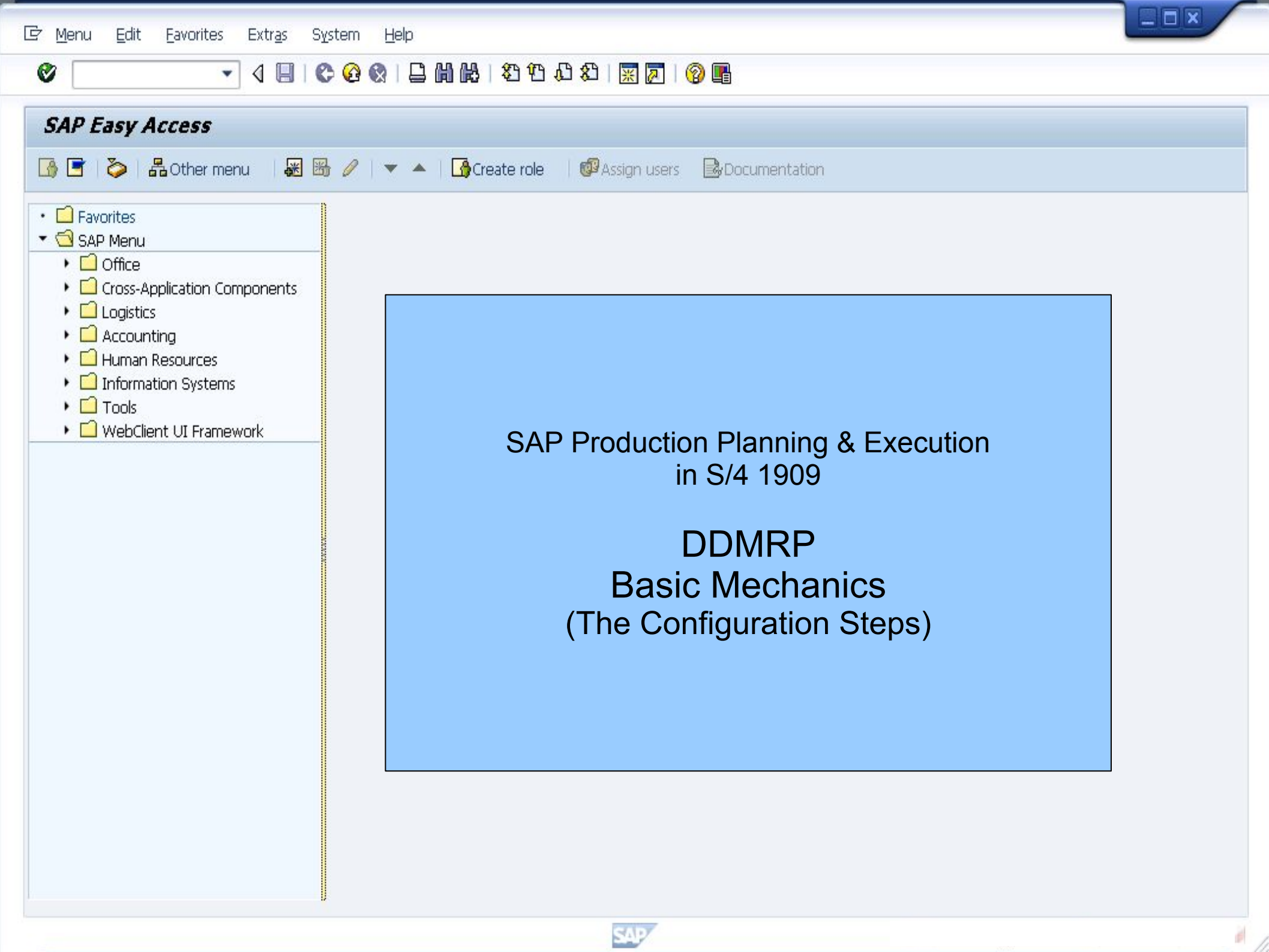
Menu
Edit
Favorites
Extras
System
Help
SAP Easy Access
Other menu
Create role
Assign users
Documentation
Favorites
SAP Menu
Office
Cross-Application Components
Logistics
Accounting
Human Resources
Information Systems
Tools
WebClient UI Framework
SAP Production Planning & Execution
in S/4 1909
DDMRP
Basic Mechanics
(The Configuration Steps)

Is MRP Relevant today ?

- MRP is first coined in the 1950s and with with advent of Computerization in the early 60s and 70s, to solve manufacturing issues of Materials Requirement.
- It is a simple idea of looking at the Bills of Material where the highest level is the Finished Goods cascading down in a hierarchy of Assemblies and Components and the MRP logic is to perform calculations of the supply requirements in that hierarchy in order to produce that Finished Goods at the BOM header.

Issues of MRP ?

- MRP as a product in the 50s and 60s to solve a supply calculation issue at that era of Manufacturing.
- But today's manufacturing is different:
  - Products become more complex
  - Supply Chain may be longer
  - Demands in Real time are shorter
  - Demands becoming volatile
  - Product Life-Cycle are becoming shorter
  - Product Variants are more complex

Classic flaw of MRP ?

- MRP's "Bullwhip" effect
  - Fundamentally based on Forecast and Forecast is often always have errors
  - Creates cascading long lead times for the entire BOM structure (the network of the BOM)
  - The "Bullwhip" effect distorts the reality of Real Demand as the Forecast is forever changing
  - Static Safety Stock introduced only makes more problems with excessive Inventory Investments
- The Result
  - Planner's distrust the MRP system and create their own spreadsheets outside the MRP system to compensate the Planning

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"Demand Driven MRP" (DDMRP)

DDMRP **Focus on the FLOW** and how to **Protect**

- the flow of information
- the flow of products

With 5 Components

1. Strategic inventory positioning (Decoupling)
2. Buffer profiles and level
3. Dynamic adjustments
4. Demand-driven planning
5. Highly visible and collaborative execution

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"Demand Driven MRP" (DDMRP)

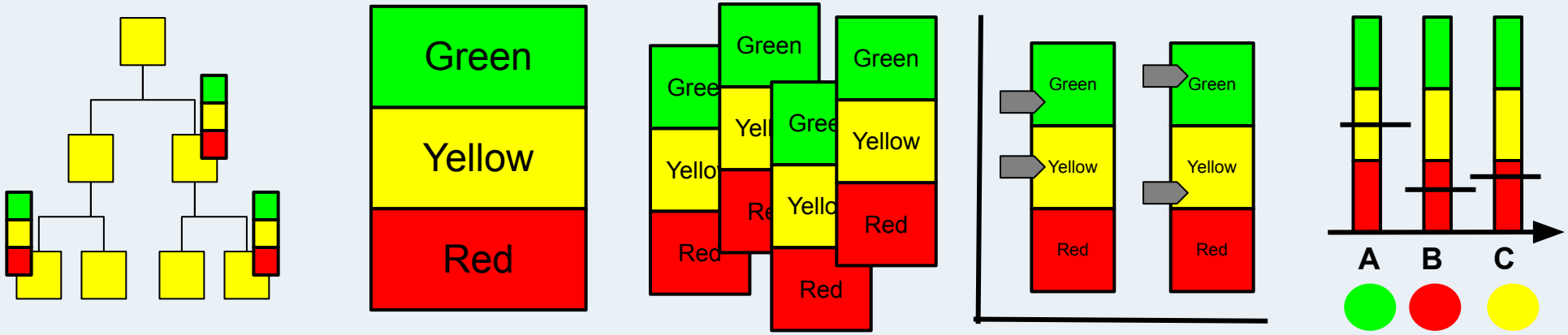
- **Position > Protect > Pull**

With 5 Components

1. Strategic inventory positioning (Decoupling)
2. Buffer profiles and level
3. Dynamic adjustments
4. Demand-driven planning
5. Highly visible and collaborative execution

SAP

Continuous Modeling of the Environment			Plan	Execute
Configuration			Plan & Execute	
Position	Protect		Pull	
1	2	3	4	5
Strategic Decoupling	Buffer Profile and Buffer Levels	Dynamic Adjustment	Demand Driven Planning	Visible and Collaboration Execution



System Help

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With 5 Components

1. Strategic inventory positioning (Decoupling)
2. Demand-driven planning
3. Highly visible and collaborative execution
4. Demand-driven planning
5. Highly visible and collaborative execution

SAP

Continuous Modeling of the Environment			Plan	Execute
Configuration			Plan & Execute	
Position	Protect		Pull	
1	2	3	4	5
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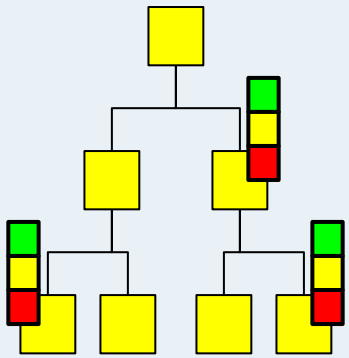

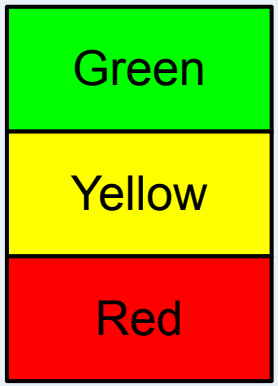

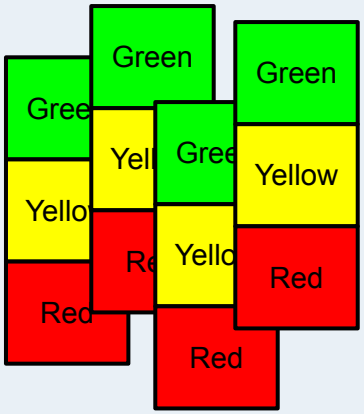

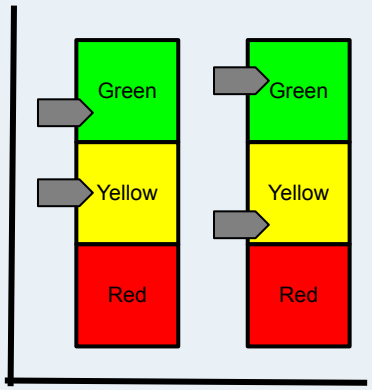

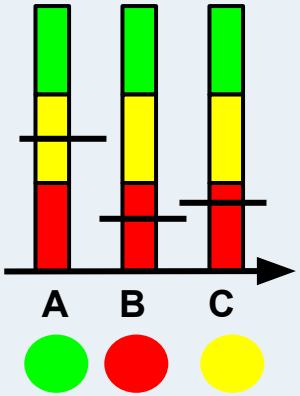

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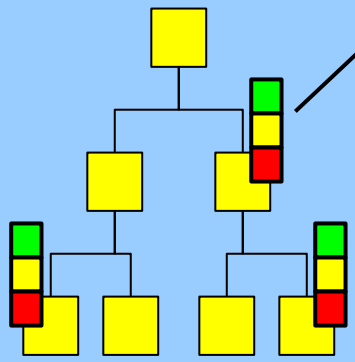
1. Strategic inventory positioning (Decoupling)

Concept of Decoupling



Setup **Buffers** (**Brick Walls**), but we used to call it **Safety Stock** !

To avoid **Bullwhip effect Propagation** (ie: the basic flaw on MRP hierarchical planning)

Since Buffers/Safety Stocks are defined for these "**Strategic Inventory Points**" of the BOM, the **Lead Time** to produce to FG will now be **compressed** for a given Quantity and Time

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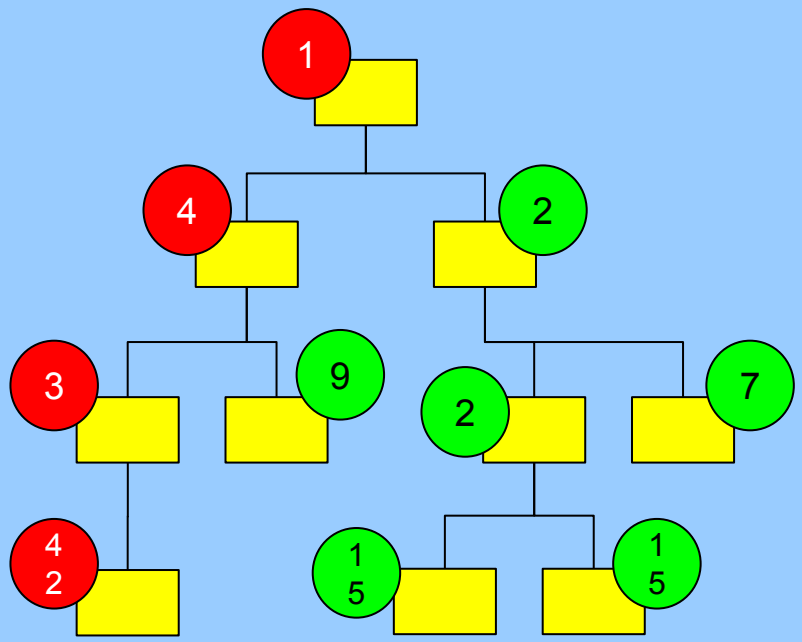
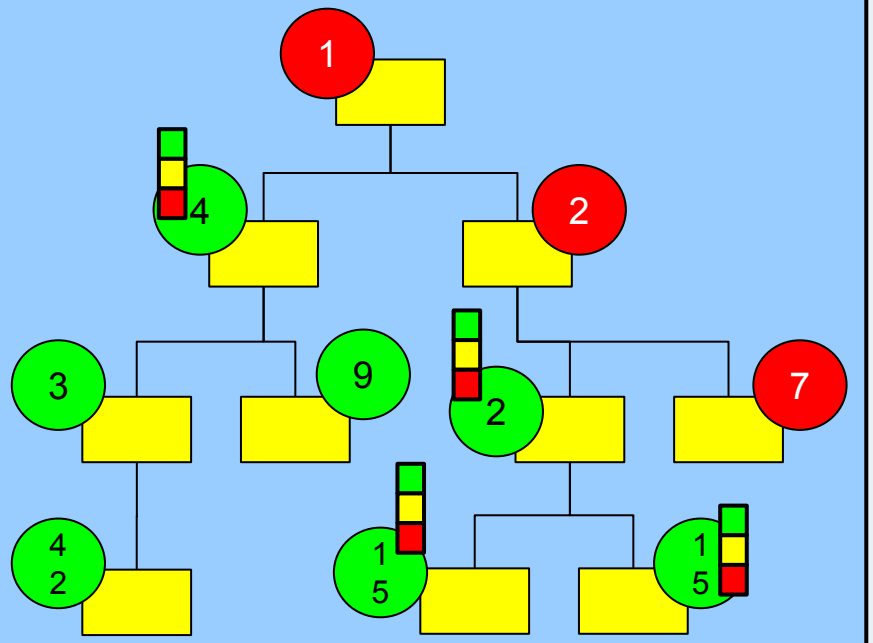
1. Strategic inventory positioning (Decoupling)

Concept of Decoupling (TRLT = Total Replenishment Lead Time)



TRLT is 1+4+3+42 = 50



TRLT is 1+2+7 = 10

by Decoupling the Lead Time

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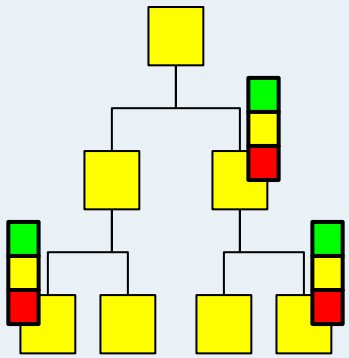
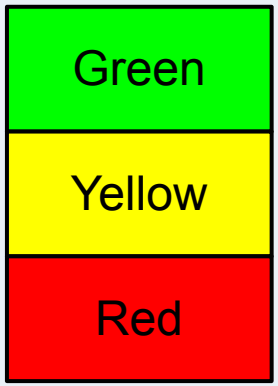
With 5 Components

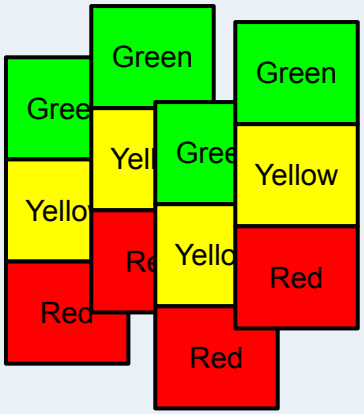
1. Strategic inventory positioning (Decoupling)
2. **Buffer profiles and level**
3. **Dynamic adjustments**
4. Demand-driven planning
5. Highly visible and collaborative execution

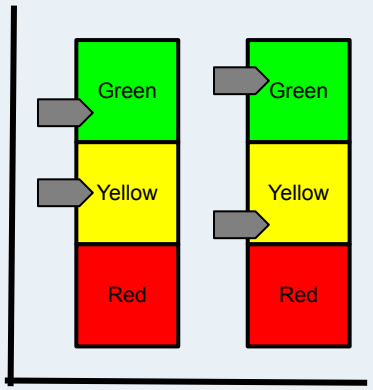
SAP

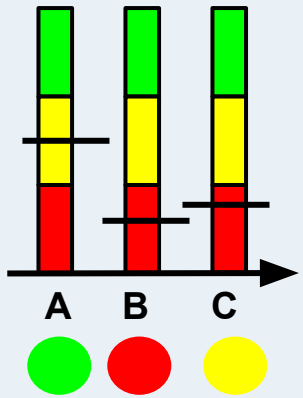
Continuous Modeling of the Environment			Plan	Execute
Configuration			Plan & Execute	
Position	Protect		Pull	
1	2	3	4	5
Strategic Decoupling	Buffer Profile and Buffer Levels	Dynamic Adjustment	Demand Driven Planning	Visible and Collaboration Execution











System Help

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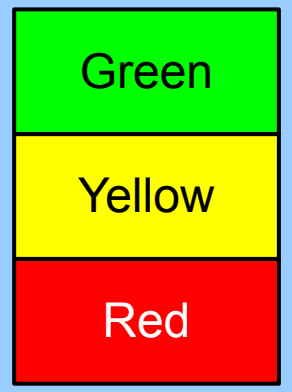
1. Strategic inventory positioning (Decoupling)
2. **Buffer profiles and Level**
3. **Dynamic adjustments**



Terminologies:

- **Buffer Profile - Key Parameters that are used to calculate and control the Buffer Inventory**
- **Buffer Level - The Green, Yellow, and Red Zones**

And in Step 3, the Buffer Levels can be adjusted dynamically DAILY

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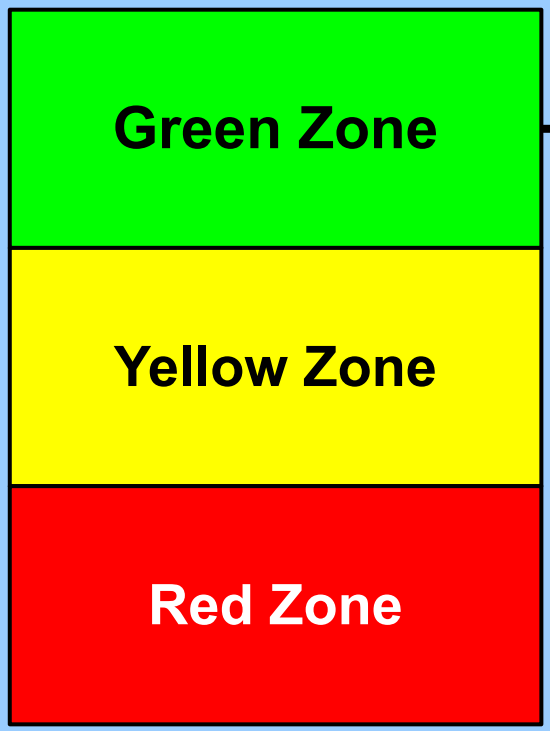
Buffer Levels



<u>Green Zone</u> is Central Point of the Buffer.

- **Frequency to Order**
  - Thinner zone (more frequency of order creation)
  - Thicker zone (less frequency of order creation)
- **Quantity to Order**

The <u>NET FLOW</u> will be move within the GREEN Zone

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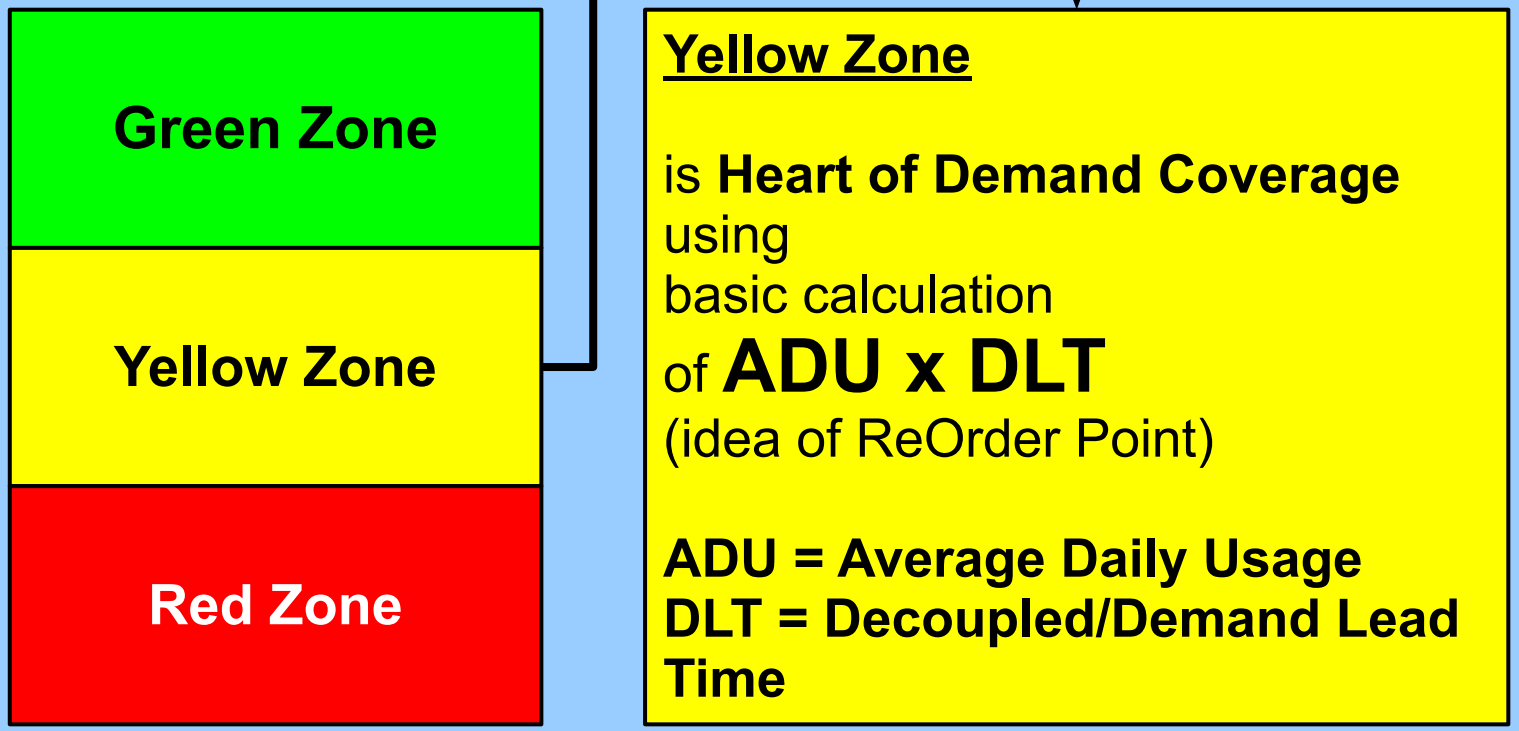
Buffer Levels



Yellow Zone

is **Heart of Demand Coverage**
using
basic calculation
of **ADU x DLT**
(idea of ReOrder Point)

ADU = Average Daily Usage
DLT = Decoupled/Demand Lead Time

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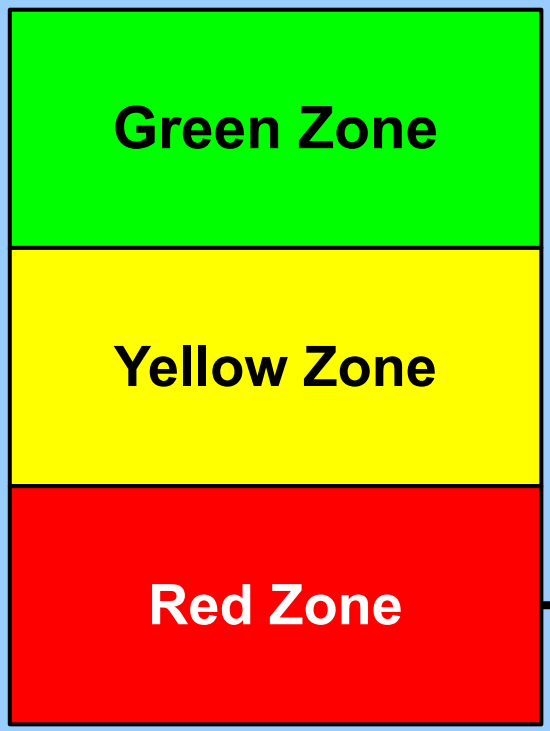
Buffer Levels



Red Zone

is **Safety embedded in the Buffer** to ensure the Buffer is **PROTECTED**

- Higher Variability of the Product > Thicker Red Zone
- Lower Variability of the Product > Thinner Red Zone

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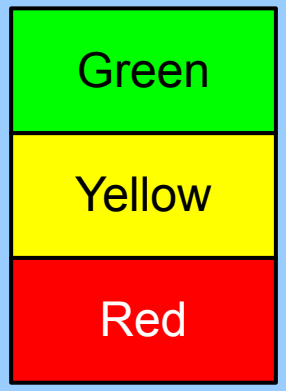
1. Strategic inventory positioning (Decoupling)
2. **Buffer profiles will be used to Create the 3 Buffer Levels (Buffer Zones)**
   - **3 criterias**
     i. **Item Type:** Manufactured, Purchased, Transfers (in SAP is STPO)
     ii. **Lead Time:** Long, Medium, Short
     iii. **Variability (supply and demand viewpoint) :** Low, Medium, HIgh
   - **Depending on the choices in the criterias, a factor will be used for the calculations to determine the Zones**



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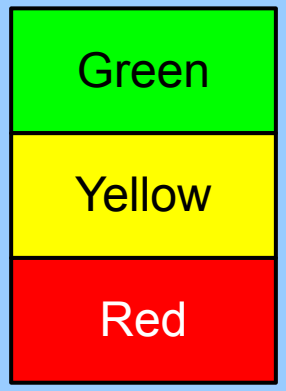
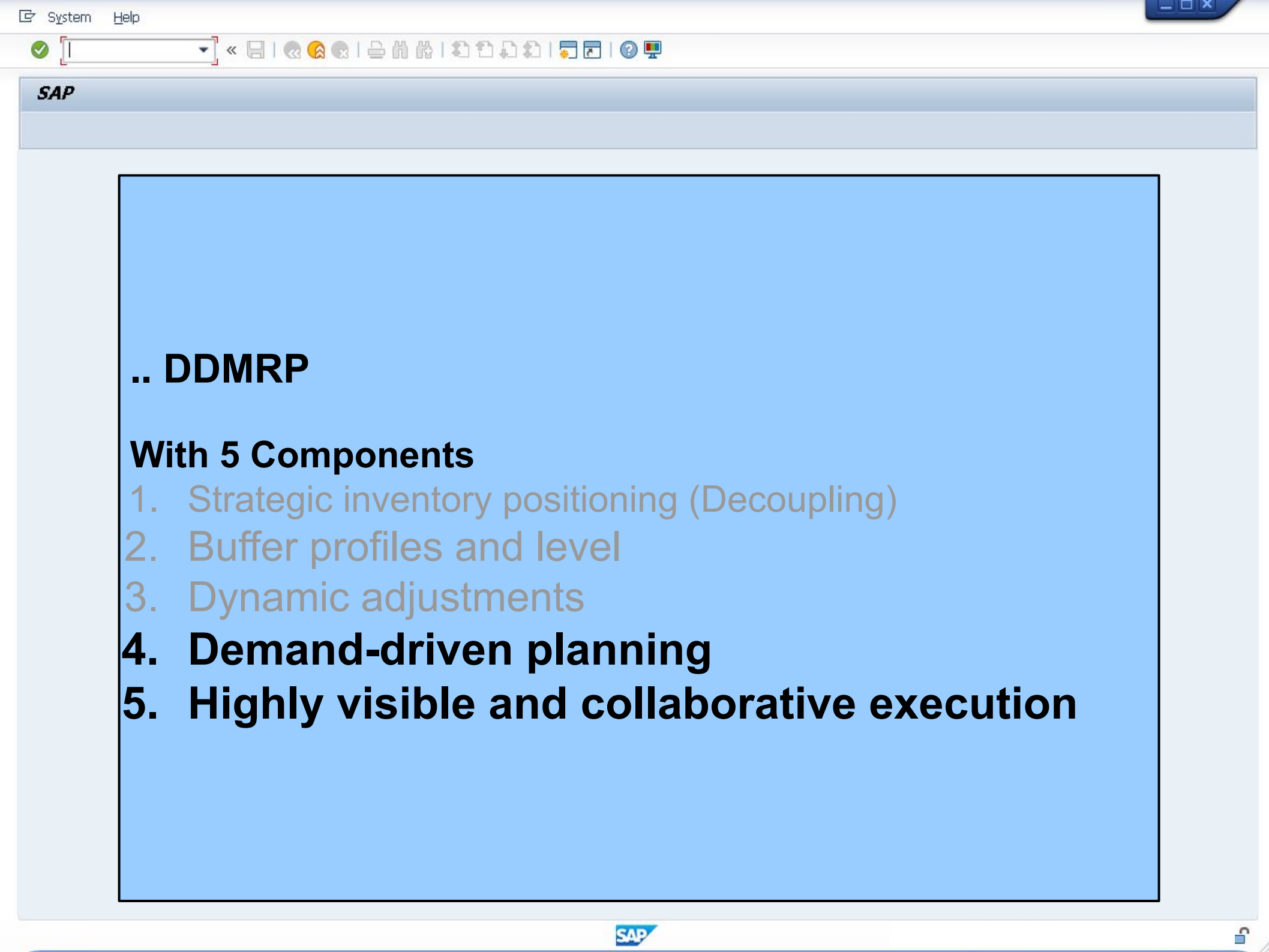
1. Strategic inventory positioning (Decoupling)
2. **Buffer profiles will be used to Create the 3 Buffer Levels (Buffer Zones)**
   - **Average Daily Usage (ADU)**
     i. **Computation** - Fixed, Past, Future or combinations
     ii. **ADU** will be computed daily and as is input value to derive the Buffer zones, hence the Buffer zones/levels will also change Dynamically every day
   - **Order Spike**
     i. **Order Spike Horizon** - a defined future time frame used to quality order spikes in combination with an order spike threshold
     ii. **Order Spike Threshold** - a defined amount used to qualify order spikes in combination with the order spike horizon




System
Help
SAP
.. DDMRP
With 5 Components
1. Strategic inventory positioning (Decoupling)
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SAP

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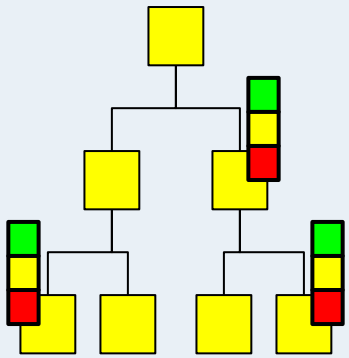

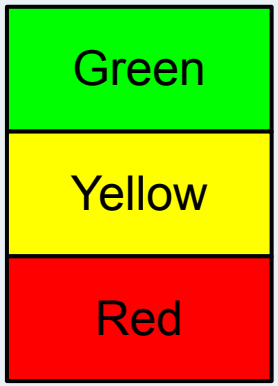

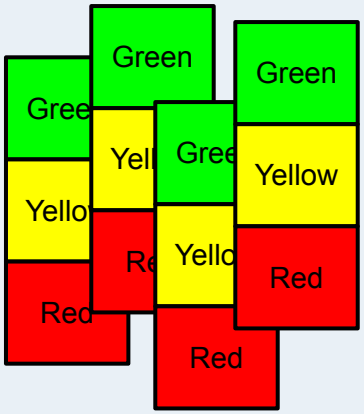

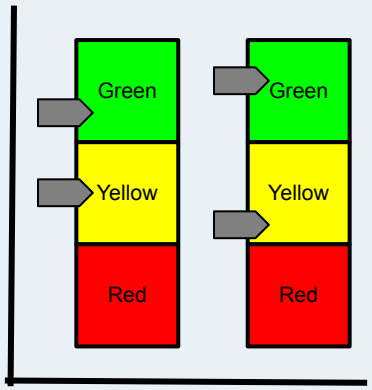

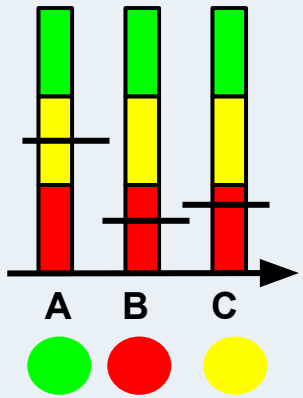

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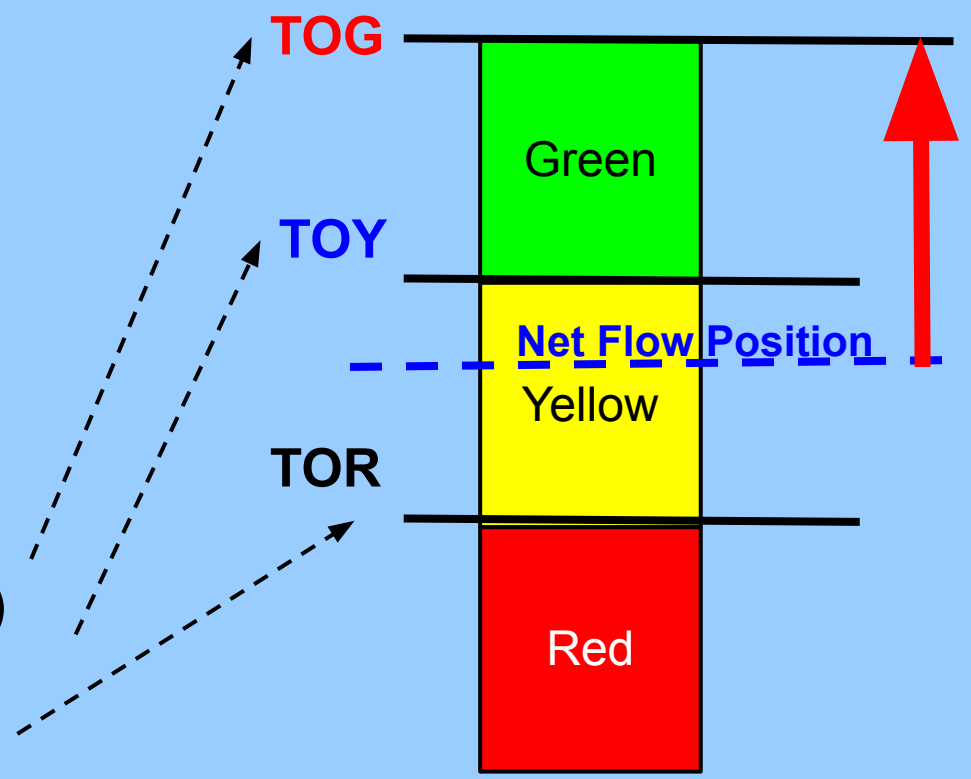
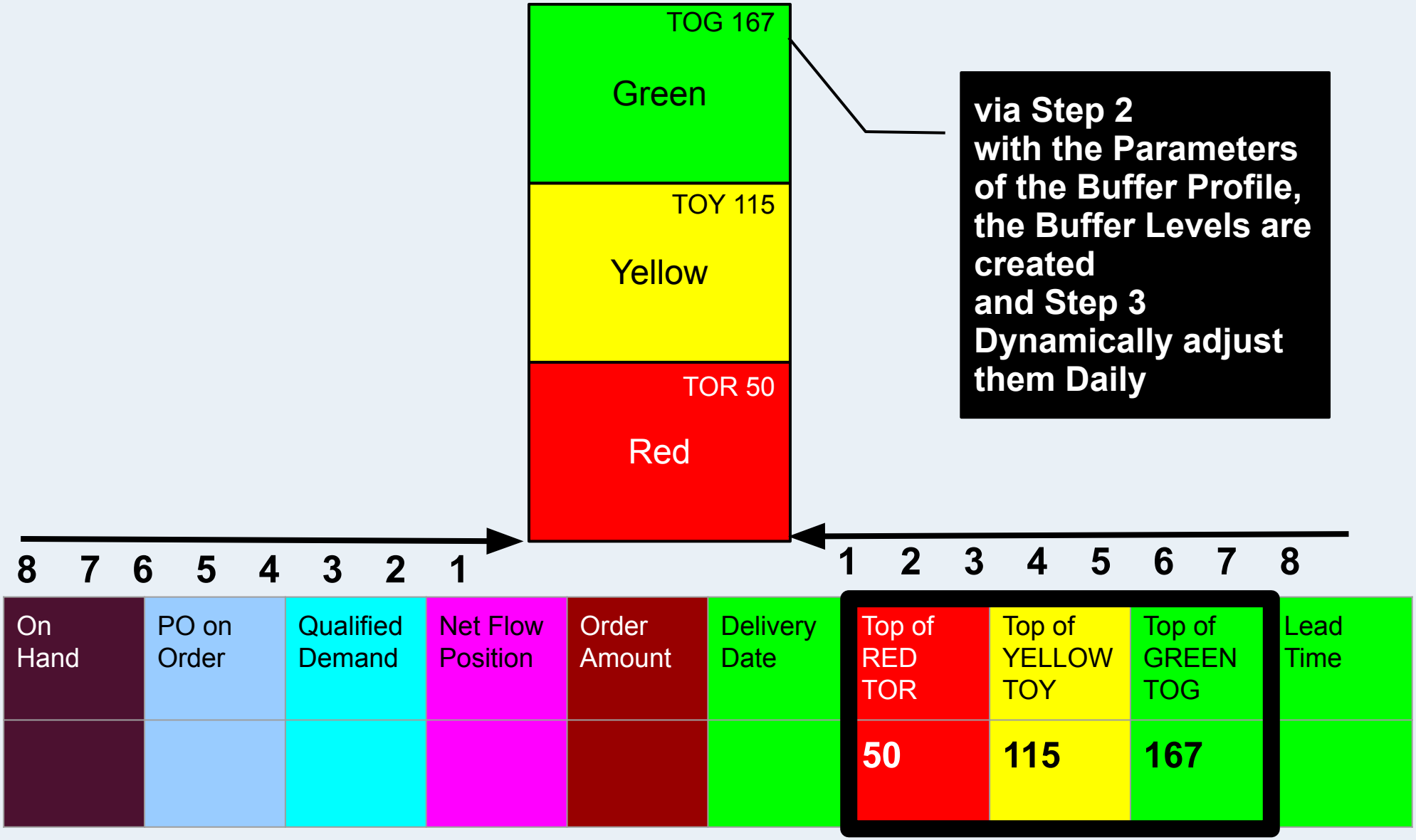
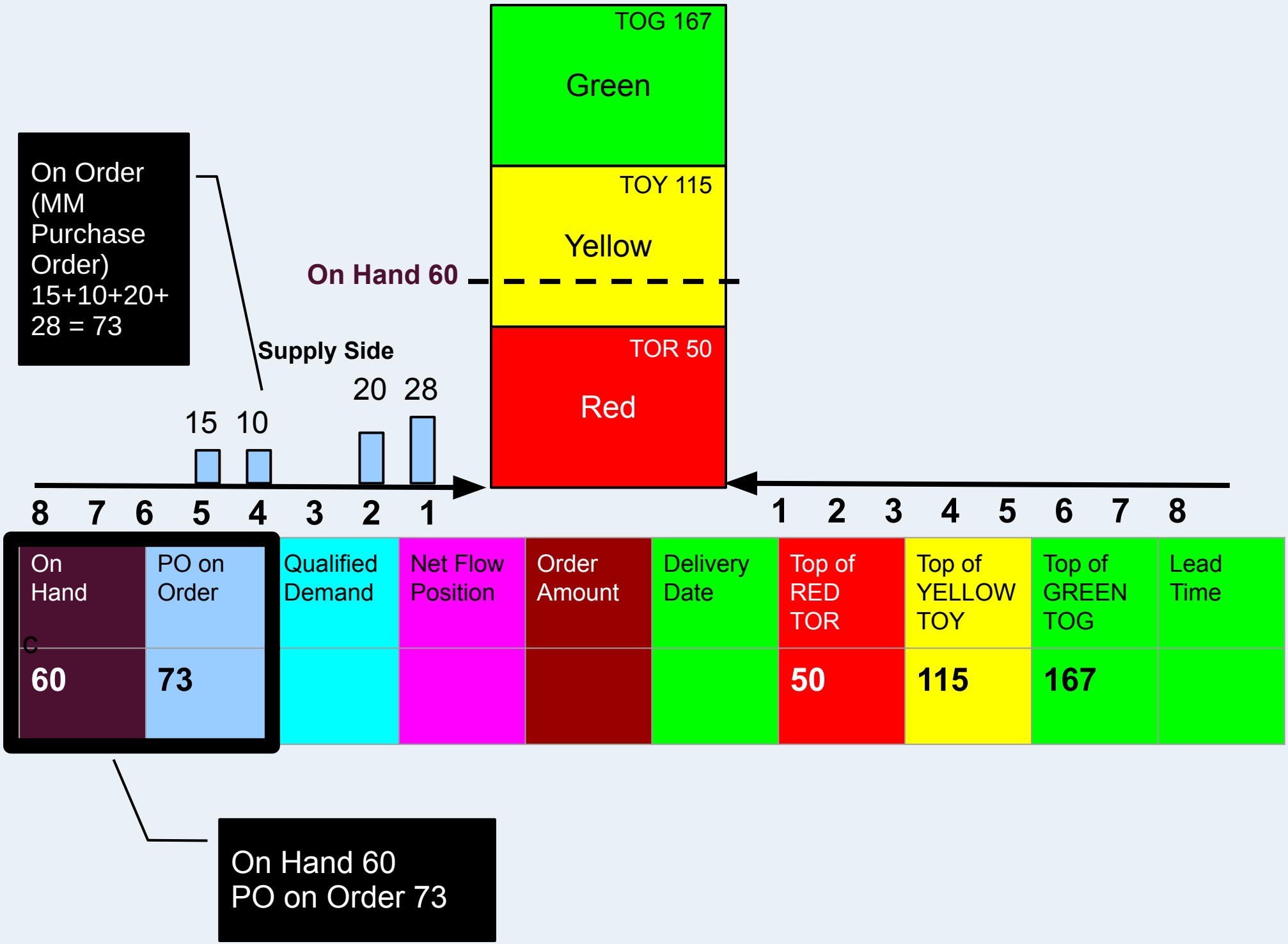
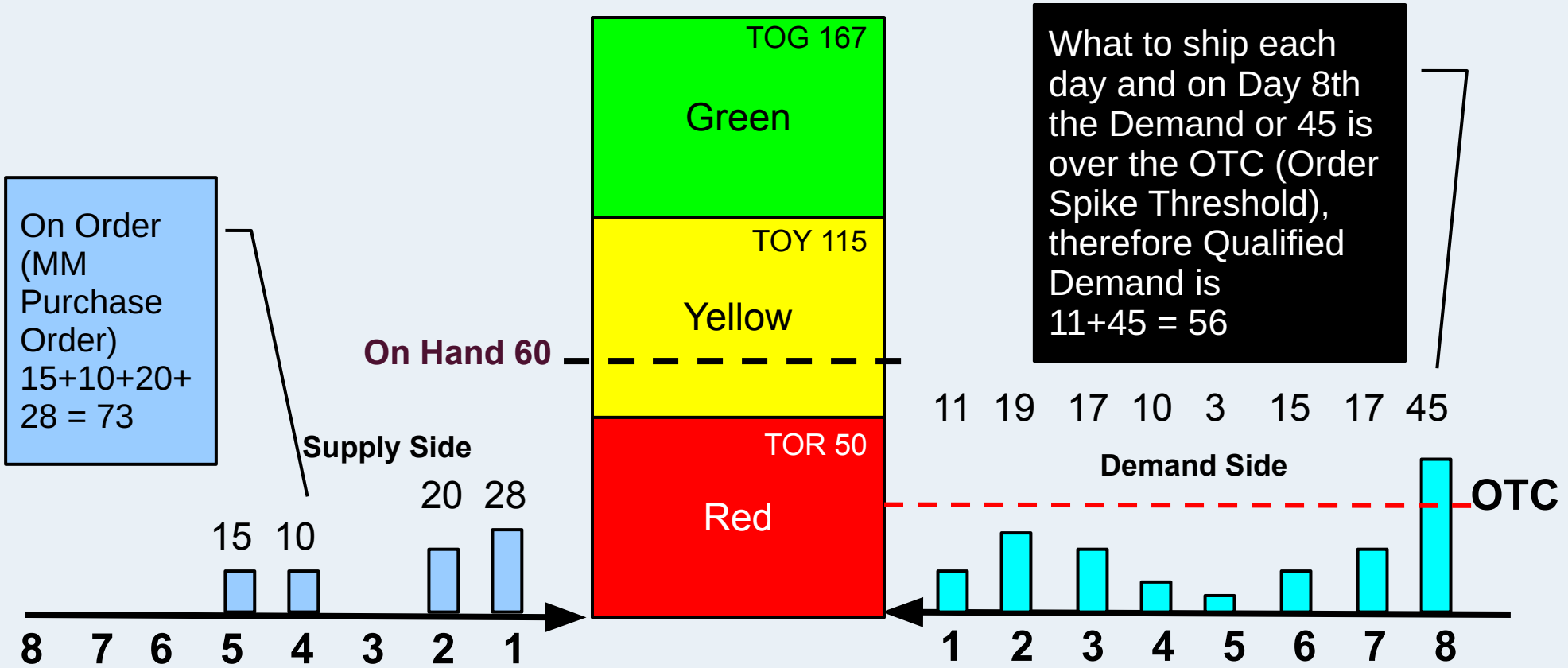
Net Flow

- Terminologies
  - i. TOG (Top of Green zone)
  - ii. TOY (Top of Yellow zone)
  - iii. TOR (Top of Red zone)
- Net Flow Position (NFP)
  = On Hand + PO on Order - Qualified Demand
- If Net Flow Position is < TOY then ORDER until TOG

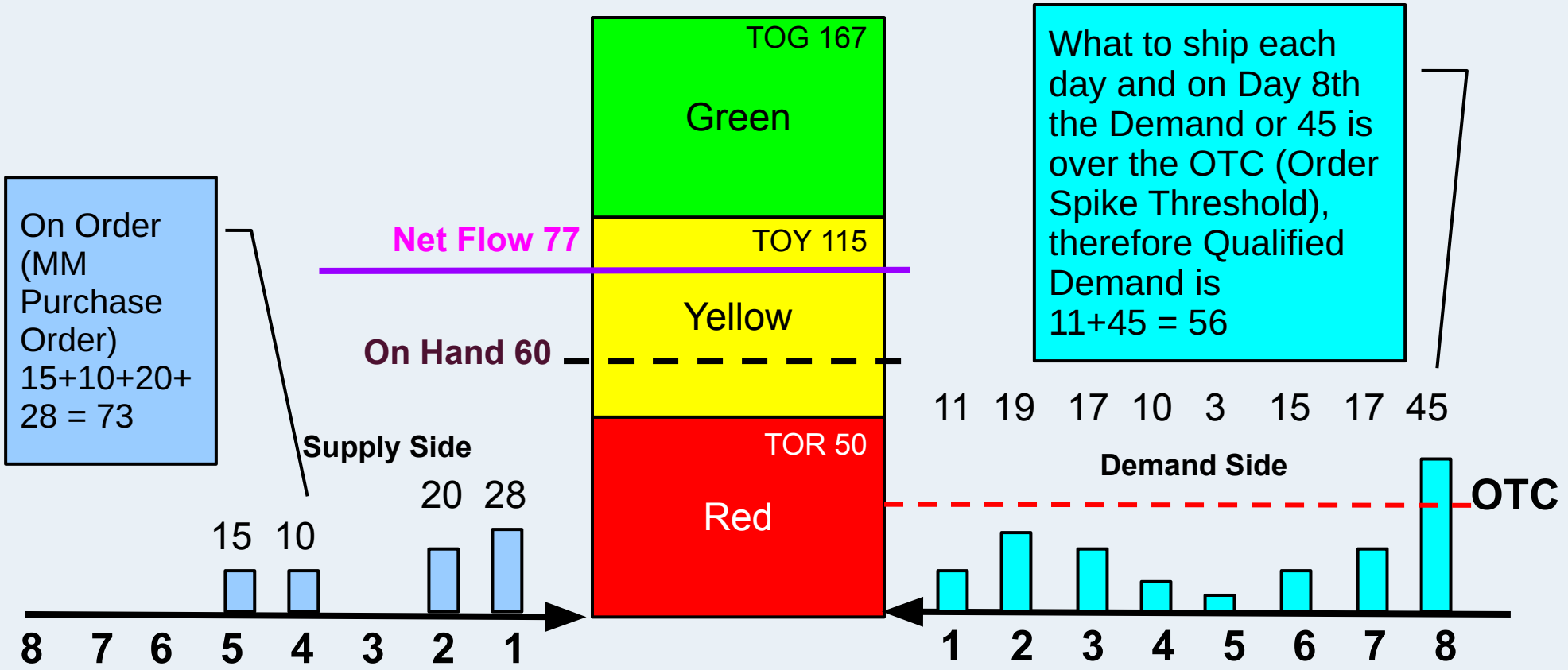



TOG 167
Green
TOY 115
Yellow
TOR 50
Red
via Step 2
with the Parameters
of the Buffer Profile,
the Buffer Levels are
created
and Step 3
Dynamically adjust
them Daily
8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8
On Hand
PO on Order
Qualified Demand
Net Flow Position
Order Amount
Delivery Date
Top of RED TOR
Top of YELLOW TOY
Top of GREEN TOG
Lead Time
50
115
167


TOG 167
Green
TOY 115
Yellow
On Hand 60
TOR 50
Red
On Order (MM Purchase Order) 15+10+20+ 28 = 73
Supply Side
15 10
20 28
8 7 6 5 4 3 2 1
1 2 3 4 5 6 7 8
On Hand
PO on Order
Qualified Demand
Net Flow Position
Order Amount
Delivery Date
Top of RED TOR
Top of YELLOW TOY
Top of GREEN TOG
Lead Time
C
60
73
50
115
167
On Hand 60
PO on Order 73

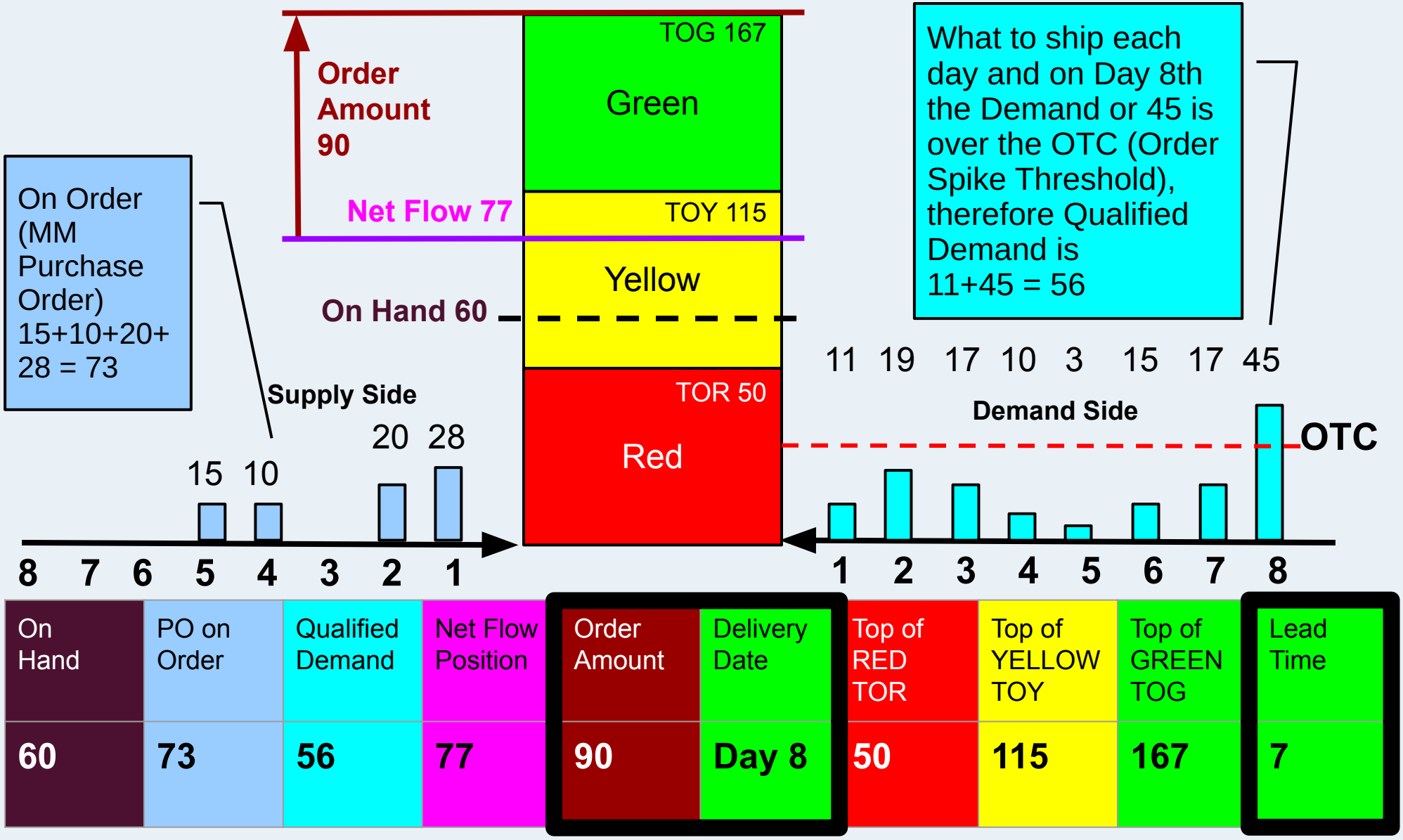


On Hand	PO on Order	Qualified Demand	Net Flow Position	Order Amount	Delivery Date	Top of RED TOR	Top of YELLOW TOY	Top of GREEN TOG	Lead Time
60	**73**	**56**				**50**	**115**	**167**	



On Hand	PO on Order	Qualified Demand	Net Flow Position	Order Amount	Delivery Date	Top of RED TOR	Top of YELLOW TOY	Top of GREEN TOG	Lead Time
60	**73**	**56**	**77**	**90**	**Day 8**	**50**	**115**	**167**	**7**

Net Flow Position = On Hand + PO on Order - Qualified Demand
Net Flow Position = 60 + 73 - 56 = 77



On Hand	PO on Order	Qualified Demand	Net Flow Position	Order Amount	Delivery Date	Top of RED TOR	Top of YELLOW TOY	Top of GREEN TOG	Lead Time
60	**73**	**56**	**77**	**90**	**Day 8**	**50**	**115**	**167**	**7**

Net Flow Position = On Hand + PO on Order - Qualified Demand
Net Flow Position = 60 + 73 - 56 = 77
If Net Flow is < TOY (Top of YELLOW), order to TOG (Top of Green)
Order Amount = TOG - Net FLow Position = 167 - 77 = 90