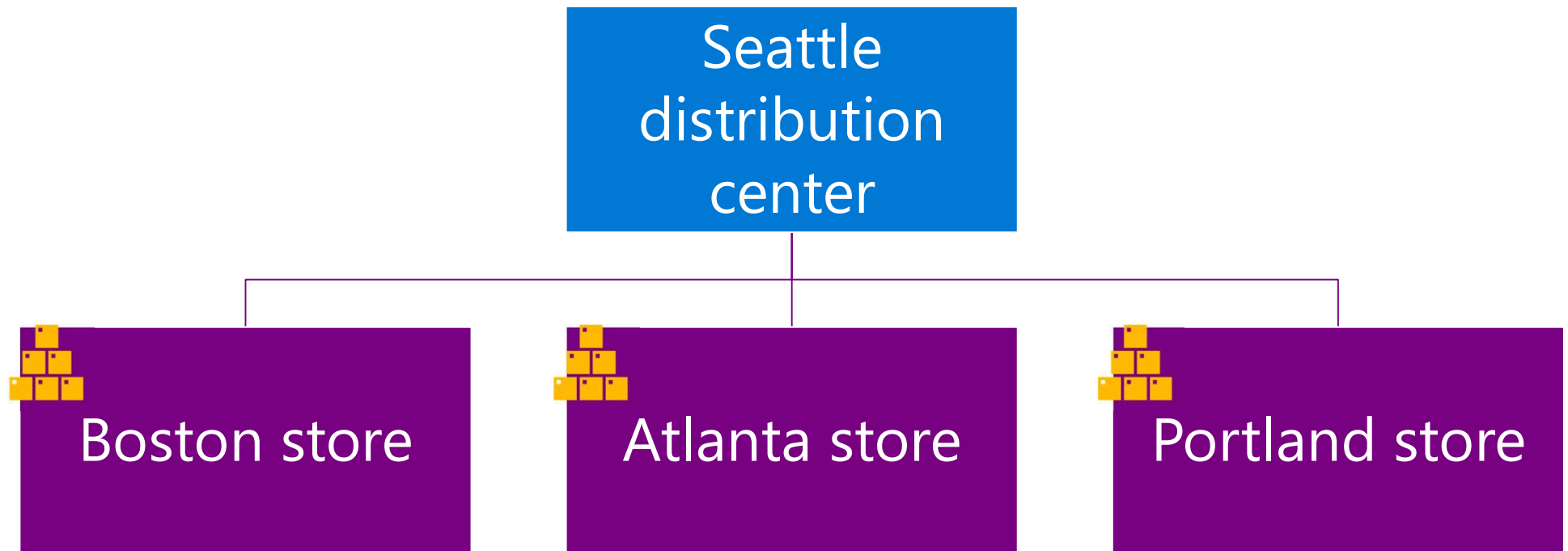
Sales order visibility horizon

Market potential lead time

Decoupled lead time



Strategic inventory positioning in a retail model



Decoupled lead time form

Finance and Operations Preview

Search for a page

SaveDeleteDisplay dimensionsCalculate decoupled lead timeOptions

Filter

PL0004 : 5

- V0001 : 1
 - VY0001 : 17
 - VZ0001 : 15
 - VZ0002 : 2
 - VZ0003 : 3
 - V0002 : 10
 - VY0002 : 4
 - V0003 : 2

PL0004 : 000031 | Standard view

Decoupled lead time

Item number : Decoupled lead time

General

IDENTIFICATION

Item number

PL0004

BOM

000176

Decoupling point

☒ Yes

DECOUPLED LEAD TIME

Decoupled lead time

5

Lead time

3

Inventory dimensions

INVENTORY DIMENSIONS

Configuration

Size

Color

Style

Site

1

Warehouse

11

Location

Inventory status

License plate

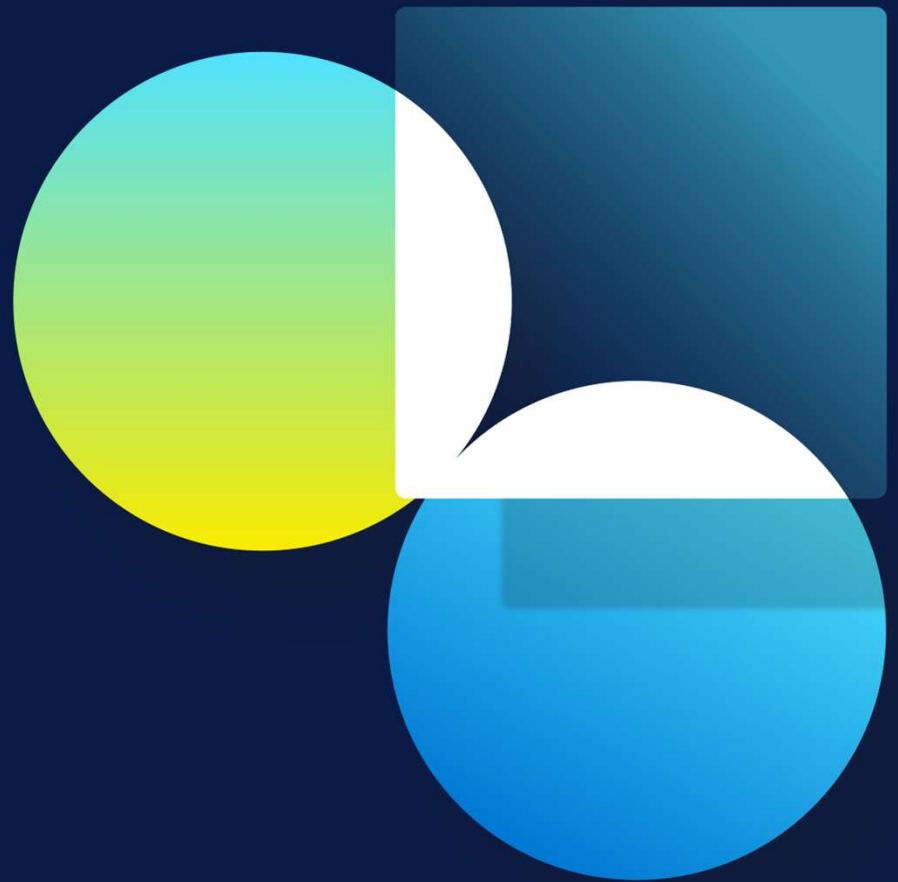
Batch number

Serial number

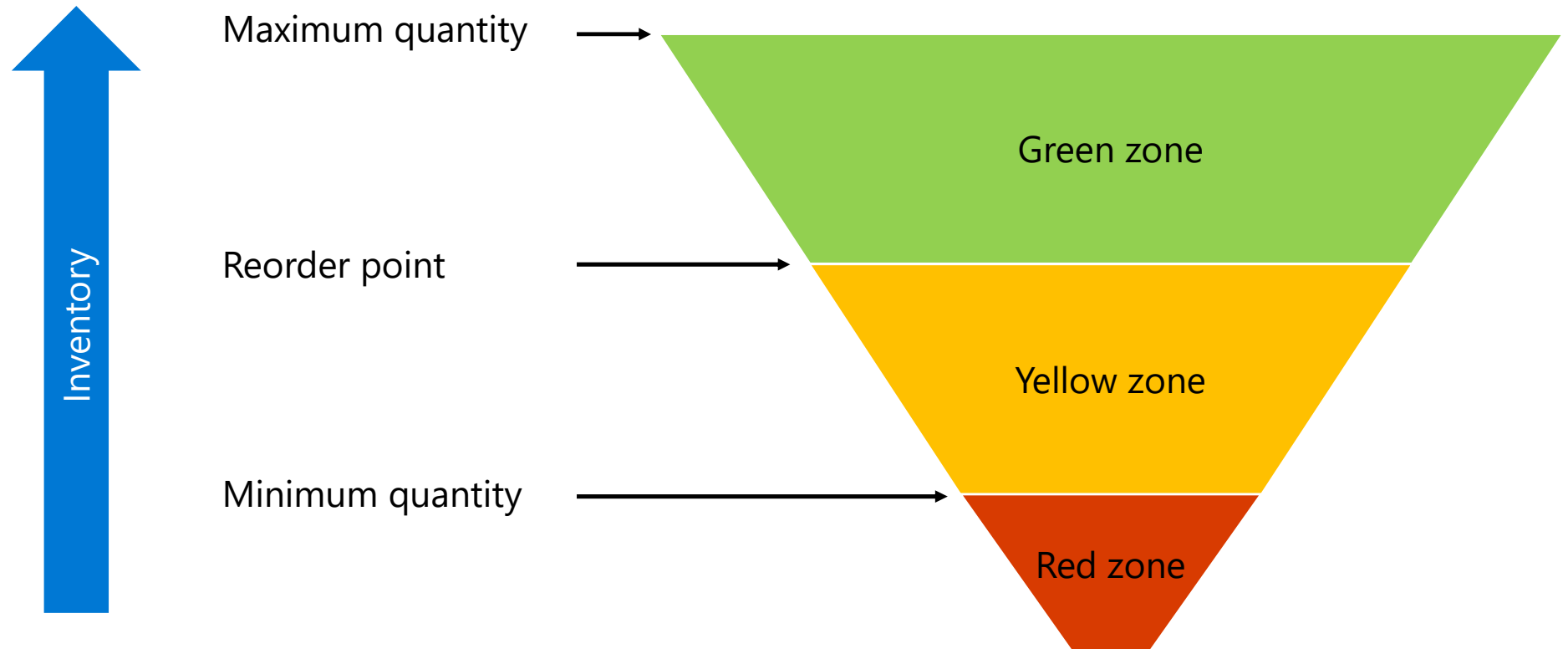
Owner

Buffer levels

Beatriz Nebot Gracia



Buffer levels



What should each buffer zone be?

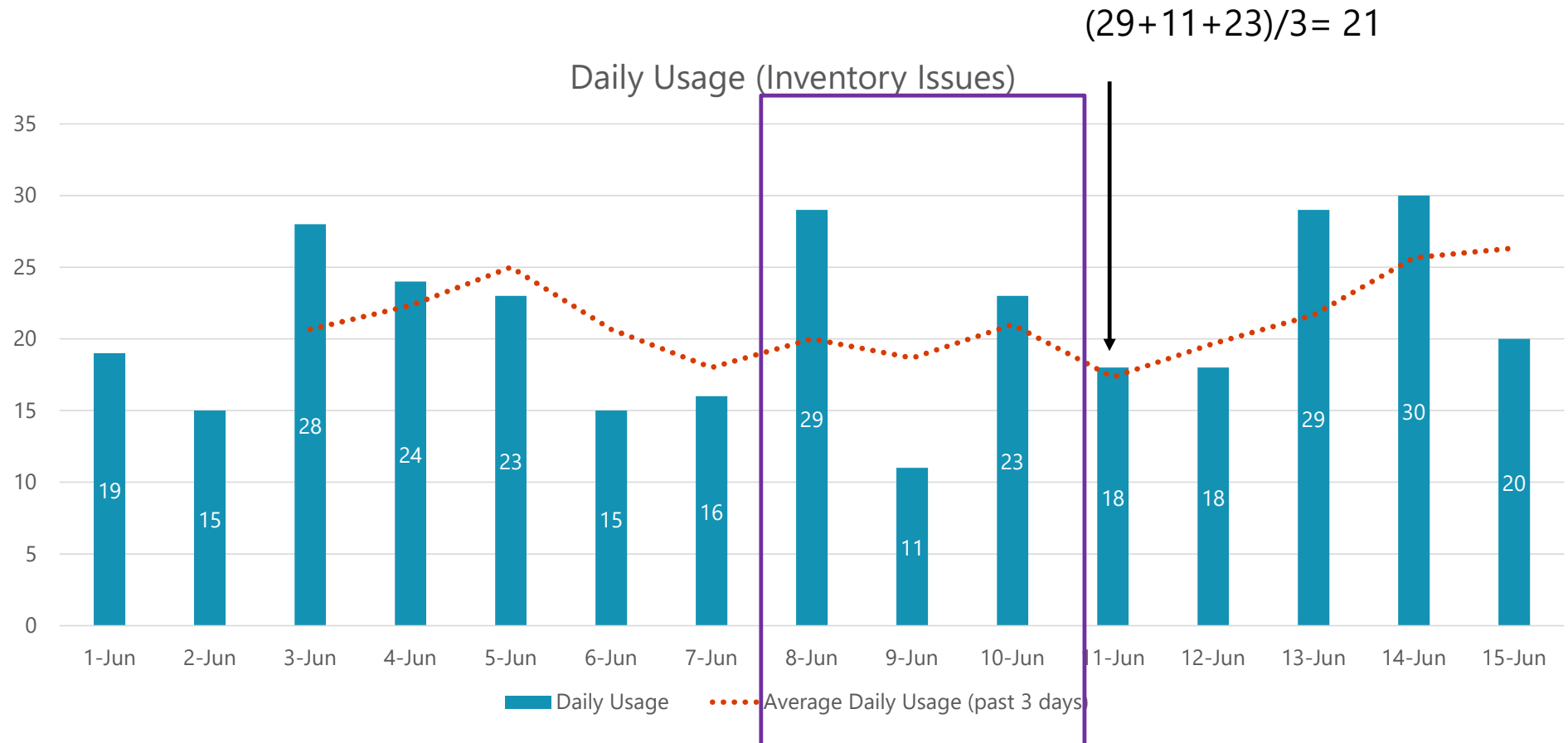
Green = Max of {
Minimum order quantity
Average daily usage × order cycle
Average daily usage × decoupled lead time × lead time factor

Yellow = $\underbrace{\text{Average daily usage} \times \text{decoupled lead time}}$
expected consumption during replenishment lead time

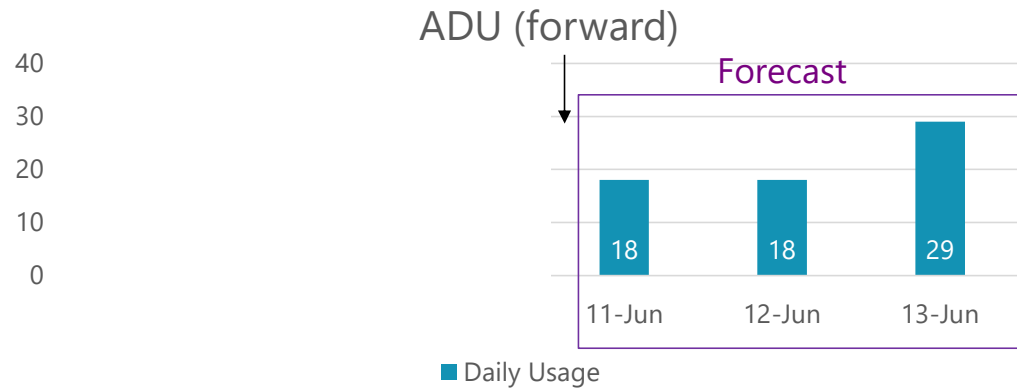
Red = Sum of {
Red base = average daily usage × decoupled lead time × lead time factor
Red safety = red base × variability factor

Average daily usage (past)

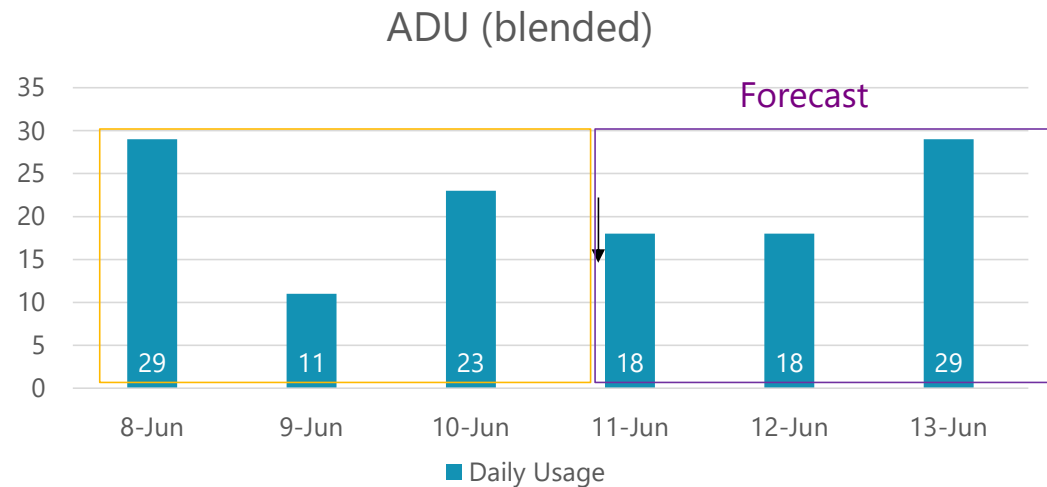
Average daily usage of pillow = 21



Past, forward, or blended ADU



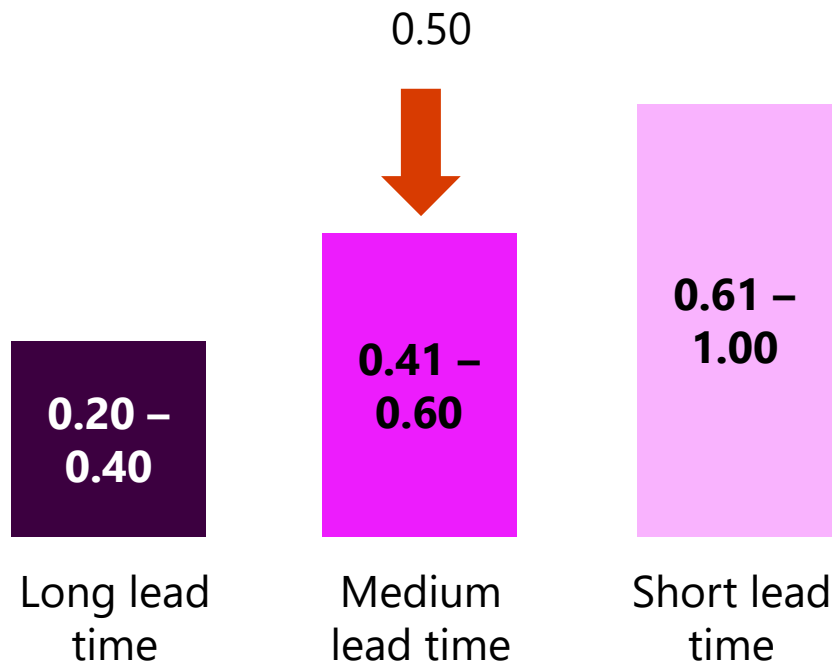
$$\text{ADU forward} = (18 + 18 + 29) / 3 = 21.66$$



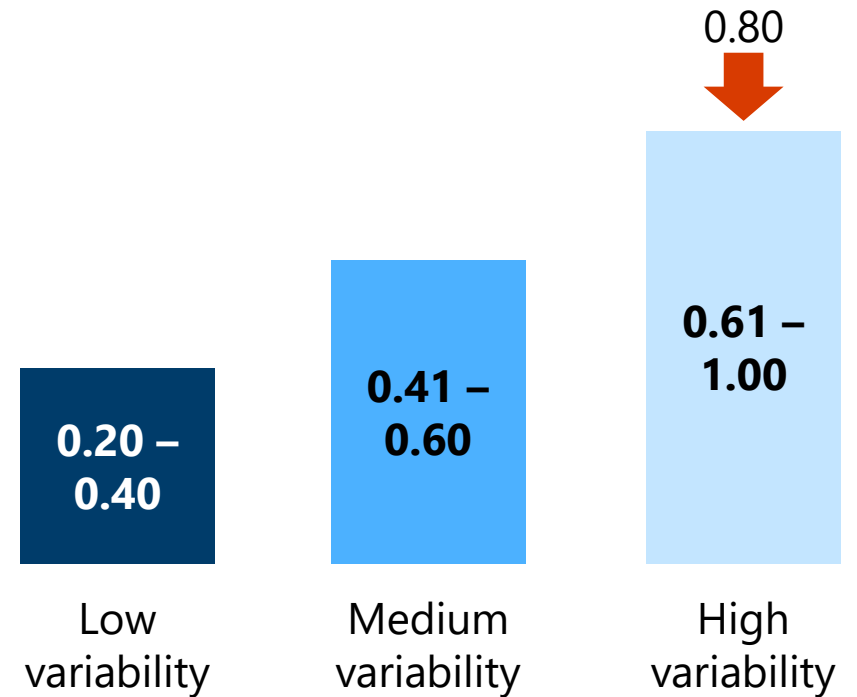
$$\begin{aligned} \text{ADU blended} &= (\text{ADU past} + \text{ADU forward}) / 2 \\ &= (21 + 21.66) / 2 = 21.33 \end{aligned}$$

Zone calculation factors

Lead time factor



Variability factor



Buffer level example

Anne Krupke



What should the yellow zone be?

Pillow example:

Average daily usage: 23 ea
Decoupled lead time: 5 days

$$\text{Yellow zone} = 23 \times 5 = 115 \text{ ea}$$

Yellow =

Average daily usage × decoupled lead time

expected consumption during replenishment lead time

What should the red zone be?

Pillow example:

Average daily usage: 23 ea
Decoupled lead time: 5 days
Lead time factor: 0.5
Variability factor: 0.8

$$\text{Red base} = 23 \times 5 \times 0.5 = 57.5 \text{ ea}$$

$$\text{Red safety} = 57.5 \times 0.8 = 46 \text{ ea}$$

$$\text{Red zone} = 57.5 + 46 = 103.5 \text{ ea}$$

Yellow zone

Red = Sum of

Red base = average daily usage $\times$ decoupled lead time $\times$ lead time factor

Red safety = red base $\times$ variability factor

What should the green zone be?

$$\text{Green} = \text{Max of} \left\{ \begin{array}{l} \text{Minimum order quantity} \\ \text{Average daily usage} \times \text{order cycle} \\ \text{Average daily usage} \times \text{decoupled lead time} \times \text{lead time factor} \end{array} \right.$$

Yellow zone

Pillow example:

Average daily usage: 23 ea
Decoupled lead time: 5 days
Lead time factor: 0.5
Order cycle: none
Minimum order quantity: 10 ea

Minimum order quantity = 10 ea

Average daily usage $\times$ order cycle = $23 \times 0 = 0$ ea

Yellow zone $\times$ LTF = $25 \times 5 \times .5 = 57.5$ ea

Green zone = 57.5 ea

Buffer levels results

Maximum quantity = 277



58

Reorder point = 219

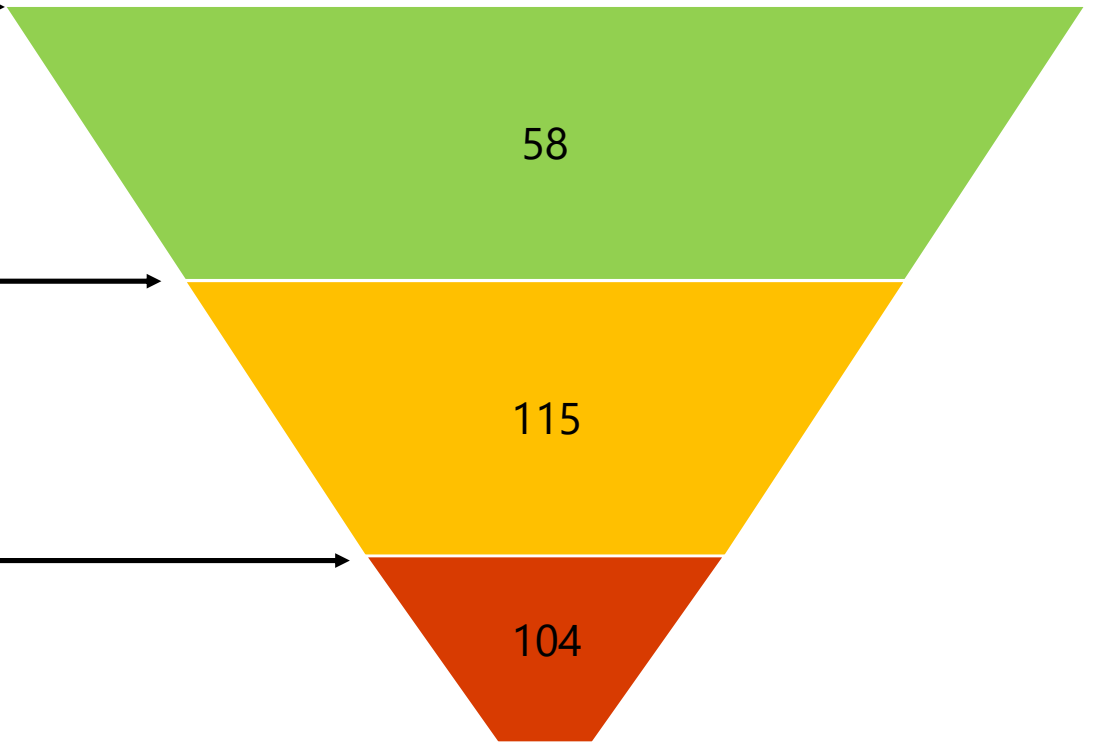


115

Minimum quantity = 104



104



Decoupling coverage group

Coverage groups

Coverage group

Name

Calendar

D-Pillows

DDMRP Pillows

General

COVERAGE

Coverage code

Decoupling point

Coverage period

0

Coverage time fence (days)

100

Negative days

2

Positive days

100

Planning priority model

ON-HAND INVENTORY

Consume on-hand inventory

Before all other supply

Use the specified route version

No

Period template

OTHER

Use the specified BOM or formula v...

No

Other

PLANNED ORDER

Requested production status

Scheduled

Automatic firming time fence (days)

0

Freeze time fence (days)

0

BOM explosion time fence (days)

100

Capacity scheduling time fence (days)

100

REQUISITION

Approved requisitions time fence (days)

0

FORECAST PLAN

Forecast plan time fence

100

Reduction key

Reduce forecast by

Orders

Include intercompany orders

Yes

Include customer forecast in the de...

No

SAFETY MARGINS IN DAYS

Receipt margin added to requirement ...

0

Issue margin deducted from requirem...

0

Reorder margin added to item lead time

0

DDMRP PARAMETERS

Lead time factor

0.50

Variability factor

0.80

Average daily usage past period (days)

10

Min, max, and reorder-point period

Weekly

Action

Demo: set up a decoupling point

Finance and Operations Preview

Search for a page

PPC

AN

Save

New

Delete

Product

Purchase

Sell

Manage inventory

Engineer

Plan

Manage projects

Manage costs

Commerce

General

Setup

Options

View

Forecast

Coverage

Order settings

Requirement

Sequencing

Supply schedule

Demand forecast

Supply forecast

Inventory forecast

Item coverage

Default order settings

Net requirements

Gross requirement

Sequence value

Released product details

Standard view

PL004 : 12in Round Lavender Velvet Pillow

Promote

COUPON

Exclude

No

Deliver

Sell

Foreign trade

Manage inventory

Engineer

Plan

Coverage group

Manage costs

POSTING

Item group

Pillows

COSTING

Cost group

M5

PRICE UPDATE

Latest cost price

No

Date of price

1/1/2017

PRICES

Unit

ea

Price

12.48

Price quantity

1.00

CHARGES

Price charges

0.00

Charges quantity

1.00

Incl. in unit price

Yes

ABC CLASSIFICATION

Value

None

Margin

None

Revenue

None

Carrying cost

None

Related information

Dynamic adjustments

Beatriz Nebot Gracia



Demo: adjust the buffer

SaveNewDeleteWizardDefault settingsBuffer valuesOptions

Periodic setup

Calculate

Take Action

Add time periods

Calculate decoupled lead time

Accept all calculations

Discard all calculations

Delete selected time periods

Calculate Average Daily Usage

Accept calculations for selected rows

Discard calculations for selected rows

Calculate min, max and reorder point quantities



PL004 : 12INROUND LAVENDERVE | Standard view

Item coverage, Site: 10, Warehouse: 101

OverviewGeneralLead timeMin./Max.DimensionBuffer valuesOn-hand

	From date	To date	Min	Reorder point	Max	Average daily usage	Demand Adjustment Factor	Decoupled lead time	Lead time factor	Variability factor	Calculated min	Calculated reorder	Calculated max
	6/20/2022	6/26/2022	104.00	219.00	277.00	23.00	1.00	5	0.50	0.80	104.00	219.00	277.00
	6/27/2022	7/3/2022	0.00	0.00	0.00	25.00	1.00	5	0.50	0.80	113.00	238.00	301.00
	7/4/2022	7/10/2022	0.00	0.00	0.00	30.00	1.00	5	0.50	0.80	135.00	285.00	360.00
	7/11/2022	7/17/2022	0.00	0.00	0.00	24.00	1.00	5	0.50	0.80	108.00	228.00	288.00
	7/18/2022	7/24/2022	0.00	0.00	0.00	28.00	1.00	5	0.50	0.80	126.00	266.00	336.00
	7/25/2022	7/31/2022	0.00	0.00	0.00	20.00	1.00	5	0.50	0.80	90.00	190.00	240.00
	8/1/2022	8/7/2022	0.00	0.00	0.00	26.00	1.00	5	0.50	0.80	117.00	247.00	312.00
	8/8/2022	8/14/2022	0.00	0.00	0.00	23.00	1.00	5	0.50	0.80	104.00	219.00	277.00
	8/15/2022	8/21/2022	0.00	0.00	0.00	23.00	1.00	5	0.50	0.80	104.00	219.00	277.00

Master plan

MasterPlan

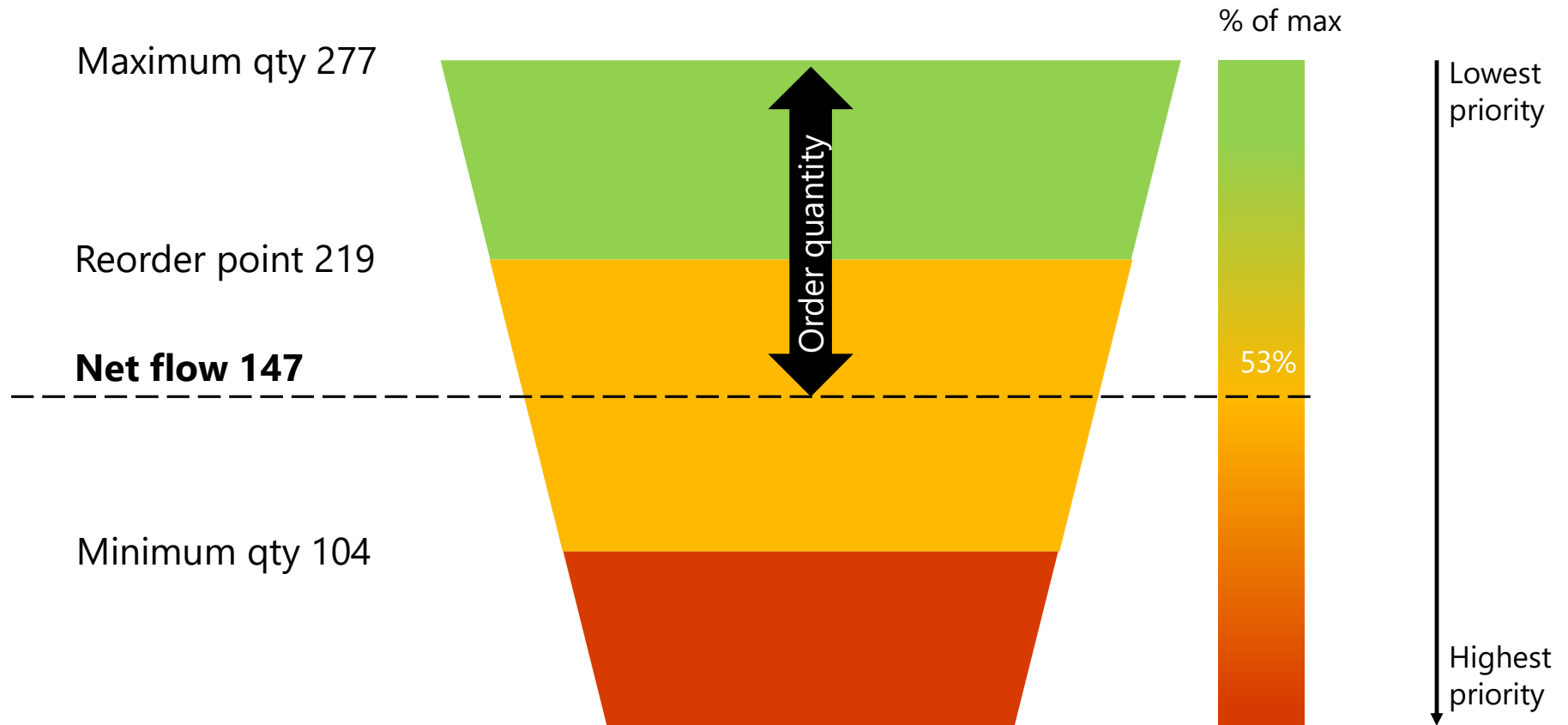


Demand driven planning

Anne Krupke



Using DDMRP to generate planned orders



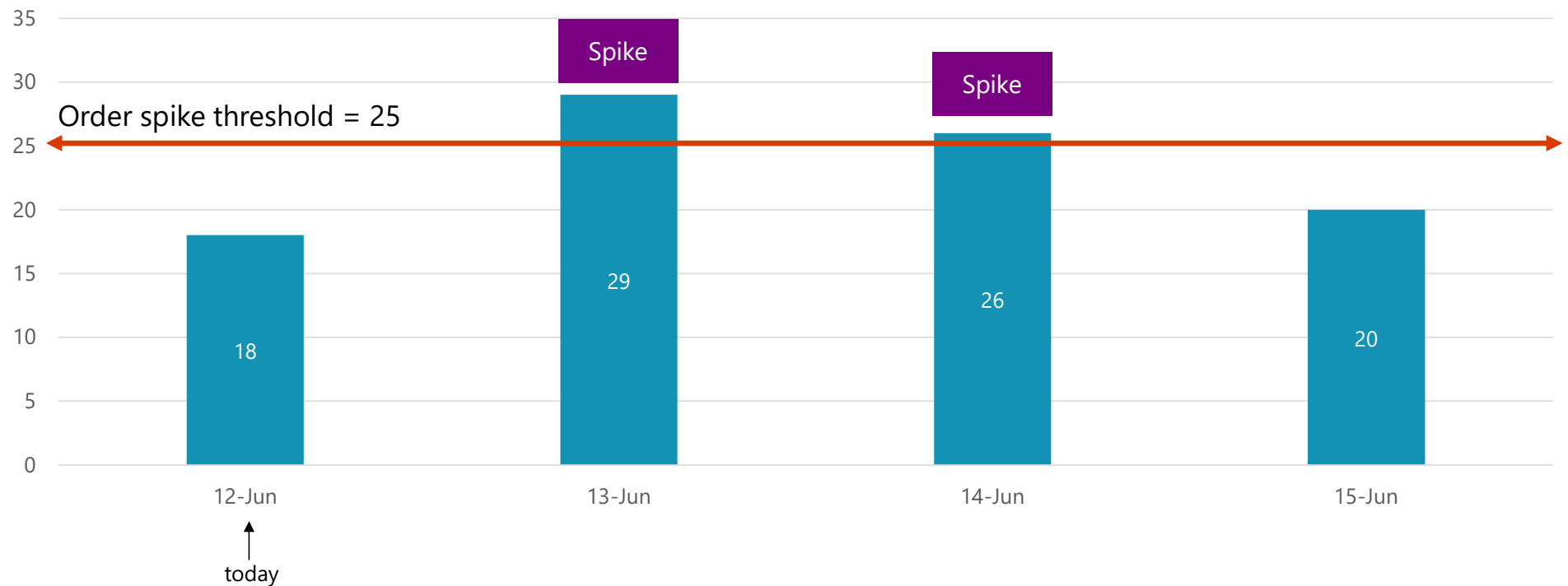
Net flow = on-hand + on order – qualified demand

Qualified demand

Net flow = on-hand + on order – **qualified demand**

Qualified demand = demand past due + today's demand + qualified order spikes
= 0 + 18 + (29 + 26) = **73**

Demand



Demo: generate planned orders with DDMPR

Finance and Operations Preview

Search for a page

PPC

AN

Edit

New

Delete

Product

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Supply schedule

Demand forecast

Supply forecast

Inventory forecast

Item coverage

Default order settings

Net requirements

Gross requirement

Sequence value

Released product details | Standard view

PL004 : 12in Round Lavender Velvet Pillow

General

PL004

IDENTIFICATION

Item number

PL004

Product type

Item

Product number

Product subtype

PL004

Product

Engineering product category details

Product service type

Not specified

Product owner

FURTHER IDENTIFICATION

Product name

12in Round Lavender Velvet Pill...

Search name

12inRoundLavenderVe

Description

ADMINISTRATION

Storage dimension group

SiteWH

Tracking dimension group

None

Item model group

STD

Reservation hierarchy

Counting reason code policy

Product lifecycle state

BUNDLE

Bundle

No

RELEASE

Release policy

Counting reason code policy

Product lifecycle state

READINESS

Product readiness policy

Purchase

ea

12.00

PURCHASE ORDER

Unit

ea

Overdelivery

0.00

Underdelivery

0.00

Intercompany stopped

No

ADMINISTRATION

Buyer group

DDMRP

Item price tolerance group

Vendor

V100002

TAXATION

Item sales tax group

PRICE UPDATE

Latest purchase price

No

Date of price

6/16/2022

PRICES

Price

12.00

Price quantity

1.00

CHARGES

Price charges

0.00

Charges quantity

0.00

Charges group

Incl. in unit price

No

DISCOUNTS

Line discount group

Multiline discount

Total discount

Yes

Supplementary item group

Pricing precision

VENDOR REBATE

Vendor rebate item group

APPROVED VENDOR

Approved vendor check method

No check

Promote

COUPON

Exclude

Related information

Visual and collaborative execution

Beatriz Nebot Gracia



Demo: on-hand of the item

Item coverage, Site: 10, Warehouse: 101

Overview General Lead time Min./Max. Dimension Buffer values On-hand

Filter Master plan

From date	On-hand	On-hand status (%of min)	On-hand status color	On-hand status
6/20/2022	220.00	211.54		On-hand higher than average range

Standard view 

Filter Master plan

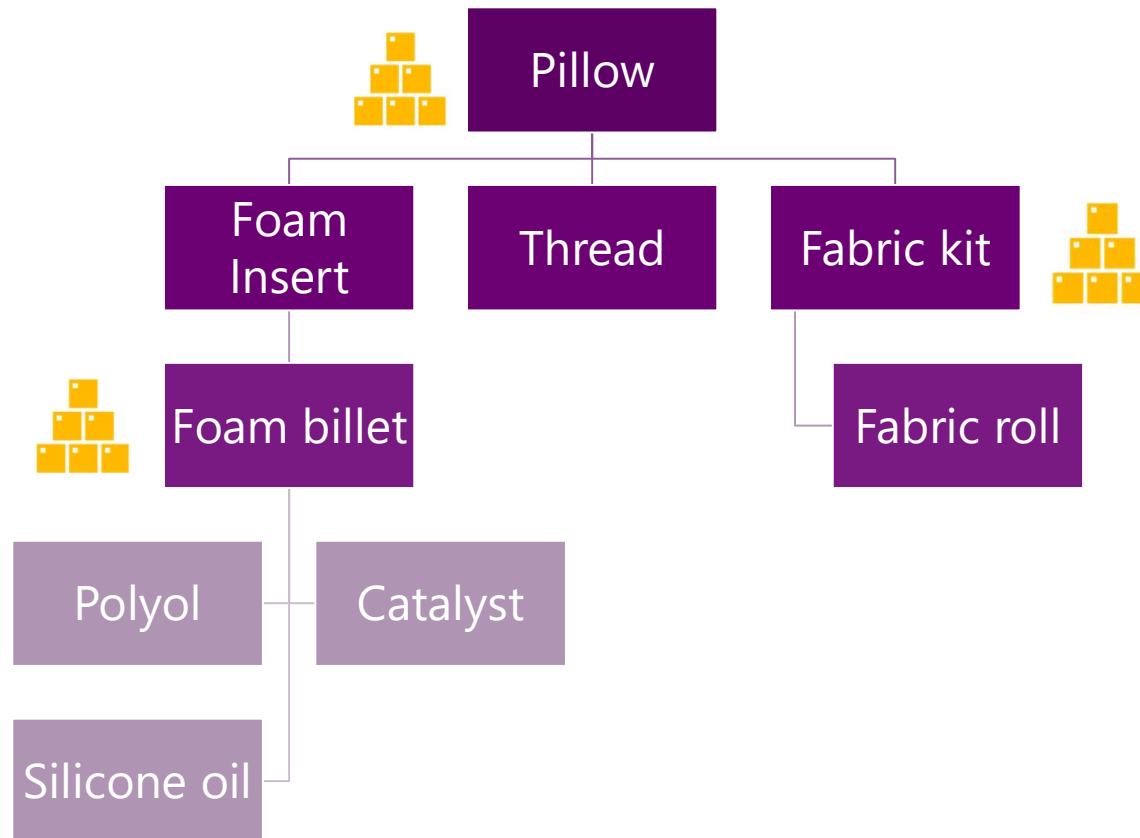
The chart displays inventory volume over a period from June 11 to June 21. The y-axis represents 'Volume' ranging from -100 to 300. The x-axis represents 'Date' with labels for each day and 12:00. A black line represents the 'On-hand' inventory. Three shaded regions represent buffer zones: 'Average on-hand' (light green, top), 'Low on-hand' (light yellow, middle), and 'Critically low on-hand' (light red, bottom). The 'On-hand' inventory starts around 120, peaks at approximately 260 on June 15, drops to around 120 on June 16, reaches a low of about 50 on June 19, and ends around 40 on June 21. The buffer zones are stacked, with 'Critically low on-hand' at the bottom, followed by 'Low on-hand', and 'Average on-hand' at the top.

Date	On-hand	Critically low on-hand	Low on-hand	Average on-hand
11 Jun	120	75	75	120
12 Jun	220	75	75	120
13 Jun	200	75	75	120
14 Jun	140	75	75	120
15 Jun	260	75	75	120
16 Jun	120	75	75	120
17 Jun	70	75	75	120
18 Jun	120	75	75	120
19 Jun	50	75	75	120
20 Jun	120	75	75	120
21 Jun	40	0	0	0



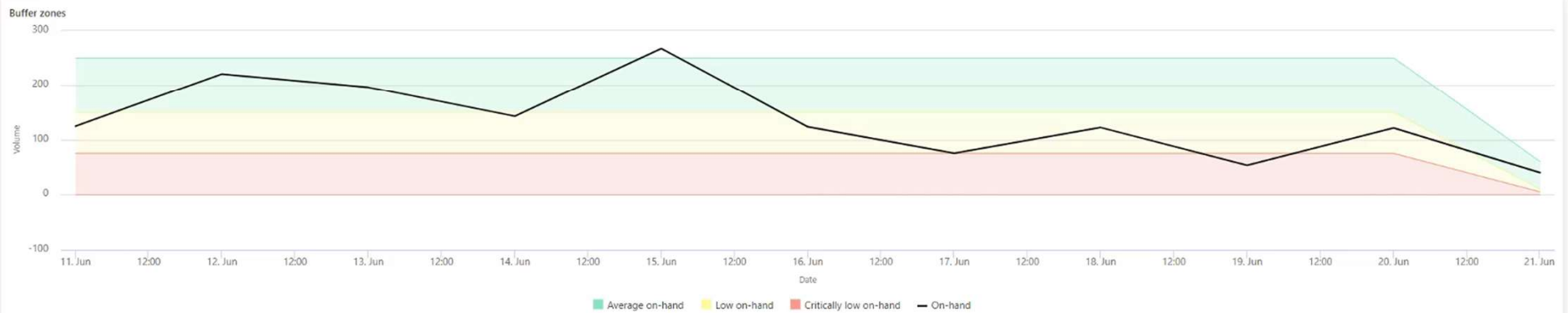
Demo: overview of decoupling points

Decoupling points



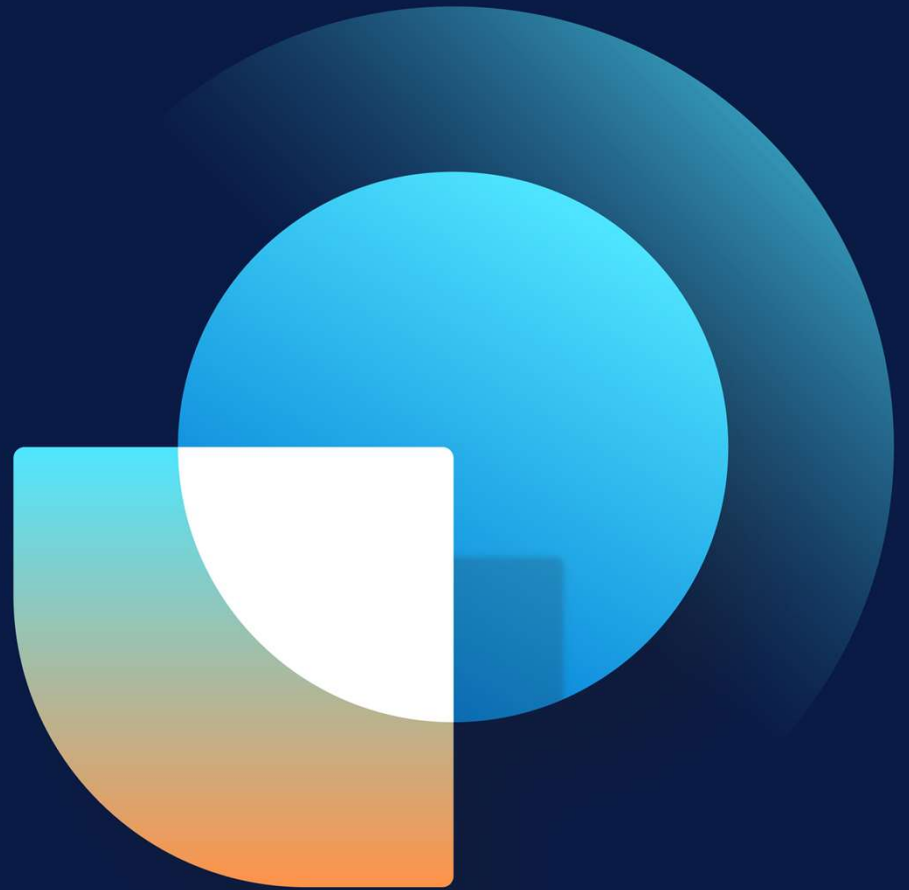
Standard view 

Filter Master plan



Resources & guidance

Anne Krupke



The five components of DDMRP

Strategic inventory positioning

Buffer profiles and levels

Dynamic adjustments

Demand driven planning

Visible and collaborative execution

DDMRP benefits

Benefit	Typical improvements
Improved customer service	Users consistently achieve 97-100% on time fill rate
Lead time compression	Lead time reductions in excess of 80% have achieved in several industry segments
Right-sizes inventory	Typical inventory reductions of 30/45% are achieved while improving customer service
Lowest total supply chain cost	Costs related to expedite activity and false signals are largely eliminated (fast freight, partial ships, cross-ships, schedule break-ins)
Easy and intuitive	Planners see priorities instead of constantly fighting the conflicting messages of MRP

Getting started recommendations

- Understand DDMRP concepts
 - Use DDI resources/training
 - Additional Deep-Dive TechTalks on theory and usage in Dynamics
- Do a prototype to test out that it will work
 - Identify low-risk items to test out or items where decoupled lead time makes the most sense
 - Some companies simulate what DDMRP would have done for past 2 years of purchases and compare to what they actually did
 - Some companies just implement DDMRP if their financials support it
- If it works, roll out a full implementation

Additional Resources

- [Demand Driven Material Requirements Planning \(DDMRP\) \(demanddriveninstitute.com\)](http://demanddriveninstitute.com)
- [What is DDMRP? on Vimeo](#)
- [Yammer : Dynamics 365 and Power Platform Insider Program : Planning Service : All Conversations](#)
- [Demand Driven Downloads \(demanddriveninstitute.com\)](http://demanddriveninstitute.com)
- [Ideas site](#)
- Microsoft docs articles – coming soon!

How do you organize a party in space?

You “planet”!





QUESTIONS

Dankie Faleminderit **Shukran** Chnorakaloutioun Hvala Blagodaria

Děkuji **Tak** Dank u Tānan Kiitos **Merci** Danke Ευχαριστώ A dank

Mahalo ἰτι. **Dhanyavād** Köszönöm Takk Terima kasih **Grazie** Grazzi

Thank you!

감사합니다 Paldies Choukrane Ačiū **Благодарам** ありがとうございます

谢谢 Баярлалаа **Dziękuję** Obrigado Mulțumesc **Спасибо** Ngiyabonga

Ďakujem Tack Nandri Kop khun Teşekkür ederim Дякую Хвала Diolch

Net flow

Net flow = on-hand + on order – qualified demand

Qualified demand = demand past due + today's demand + qualified order spikes

Supply generated if **net flow** ≤ **reorder point**:

Priority (%) = net flow/max

Quantity = Maximum – net flow

Example

On hand = 220

On order = 0

Demand past due = 0

Today's demand = 18

Qualified order spike = 29 + 26 = 55

Qualified demand = 18 + 55 = 73

Net flow = 220 – 73 = 147

Order quantity = 130