Innovation with a Capital "I"
An Alternative to Traditional Planning

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Integrated Business Planning
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Disclaimer

Agenda

The Demand Driven MRP concept

DDMRP Fundamentals

SAP DDMRP Strategy

MRP to DDMRP: a short history lesson

1975

1994

2011

2016

What's Wrong with MRP?
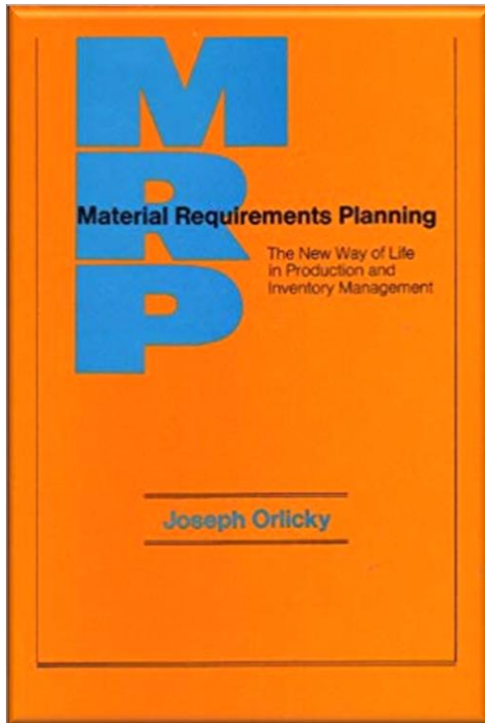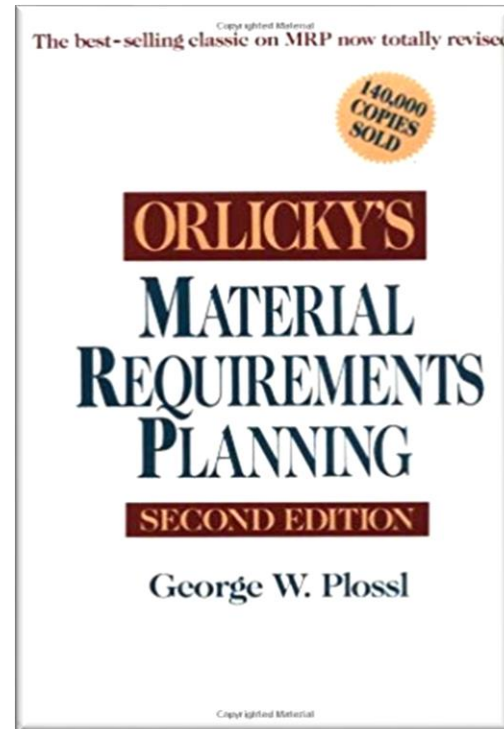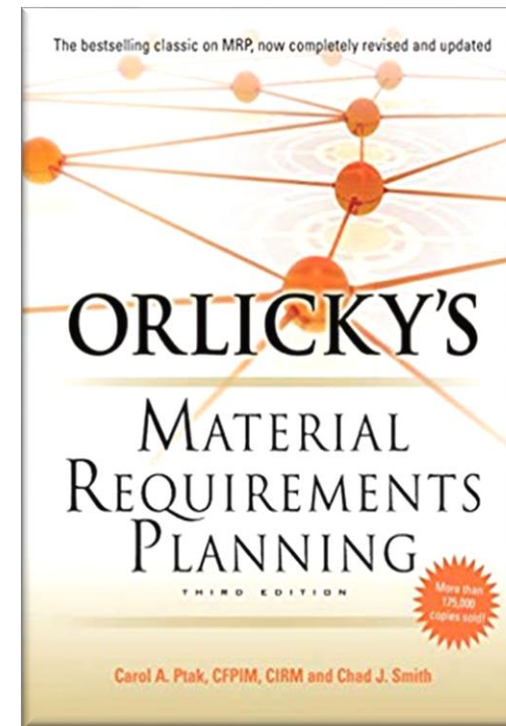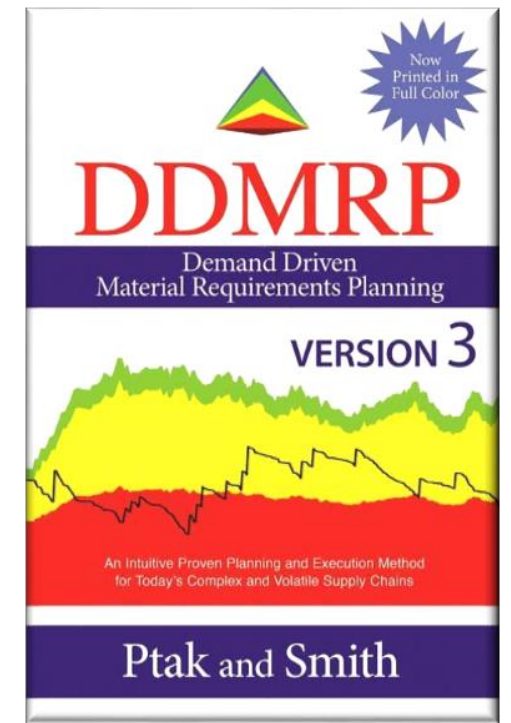
The Bullwhip Effect

Reality!

Demand is volatile,
Forecasts are wrong,
Lead times vary

Traditional planning facilitates the amplification of variability in the supply chain

Supply chain
induced variability

Forecast error induced variability

Supply>>

<<Forecast

Suppl. — RM

Suppl. — RM — Mfg — Mfg — Mfg — Pack — FG DC1 — FG DC2 — Cust.

Suppl. — RM

Suppl. — RM
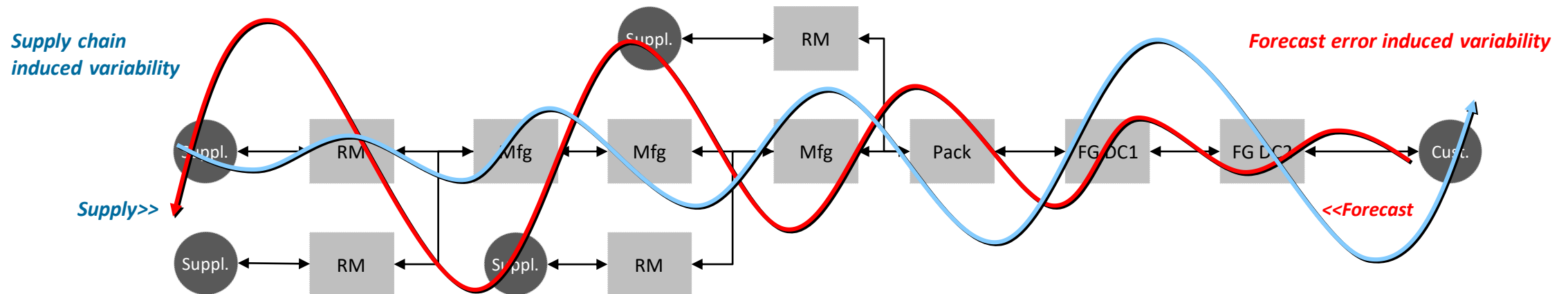
The world has changed since MRP was introduced in the 1950s…

| High supply chain complexity | Short product lifecycles | Short customer tolerance times | High product proliferation |

| High product customization | Many long lead time parts | Many more… |
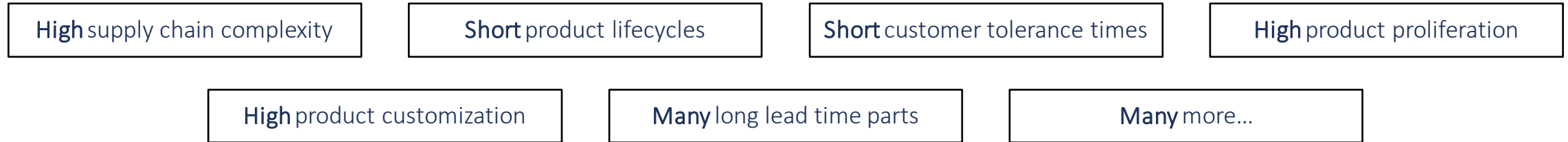
Variability, Uncertainty, Complexity, Ambiguity / Slow & disruptive response

Inventory & Service Challenges

Classic (forecast-driven) planning

What I Have

- *I have too much stock of the products I don't need.*
- *I have too little stock of the products I need.*
- *I have high expedite or over-time expenses*
- *Overall I have too much stock. Nevertheless, I cannot fulfill my customer orders (in time and quantity)*

Demand
Driven

Traditional planning resulting in a **bi-modal distribution**

Understocked SKUs	Warning	Optimally Stocked SKUs	Warning	Overstocked SKUs

Stock-outs, backorders, missed sales

Too much cash, capacity and space tied up in inventory

What I want

- **Best possible customer service levels …**
- **… at lowest possible (total supply chain) costs**

Agenda

The Demand Driven MRP concept

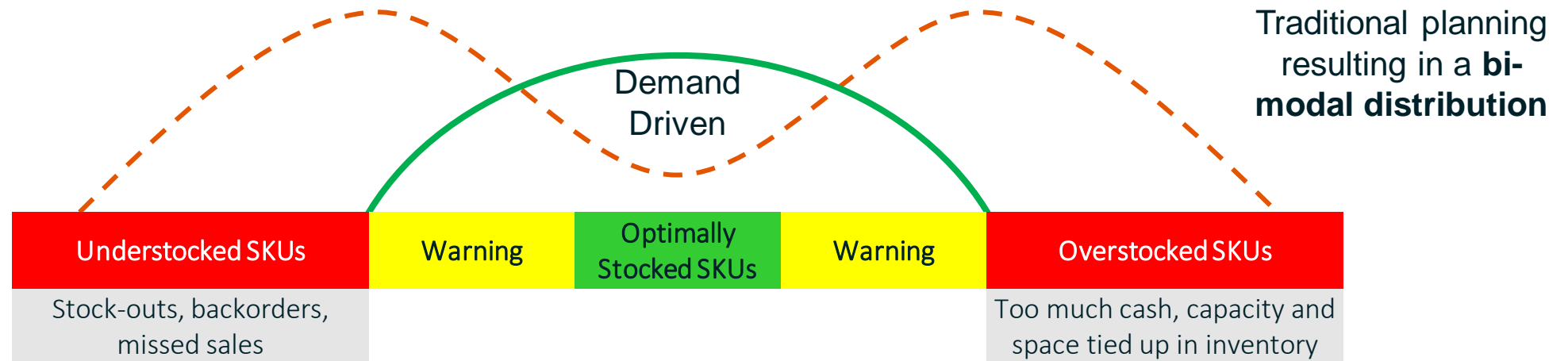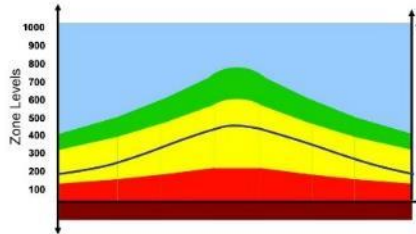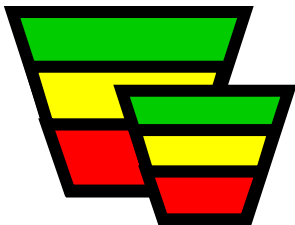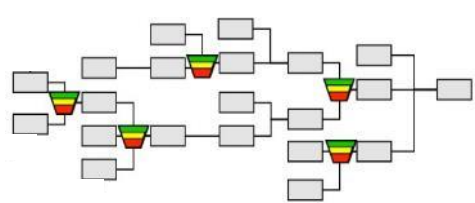DDMRP Fundamentals

SAP DDMRP Strategy

DDMRP consists of 5 components and forms the basis of the demand driven operating model
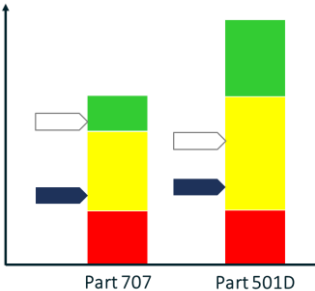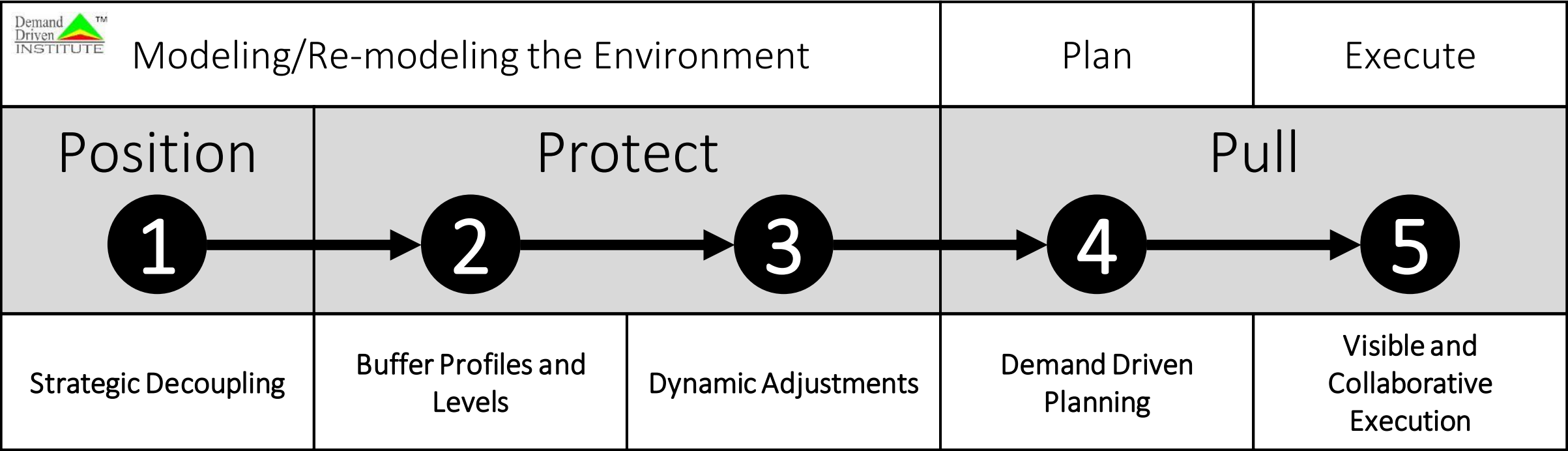
Modeling/Re-modeling the Environment			Plan	Execute
Position	Protect		Pull	
1	2	3	4	5
Strategic Decoupling	Buffer Profiles and Levels	Dynamic Adjustments	Demand Driven Planning	Visible and Collaborative Execution

Source: Demand Driven Institute: used by permission

As a first step, decoupling points within the product structure and supply chain have to be placed strategically
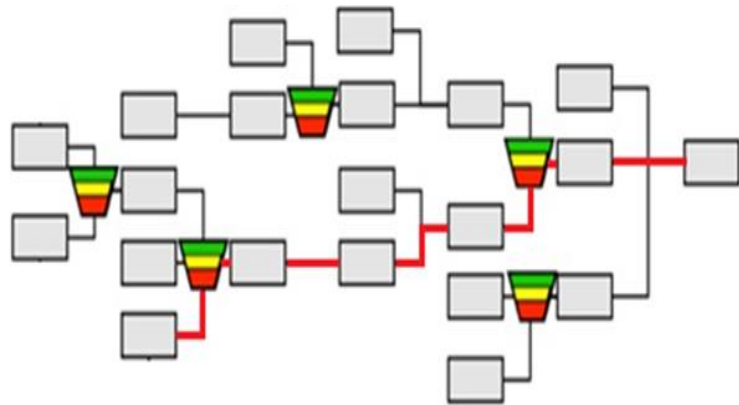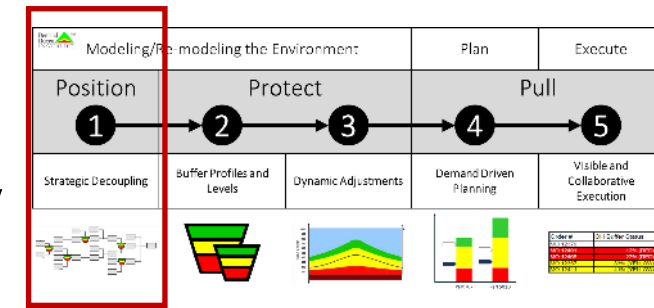
- ▶ It has to be decided where inventory buffers should be positioned
- ▶ This question must be answered before sizing the inventory
- ▶ Related to Bills of Materials as well as facilities/locations

Customer Tolerance Time	Positioning Strategy	Market Potential Lead Time
Internal & External Variability		Sales Order Visibility Horizon
Inventory Leverage and Visibility		Critical Operation Protection

Factors influencing location of decoupling points

Step 1 – Strategic Inventory Positioning at Decoupling Points

Proposed Decoupling Points;   Simulate Manual Changes

A move towards Demand-Driven Planning can dampen variability and it's amplification (bull-whip) in today's volatile world

Traditional planning facilitates the amplification of variability in the supply chain
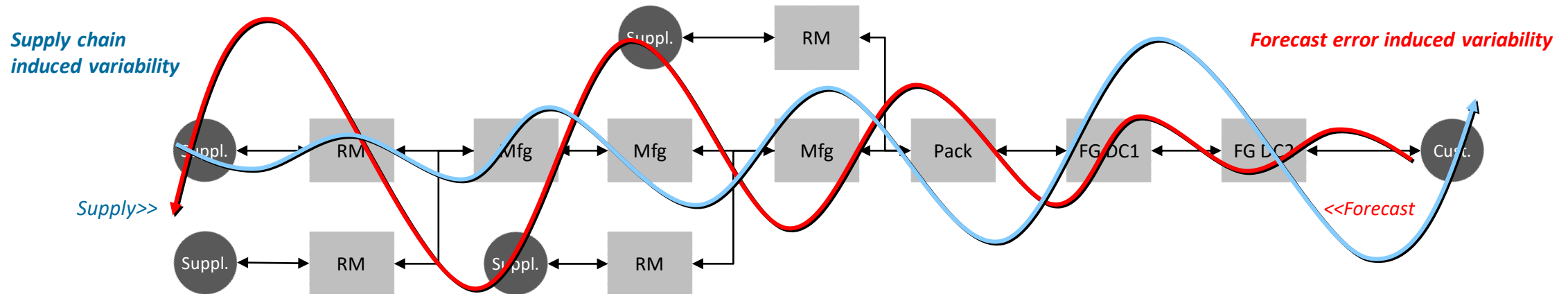
DDMRP uses strategically positioned stock buffers and pull replenishment to achieve stable material flow
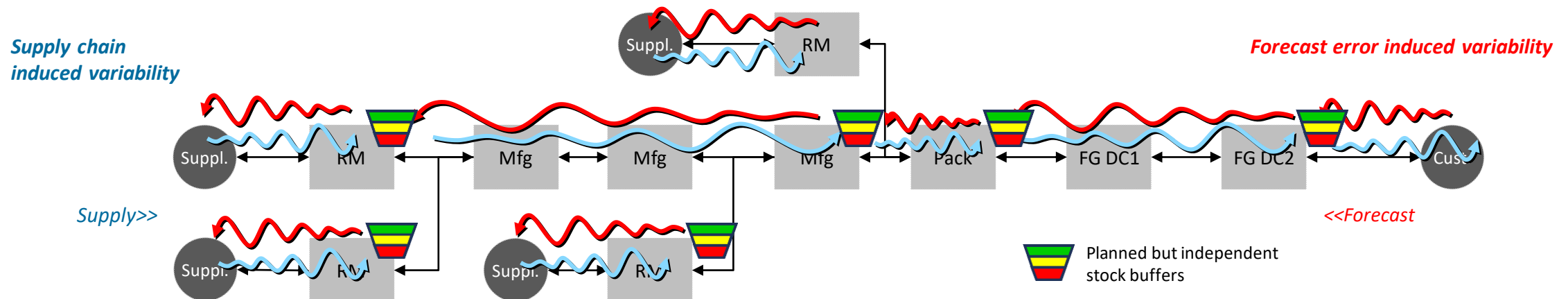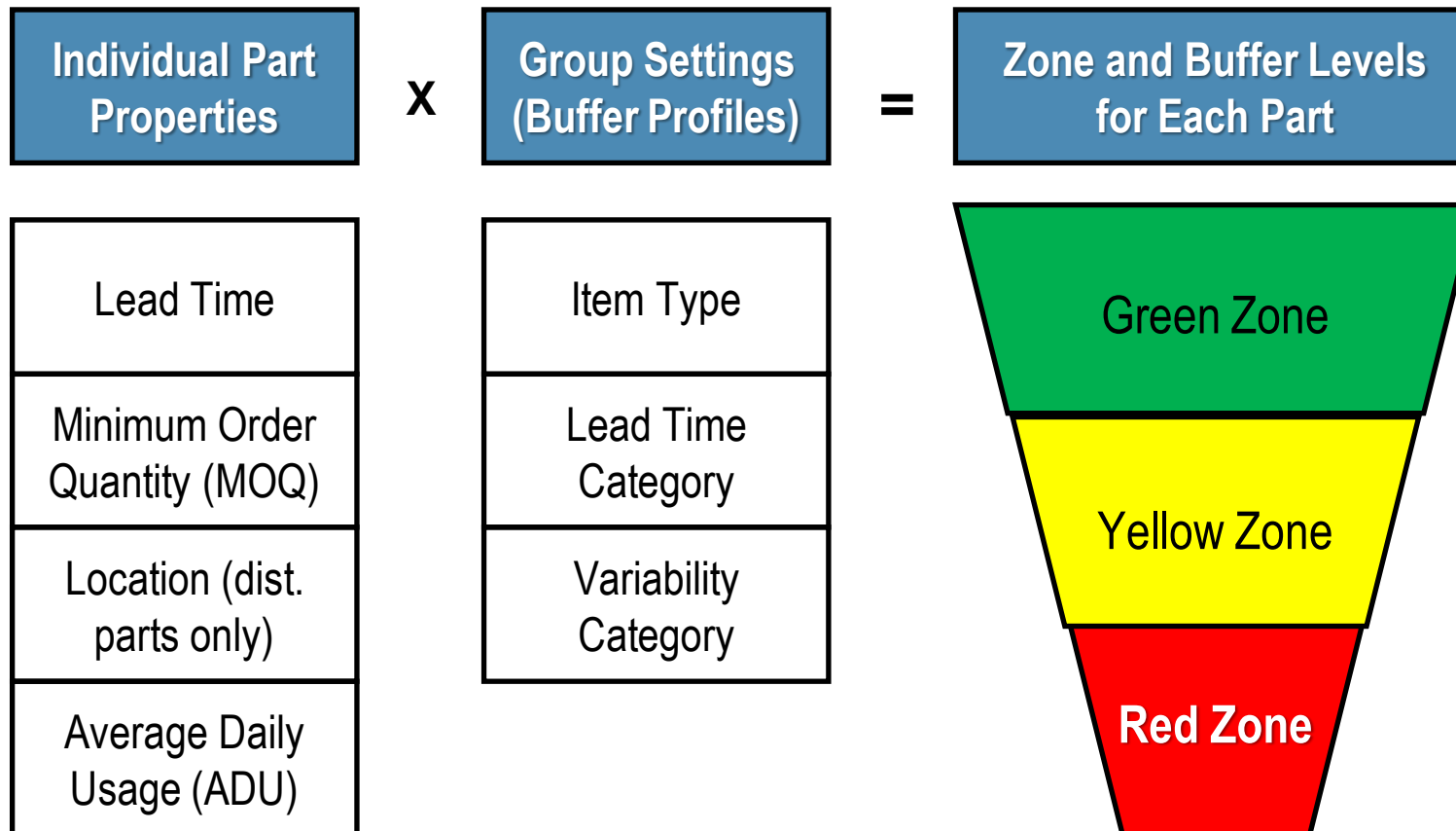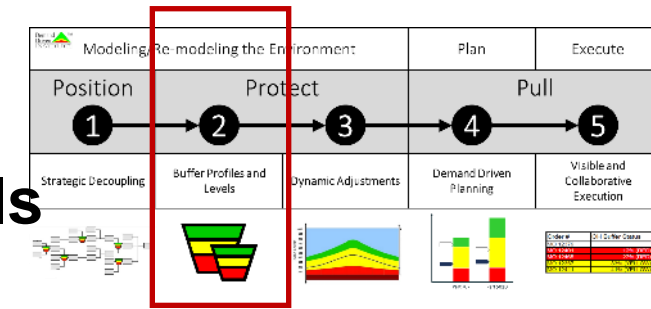
Replenishment buffers are calculated based on individual part properties and buffer profiles, resulting in buffer levels for each part/location decoupling point

Modeling/Re-modeling the Environment | Plan | Execute

Position ❶ ❷ ❸ Protect | Pull ❹ ❺

Strategic Decoupling | Buffer Profiles and Levels | Dynamic Adjustments | Demand Driven Planning | Visible and Collaborative Execution

| Individual Part Properties	X	Group Settings (Buffer Profiles)	=	Zone and Buffer Levels for Each Part
Lead Time		Item Type		**Green Zone**
Minimum Order Quantity (MOQ)		Lead Time Category		**Yellow Zone**
Location (dist. parts only)		Variability Category		**Red Zone**
Average Daily Usage (ADU)				

The heart of the order generation aspect of the buffer, determining the frequency of order generation and the minimum size of each order

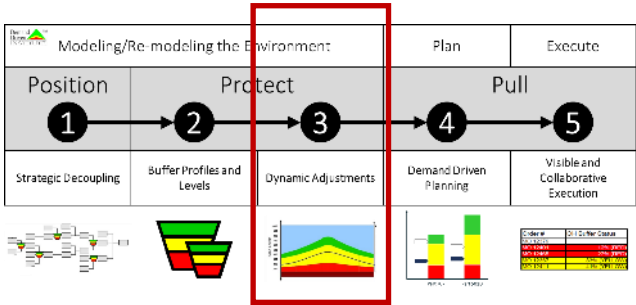The heart of the demand coverage in the buffer

The safety embedded in the buffer position

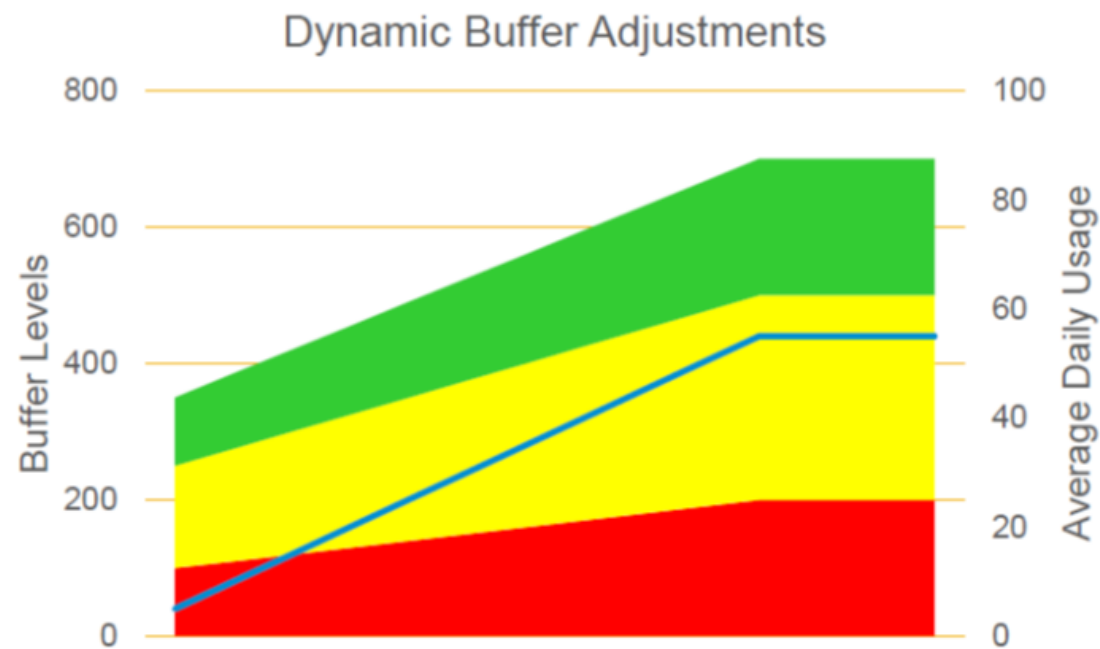# Step 2 – Buffer Profiles and Levels
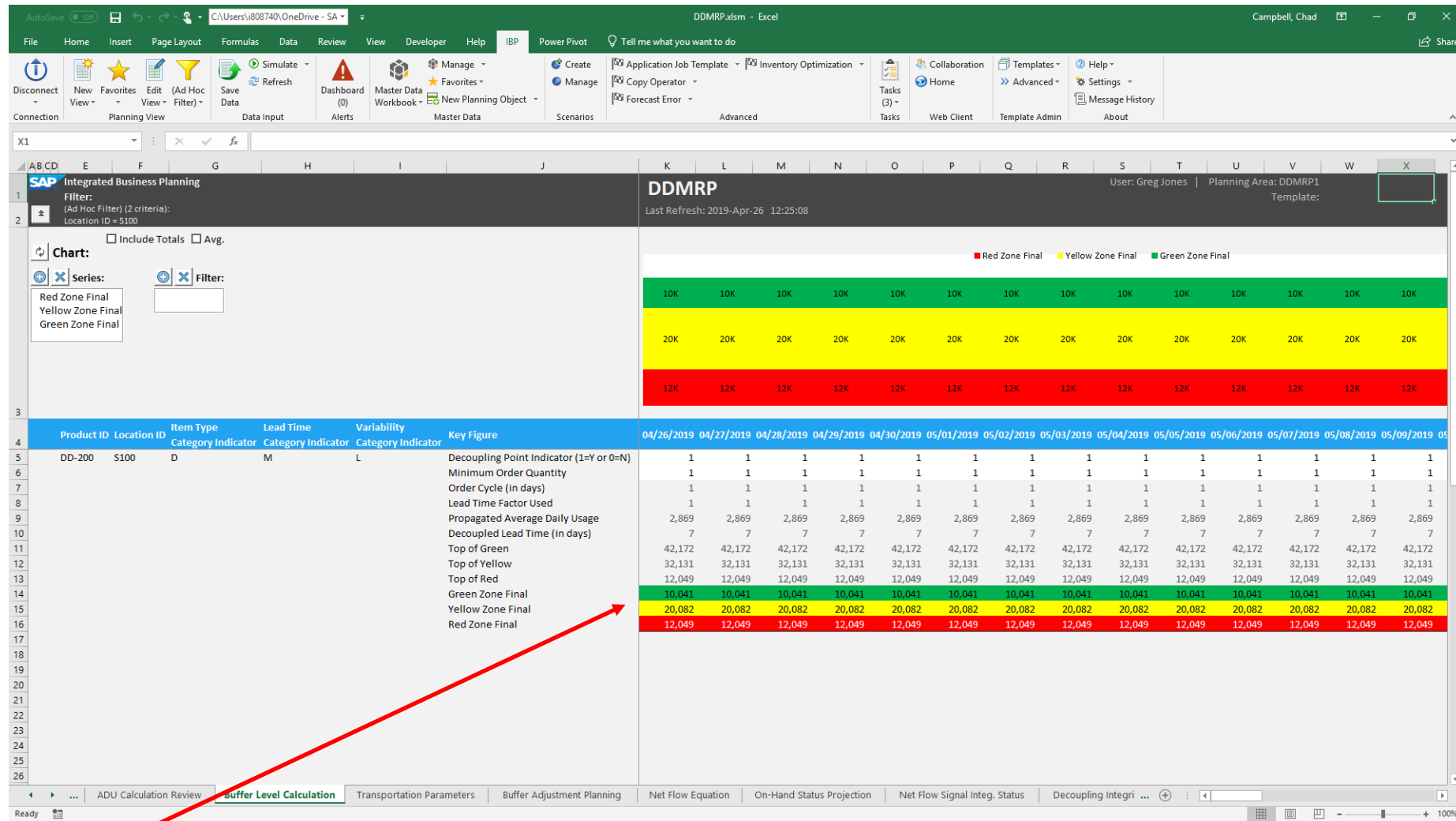
System Calculated Buffer size

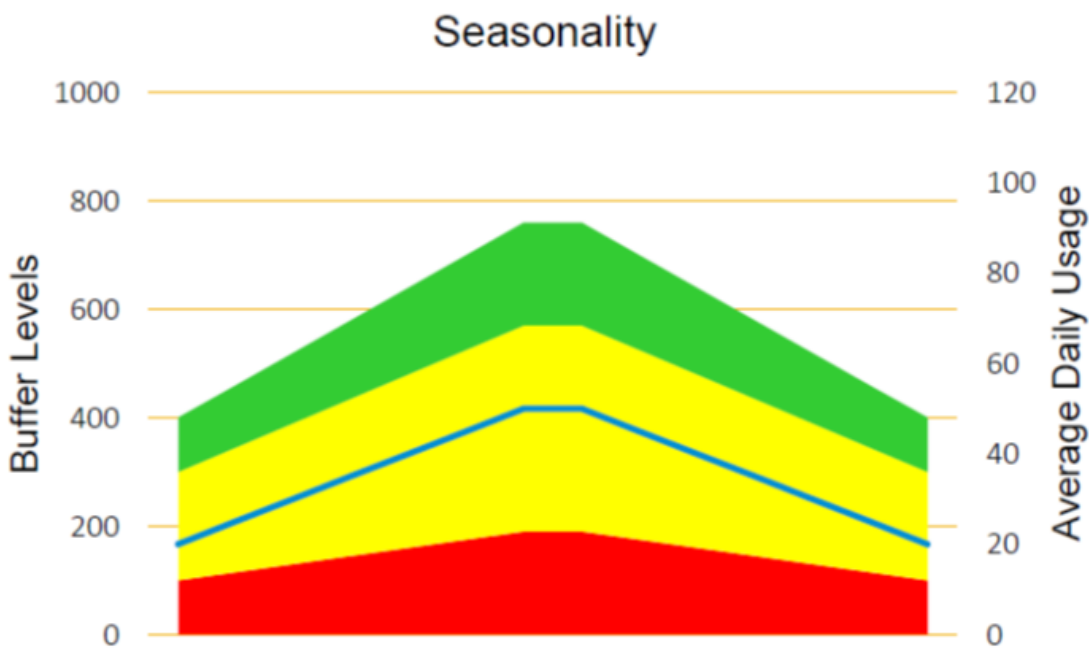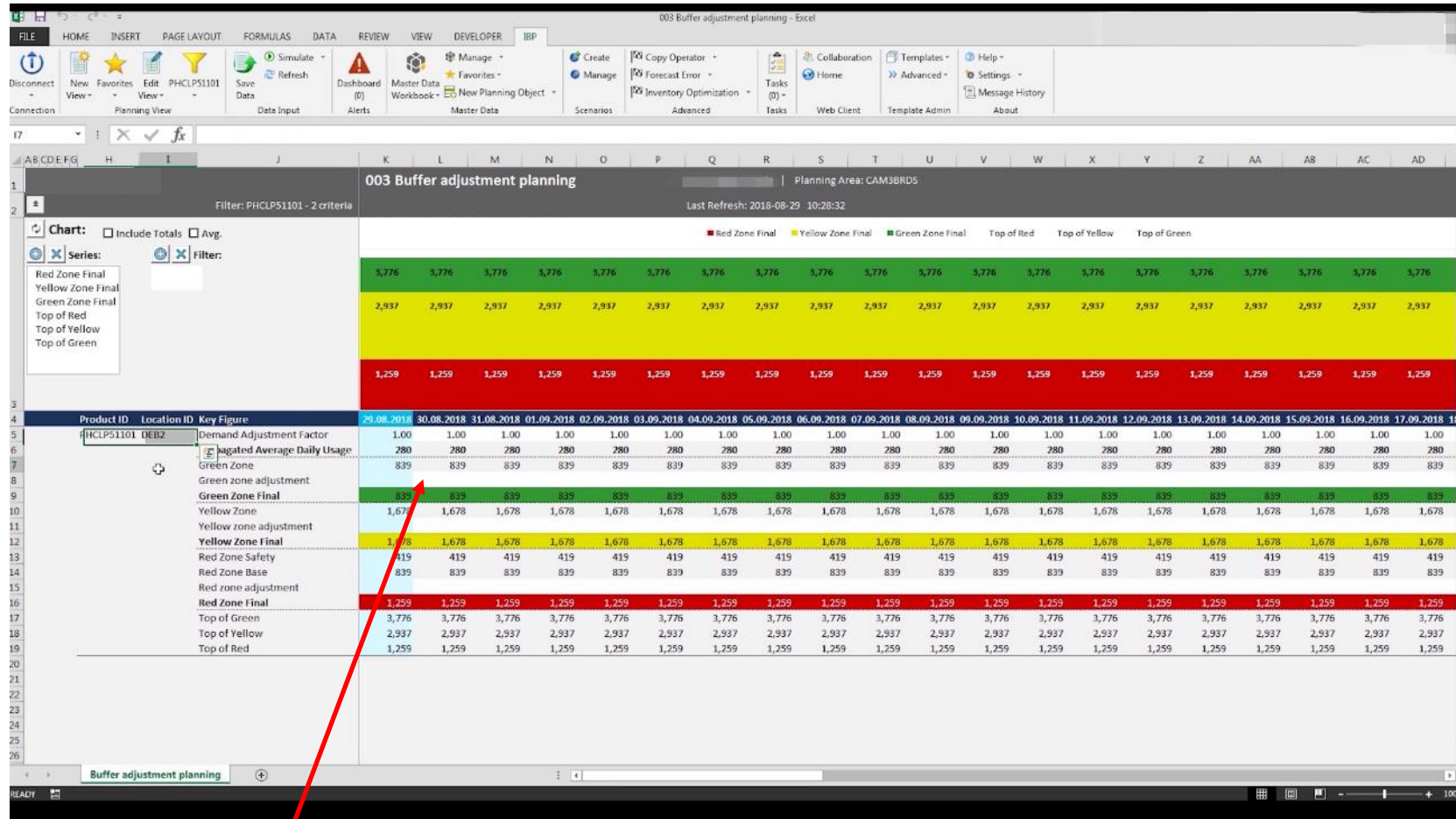# Dynamic adjustments

ADU-based recalculation of the buffer

Dynamic Buffer Adjustments

„Forecast used for the buffer calculation"

Manual adjustment of the buffer
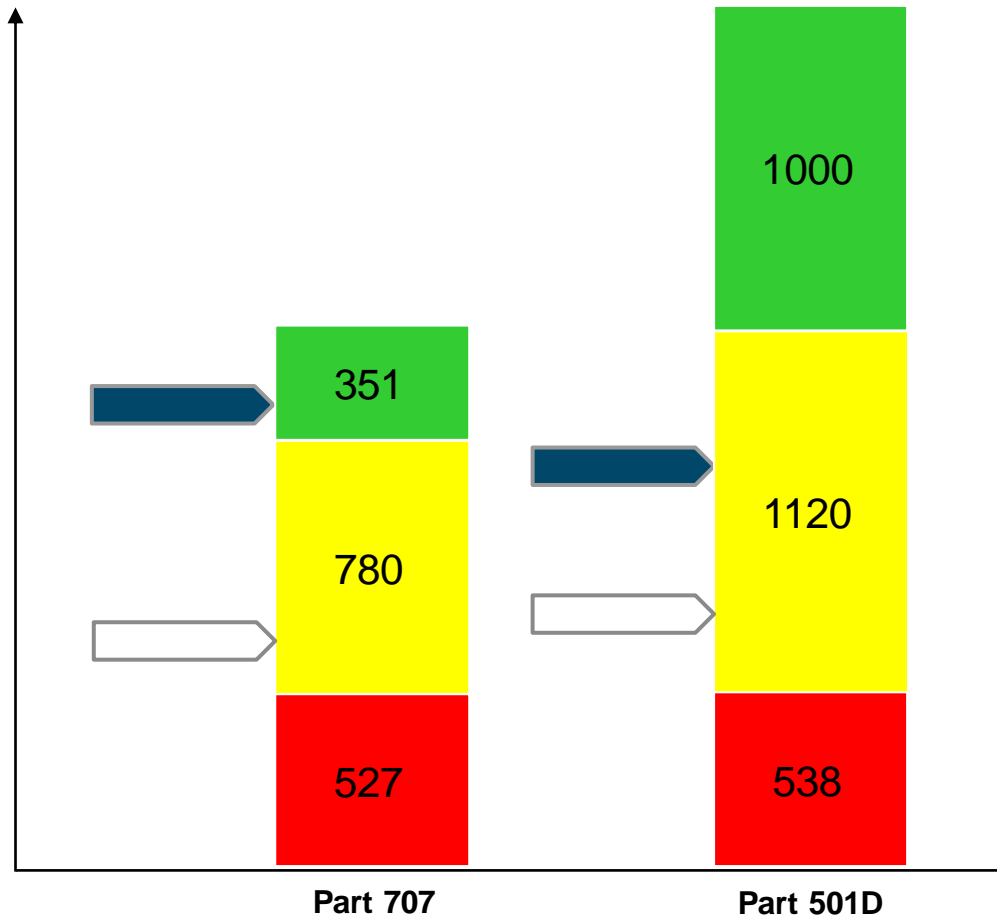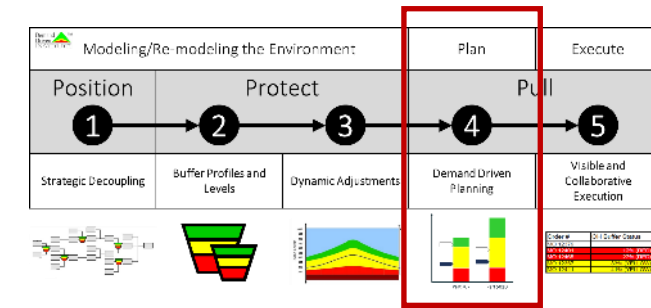

Seasonality

Step 3 – Dynamic Adjustments

User time-dependent adjustments

Supply for a part is determined by its <u>Net Flow Position</u> relative to its buffer and zone levels

Part 707

351	(green)
780	(yellow)
527	(red)

Part 501D

1000	(green)
1120	(yellow)
538	(red)

➡ Net Flow Position

⬜ Actual on-hand

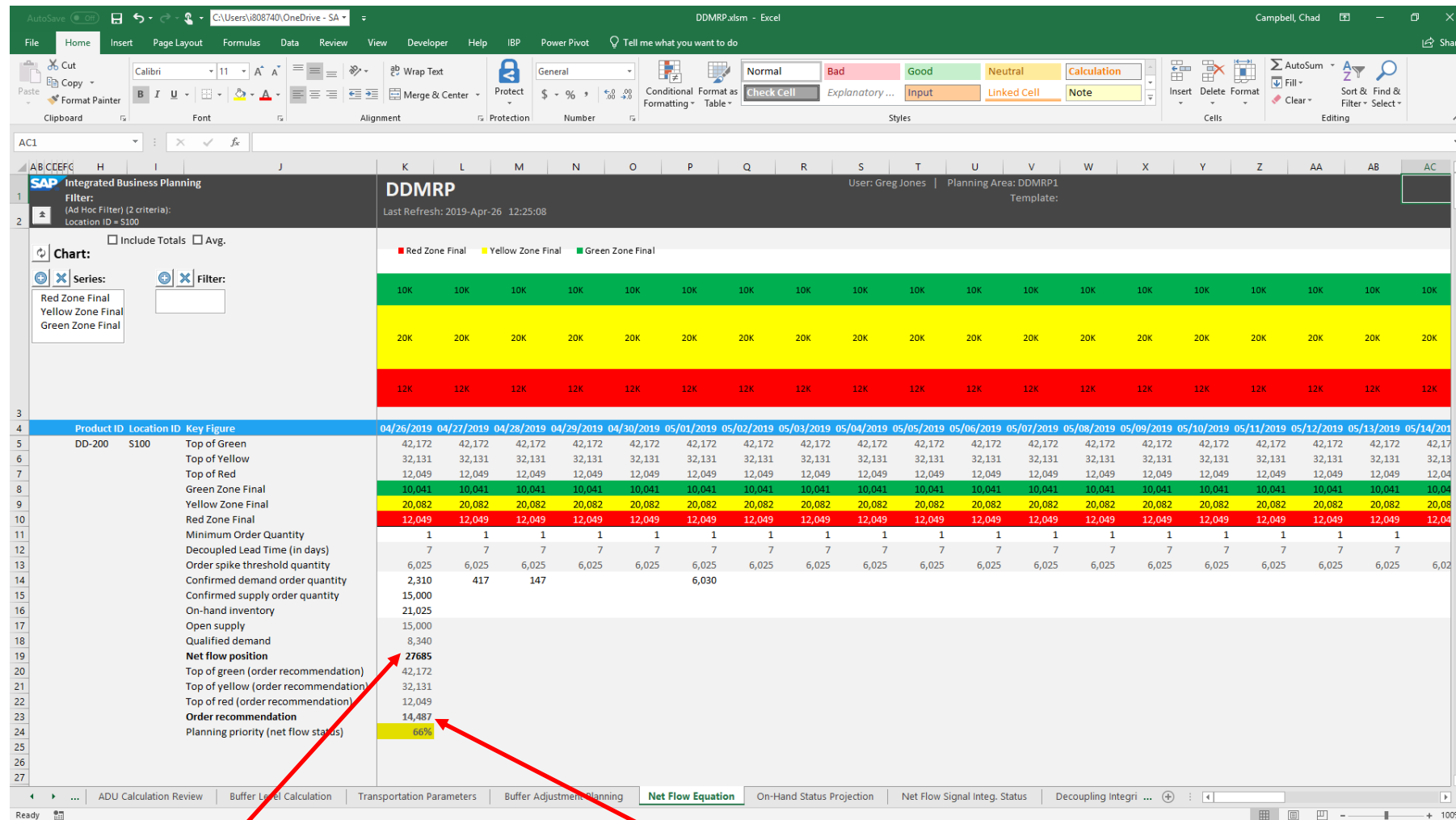**Net Flow** position =
On-hand + On-order -
"Qualified sales order demand"

► Depending on the net flow position, different actions are possible

    ► Green: No action

    ► Yellow: Place new order

    ► Red: Expedite open supply and/or place new order

► Recommended Order quantity is the quantity to bring the available stock position to the top of green

DDMRP Planning						
Part	**On Hand**	**Open Supply**	**Demand**	**Net Flow Position**	**Recommend Supply Qty**	**Action**
				1400 (84%)		
				1300 (49%)		

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Step 4 – Demand Driven Planning

Based on Net Flow Position, Propose Replenishments

Visible and Collaborative Execution
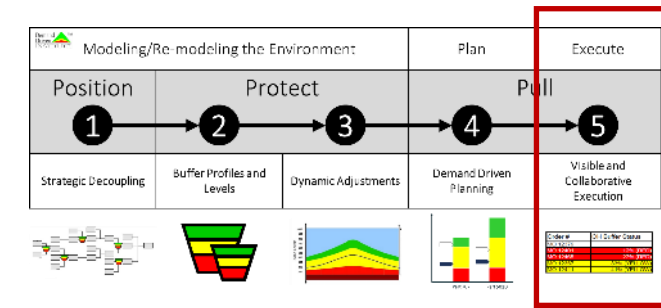
## Orders prioritized by buffer status

Order #	Due Date
PO 276-54	05/12
PO 279-84	05/12
PO 280-89	05/12
PO 281-21	05/14
PO 275-44	05/16

Order #	OH Buffer Status	Due Date
PO 275-44	3%	05/16
PO 281-21	17%	05/14
PO 276-54	27%	05/12
PO 280-89	47%	05/12
PO 279-84	54%	05/12

- Generate clear visibility for relative priorities to determine execution priority
- Avoid manual workaround or disconnected subsystems and massive daily efforts of analysis and adjustments for actual priority determination
- Provide sequence for orders in manufacturing
- Make full use of strategically positioned decoupling points / stock buffers
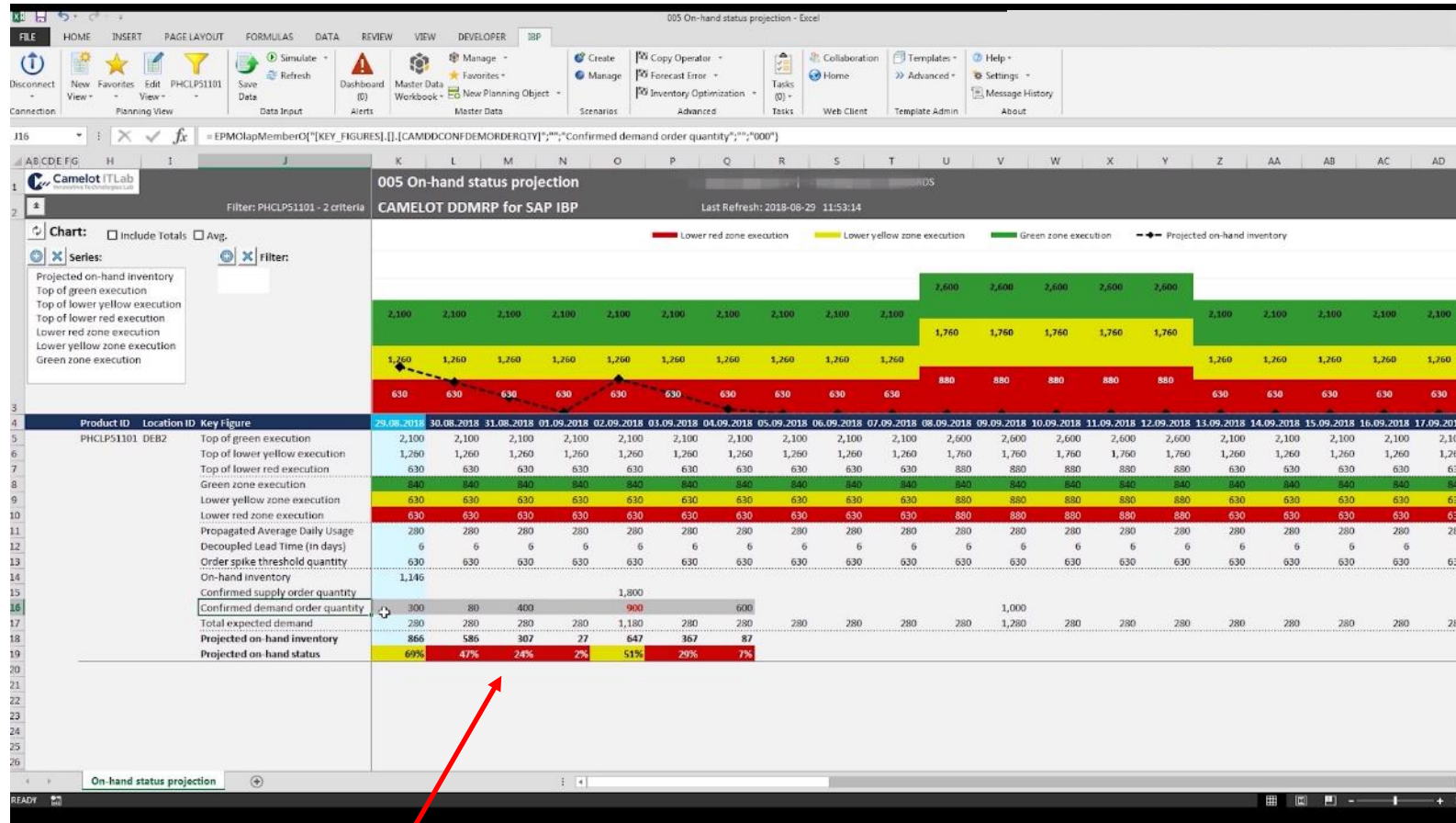
Step 5 – Visible and Collaborative Execution
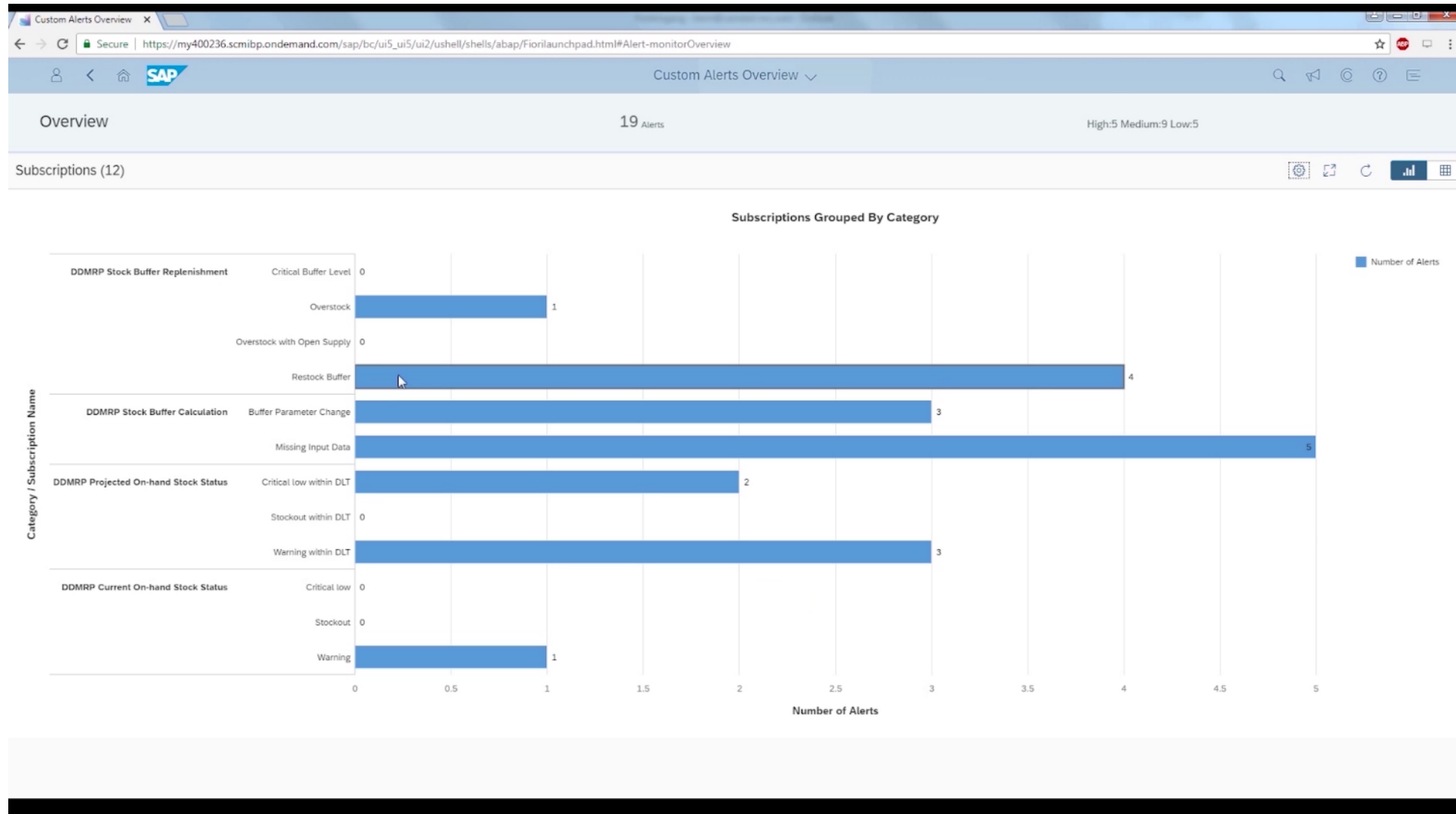
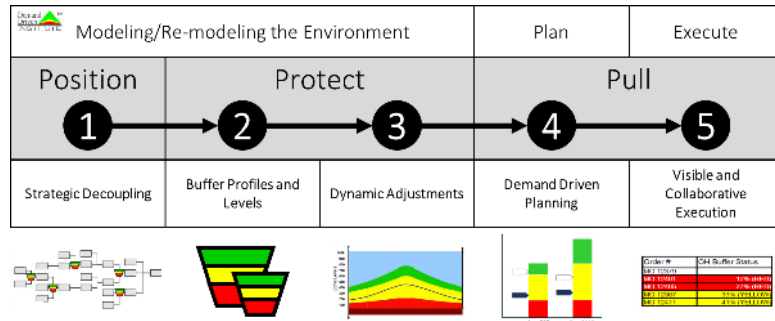# Step 5 – Visible and Collaborative Execution
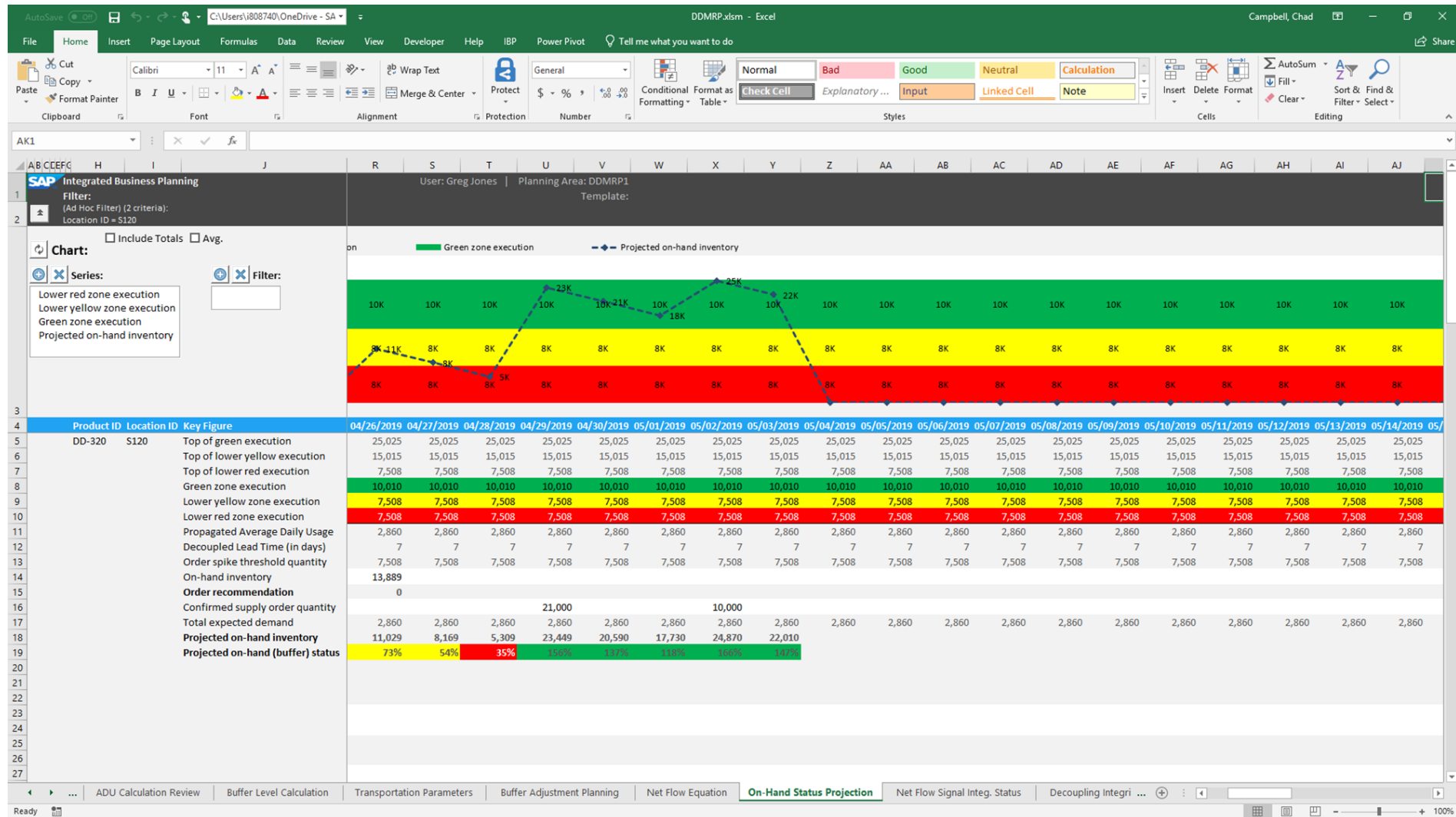
Monitor projected inventory and on hand buffer penetration

Step 5 – Visible and Collaborative Execution

Execution Monitoring / Alerting: buffer levels going low

The Demand Driven Institute states key benefits and substantial improvement potentials by the use of DDMRP

Improved customer service:
Users consistently achieve a high on time fill rate performance

Lead time compression:
Lead time reductions have been achieved in several industry segments

Right-sized inventory:
Inventory reductions are achieved while improving customer service

Lowest total supply chain cost:
Costs related to expedite activity and false signals are largely eliminated

Easy and intuitive:
Planners see priorities instead of constantly fighting the conflicting messages of MRP

Agenda

The Demand Driven MRP concept

DDMRP Fundamentals

SAP DDMRP Strategy

SAP Considers the DDAEM a Strategic Direction in Supply Chain Management

SAP is embracing the Demand-Driven Adaptive Enterprise Model via …

<u>Two Certified Compliant DDMRP solutions</u>

SAP S/4HANA®

SAP Integrated Business Planning

DDS&OP Certified Compliant Solution!

Questions?

Thank you.

Jay Foster, Director, Solution Management
Integrated Business Planning
March 2021

AGENDA

Time	Topic	Duration
15:00 CEST	**The Road to Intelligent Spend** Baber Farooq, SVP Procurement Product Strategy	30 min
15:30 CEST	**Innovate with Demand-Driven Material Requirements Planning (DDMRP)** Jay Foster, Director Solution Management	30 min
16:00 CEST	**Procurement across a heterogeneous multi-backend environment** Frank Bade, Business Architect and for SAP Procurement Regional Strategy	30 min
16:30 CEST	**How Procurement Leaders Can Plan for the Future** Mark Harris, Senior Director Product Strategy	30 min
17:00 CEST	**End & Poll**	

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