Optimized Planning in Dynamics 365 SCM
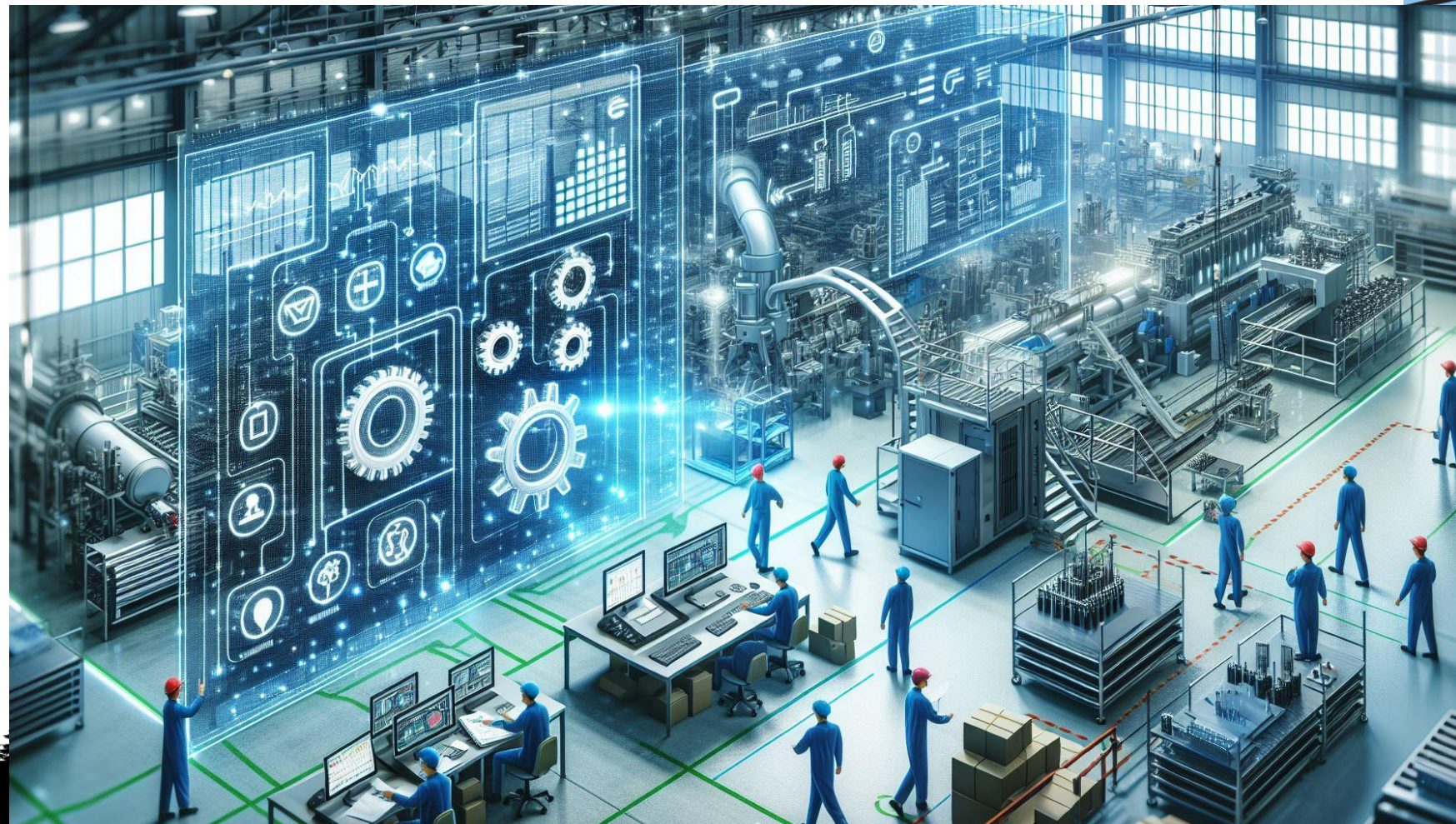

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DYNAMICSCON LIVE

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Optimized Planning

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Optimized Planning

. . . with a dash of scheduling

Survey says: The majority of Master Planners would like this to be included in their workflows . . .

Agenda:

- What is the legacy/traditional Master Planning System (MPS)

- Concepts that apply equally to Traditional and Optimized Planning
  Demand, Assumptions, Coverage, NOE, Actions, Lead times, Min stock, ABC, Vendors, Supply forecast, Freeze fence

- How to plan well regardless of Traditional vs. Optimized?

- What is Optimized Planning?

- What is Priority Planning (Brief overview)?

- What is DDMRP (Brief overview)?

- Related topics (Brief)
  How does the new Demand Planning App fit in?
  Where does Scheduling come into play?
  How does Optimized Planning compare to third party offerings?
  What about Co-Pilot and Artificial Intelligence?

WIIFM

What is Traditional Master "Supply" Planning?

Traditional Master Planning is MRP and CRP that is batch-run inside Dynamics 365 SCM and real-time for mini MRP for specific items/sku's on request

- Traditional Master Planning (MPS) runs inside the system and can be a resource hog as well as taking a long time to run

- Traditional MPS has been deprecated for a long time

- While Microsoft has extended the deadline a couple of times, Traditional MPS **WILL** be eliminated

- Traditional MPS was deprecated long before Optimized Planning reached a point where key features were matched or improved. There are STILL capabilities in MPS that have not yet made it to Optimized Planning (we will be covering some).

- Since Traditional's deprecation new capabilities have only been added to Optimized Planning

- It's straight math (no more than addition and multiplying) with some exception throwing

  - **N**ET – **O**FFSET – **E**XPLODE (**NOE**)

  - **Not** "Rules base"

  - Does NOTHING to fix things when demand cannot be met on time within assumptions/parameters – **needs a human planner**

Objective: "Raise the Triangle"

What's better about MRP?

Doesn't ignore BOM and Routing

Distinguishes dependent from independent demand

Inventory projection

Exception management

Models and copes with Lumpy demand

Models and copes with Simultaneous availability

Periodic Reorder Point calculation eliminated

Concept 1: Dependent vs. Independent Demand

- Independent – not created by Supply Planning, includes:
  - Open Sales Lines
  - Forecasts
  - Safety Stock
  - Open Unposted Cycle Count Adjustment <u>Reductions</u>
  - Unposted Movement journals
  - Negative on-hand
  - Project Item Requirements and Open Unposted Item Journals

- Dependent
  - <u>Calculated</u> from Open and Planned Supply (BOM line demand and Transfer demand on the Shipping warehouse)

Concept 2: MPS Assumptions/Reliability

- Open Sales Lines

- Forecasts

- Production/Batch Order BOM demand

- Transfer Order demand

- Journal Demand (Transfer, Movement, Count)

- Safety Stock

- Lead time

- Routes - only for lead time, capacity plan and finite capacity constraint (optional)

- Lot Sizing

Which of these is reliable data?

Concept 3: Coverage Codes

- Requirement

- Period

- Min/Max

- Priority

- Decoupling Point

- Manual

  - Often used for Kanban

  - DOES NOT explode to lower levels

Concept 4: Net-Offset-Explode <u>DEFINES</u> MRP

Progress through items on this Low level code

Start with today

Net demand against Projected On Hand and plan a supply for today of some quantity if remaining demand on THAT date

Offset that quantity by manufacturing or transfer lead time plus margins

Explode demand down BOM Lines for Mfg and down Supply Chain to source warehouse for Transfers

Advance to the next Planning day until beyond Coverage time fence

Advance to the Items with the next Low-Level Code until done

- Not rules-based at all (e.g. "if not enough try another warehouse")

- Does NOTHING to fix things when demand cannot be met on time within assumptions/parameters – **needs a human planner**

# Concept 5: The Importance of Action Messages

- MRP can be used just for Order Launch without Action Messages

- But then delays are often not known until material is needed
  - Forcing expensive expediting

- Planning's way of giving you a heads up that you may have a problem BEFORE it is a problem is Action Messages

- Action Messages and their handling is THE way to graduate from Reactive expediting to Pro-Active heading off problems

The Name of the Game: Maintain a level of Actions that you can handle every day

Concept 6: The importance of Lead Times
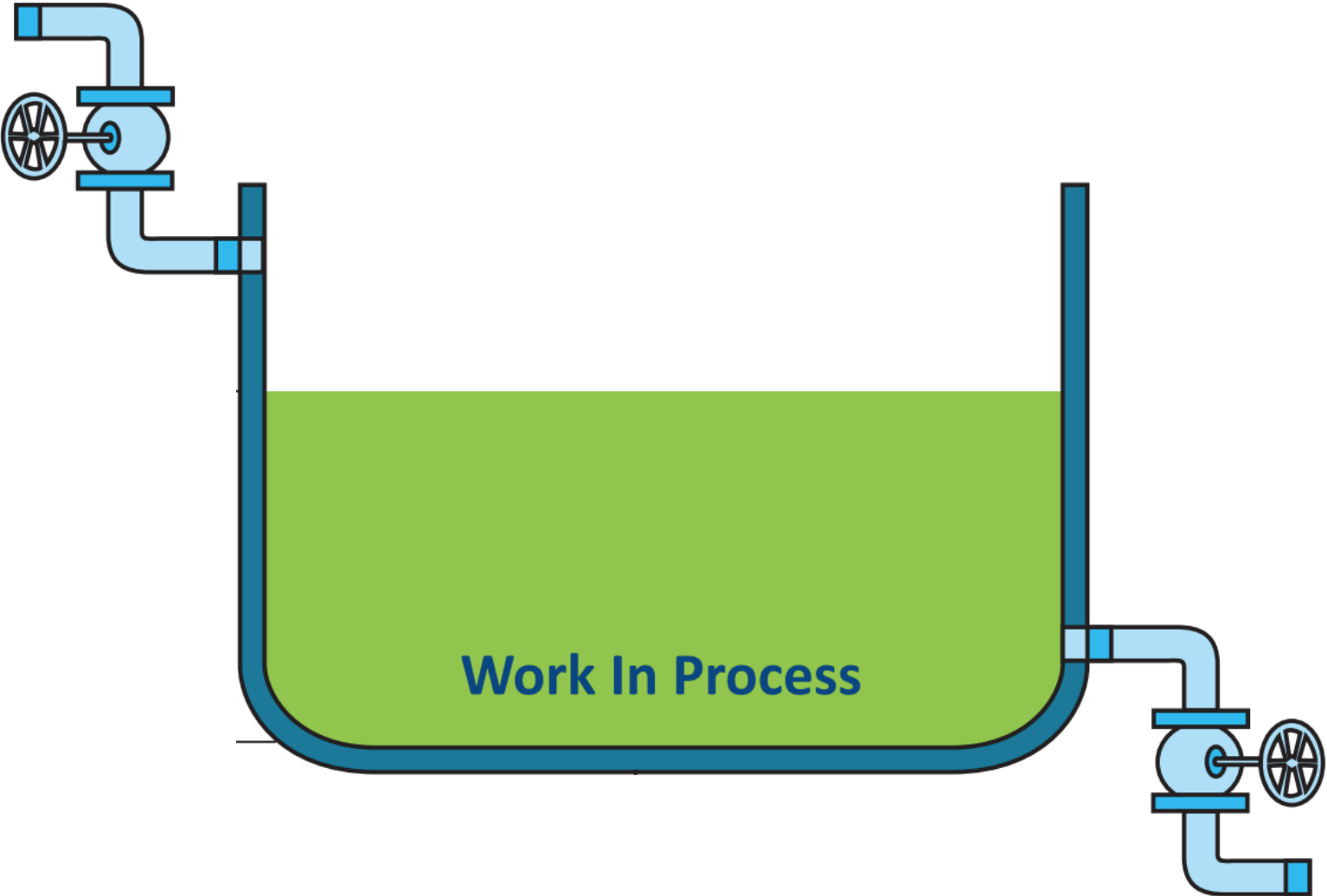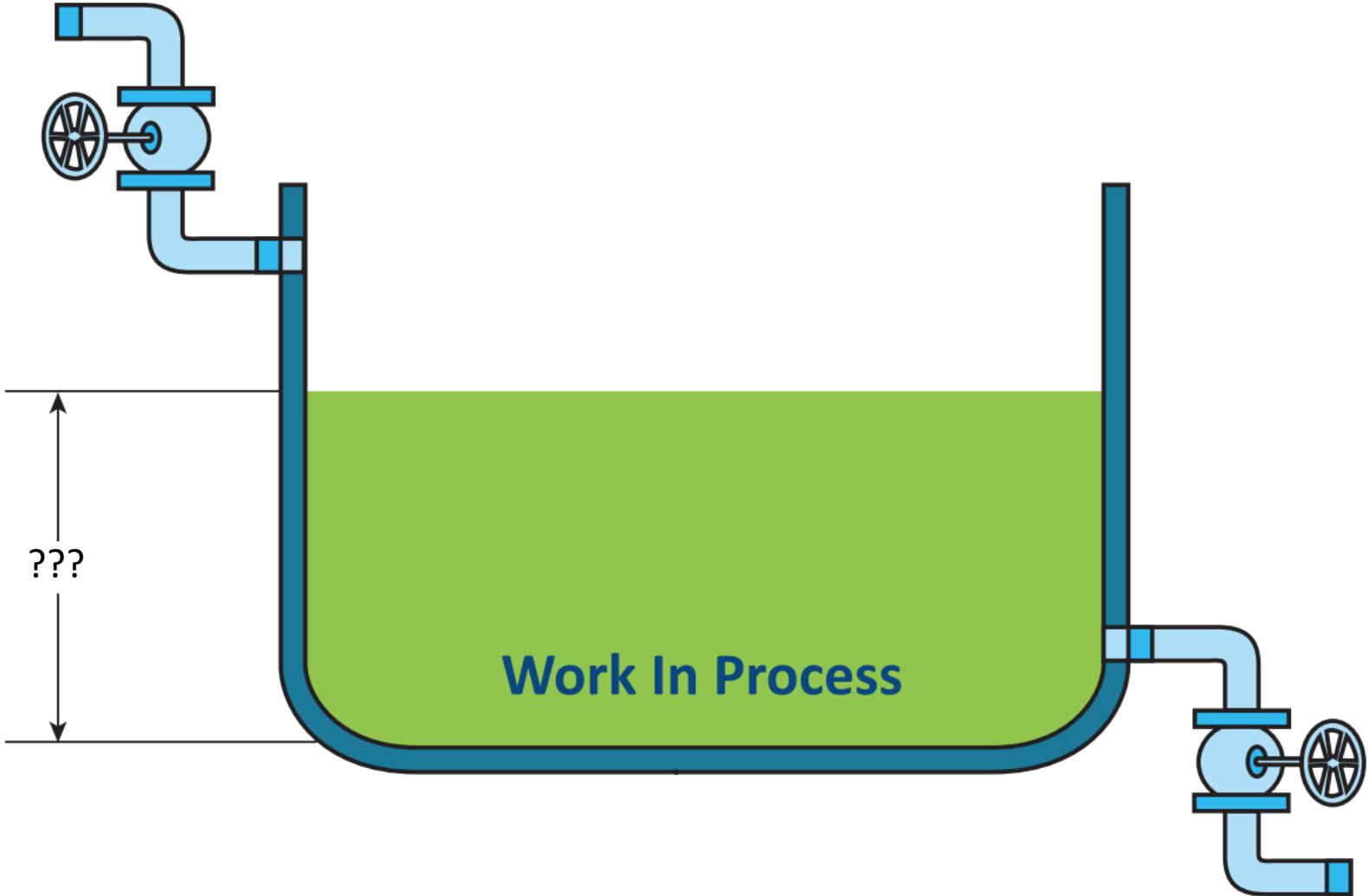
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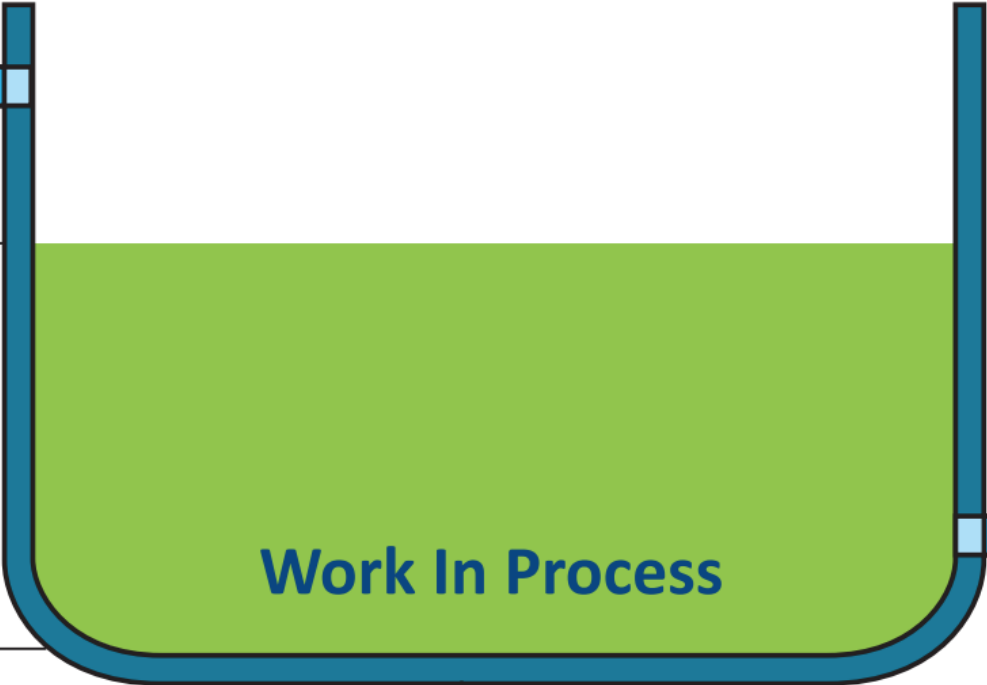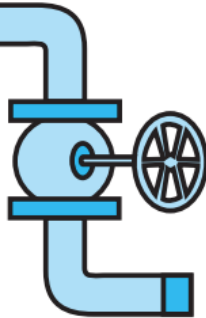
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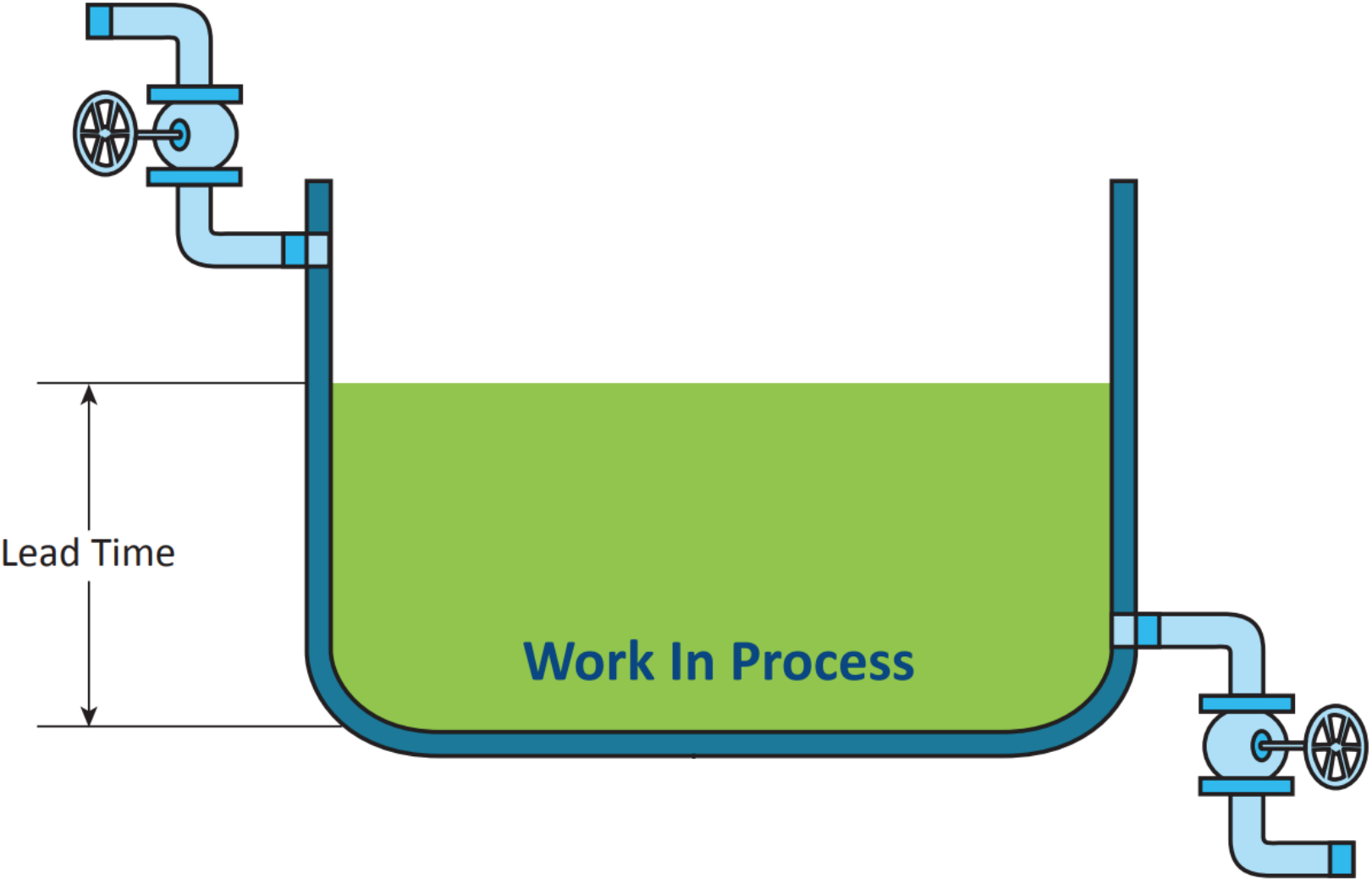
Concept 6: The importance of Lead Times

Concept 7: Management of Safety Stock and Safety Time

- ALWAYS set Safety Stock using a Safety Stock Journal

- NEVER Set Safety Stock by keying directly into Item Coverage

Concept 8: The importance of ABC Class

- Pareto: 80% of COGS is generated from 20% of skus or Items

- Set Safety Stock **Lower** for A Class

- Set Lot Sizes **Lower** for A Class

- **Goal: Reduce the number of Action Messages**
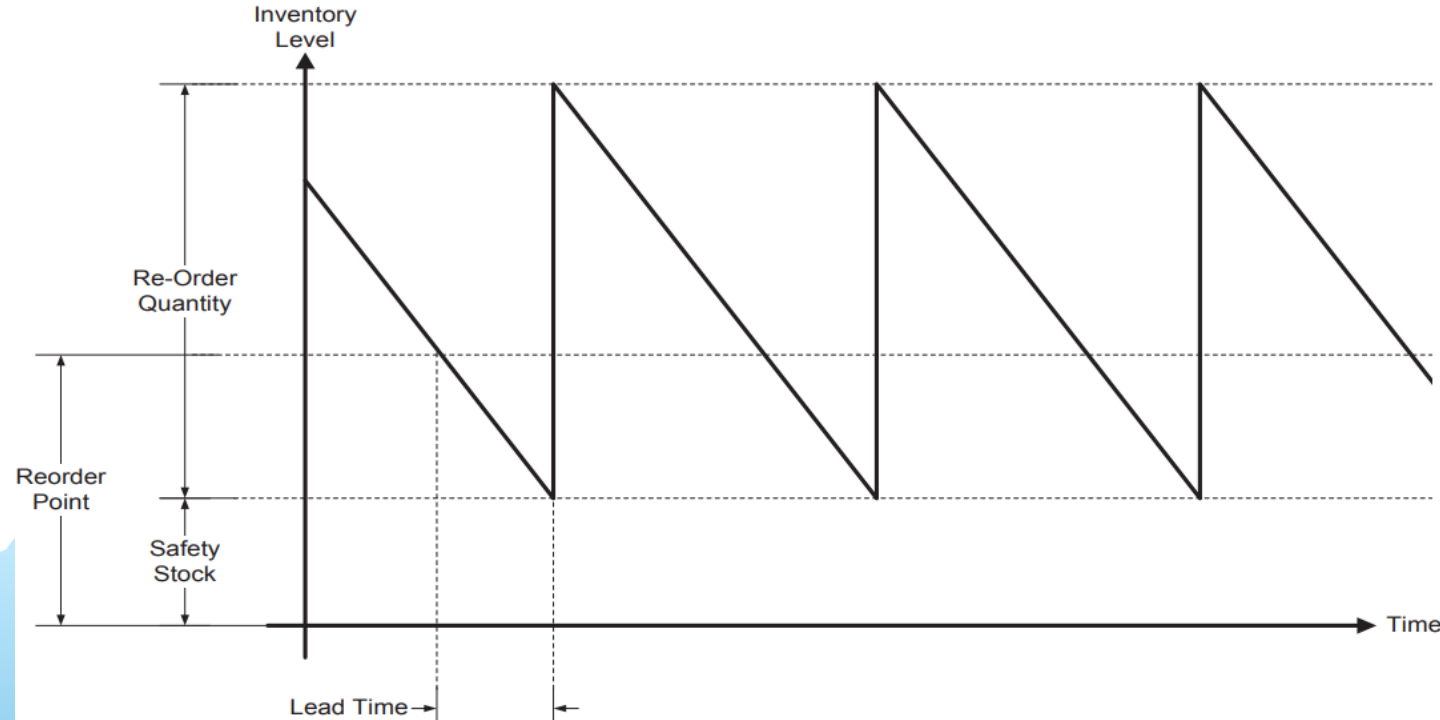
Concept 9: Dealing with Vendor Selection

- Primary Vendor

- Approved Vendor

- Shared Supply

Concept 10: What is a Supply Forecast?

- Supply forecasts look like Planned Supply Orders but they are planner-manually/imported forced values and maintained on another form.

- Can be used for
  - A vendor with limited supply
  - Master Planning as defined by APICS - along with Freeze time fence (Next Slide)

I like this approach!

Concept 10: Master Planning per APICS?

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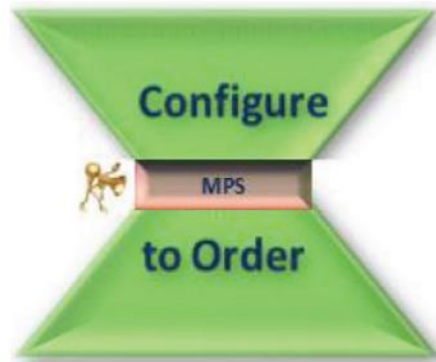 - Master Planning as defined by APICS - along with Freeze time fence (Next Slide)

Concept 11: Use of a Frozen Time Fence

- Supply Forecast vs. Approved Planned Orders

- What happens at the Freeze Fence?

- Goal: Reduce noise, **make Actions stable and easier to manage**
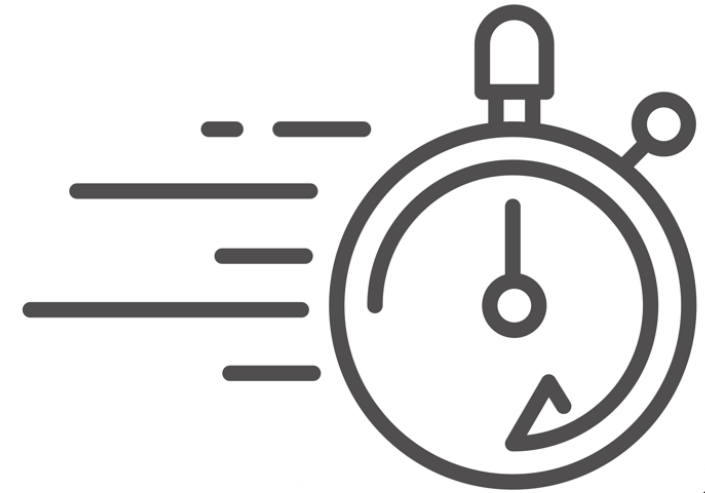
What is Optimized "Supply" Planning:

- Sometimes (more recently) referred to as D365 SCM "Planning Service"

- The only way it is "optimized" is for processing speed
    - It's still straight math (no more than addition and multiplying) with some exception throwing

- The only demands **created** by Optimized Planning are those generated by open *its own* Supply Planning (Dependent Demand).

Benefits of Optimized "Supply" Planning:

- It runs in Azure "In Memory", not inside D365
  - Much faster
  - Much less performance drain on at-large User experience

- However, there have been great feature additions that are not in Traditional MPS, for example:
  - The Big Ones:
    - Priority Planning Coverage Group (overview later)
    - DDMRP: Decoupling Point Coverage Group (overview later)
  - Many others including:
    - Shared Supply (ratio)

Limitations (1) Optimized "Supply" Planning vs. Traditional

- Almost all capabilities of Traditional MPS have now been matched in Optimized Planning
  - Most customers had a need for one or more traditional capabilities that Optimized Planning lacked at the time, severely slowing adoption rates until recently.
  - Forecast reduction based on sales shipped in the forecast bucket is deprecated? (Wow!)
  - Some time fences are not supported and default to the Coverage time fence
    - Explosion, Forecast plan, Calculated delays, Capacity, Continuity (gone),
    - (makes sense to me, generally these existed separately for performance)
  - Freeze Time Fence was going to be deprecated but Microsoft listened to the Community and added it.
    - For me frozen time fence is critical for full "Master Planning" even though few D365 customers do that (and then can't manage action messages)
    - There was an issue that required two "back-end flights" to be "run" for the new feature activation to work, but this was fixed in the last few days for the upcoming rollout (2 weeks)
  - Optimized Planning only supports Static Plans (not Dynamic). However, it is so fast to replan that this is not as critical as it might seem.
    - Note that the Service is called even when clicking in "Update" in Net Requirements/Requirement Profile)

Limitations (2) Optimized "Supply" Planning vs. Traditional

- Almost all capabilities of Traditional MPS have now been matched in Optimized Planning
    - The Planning Service does not currently support the "Time of receipt" warehouse parameter. This can force demand to the prior day. Not good for "same-day-delivery" businesses
    This was not planned to be fixed in 2023 and I am unsure about 2024.
    - Ignores **Transport days** (new feature imminent)
    - Ignores **Kanbans** (not planned)
    - **Backward scheduling capacity time fence** – not supported
    - **Ensure that the planned orders are not created prior to the master planning run date** – Not supported in Planning Optimization. Planning Optimization never creates planned orders in the past.
    - Action message: **Update postponed date as requirement date** – not supported
    - There are cases where finite planning throws an error and fails to schedule. It may be a specific circumstance related to operation "Overlap". Microsoft has declared a bug and is working on a fix.
    - Manually creating planned orders for a "Planning Item" aren't spawning other planned orders
    - ".." in an item number filter is interpreted as a range of items. Microsoft is aware.
    My own opinion is never put ".." in an Item number . . .

What is Priority Planning?

PRIORITY

- Only available in Optimized Planning

- Plans based on a Priority Index

- Attempts to solve the problem:
  - I won't even try to meet all my demand (I can't?), but who gets what I can supply?
    Which Customers, Which Warehouses, Which Productions
  - Whereas MRP is attempting to meet ALL demand and priorities entirely by date

- Low Priority code means high priority

- Priorities are set by a combination of key attributes (e.g. Customer Priority) and inheritance of priority "down" the Supply Chain and BOM Structure

- Exceptions are managed more elegantly with a Red-Yellow-Green status on inventory levels

What is DDMRP (Demand-driven MRP)?

- Rigid definition governed by the Demand Driven Institute

- D365 DDMRP is Certified Compliant

- Regarded as a "spin-off" of Theory of Constraints (TOC Institute, Eli Goldratt)

- Leverages Priority Planning

- Helps create critical "Decoupling Points" in the BOM structure (think "Safety stock on steroids") with the goal of minimizing lead times, especially "Cumulative" lead time.

- Includes dynamically calculated Average daily usage and Safety stock levels

- Very Subjective parameterization - (Opposite of very Objective MRP)

Coverage code Decoupling Point

- Considerations for each item in the BOM:

    - External variability – Availability is volatile

    - Inventory leverage and flexibility – Can be configured differently at next level up

    - Critical operation protection – Costly to allow a piece of equipment to go down

    - Customer tolerance time- Customer demands short lead time

    - Sales order visibility horizon

    - Market potential lead time

Decoupling Points
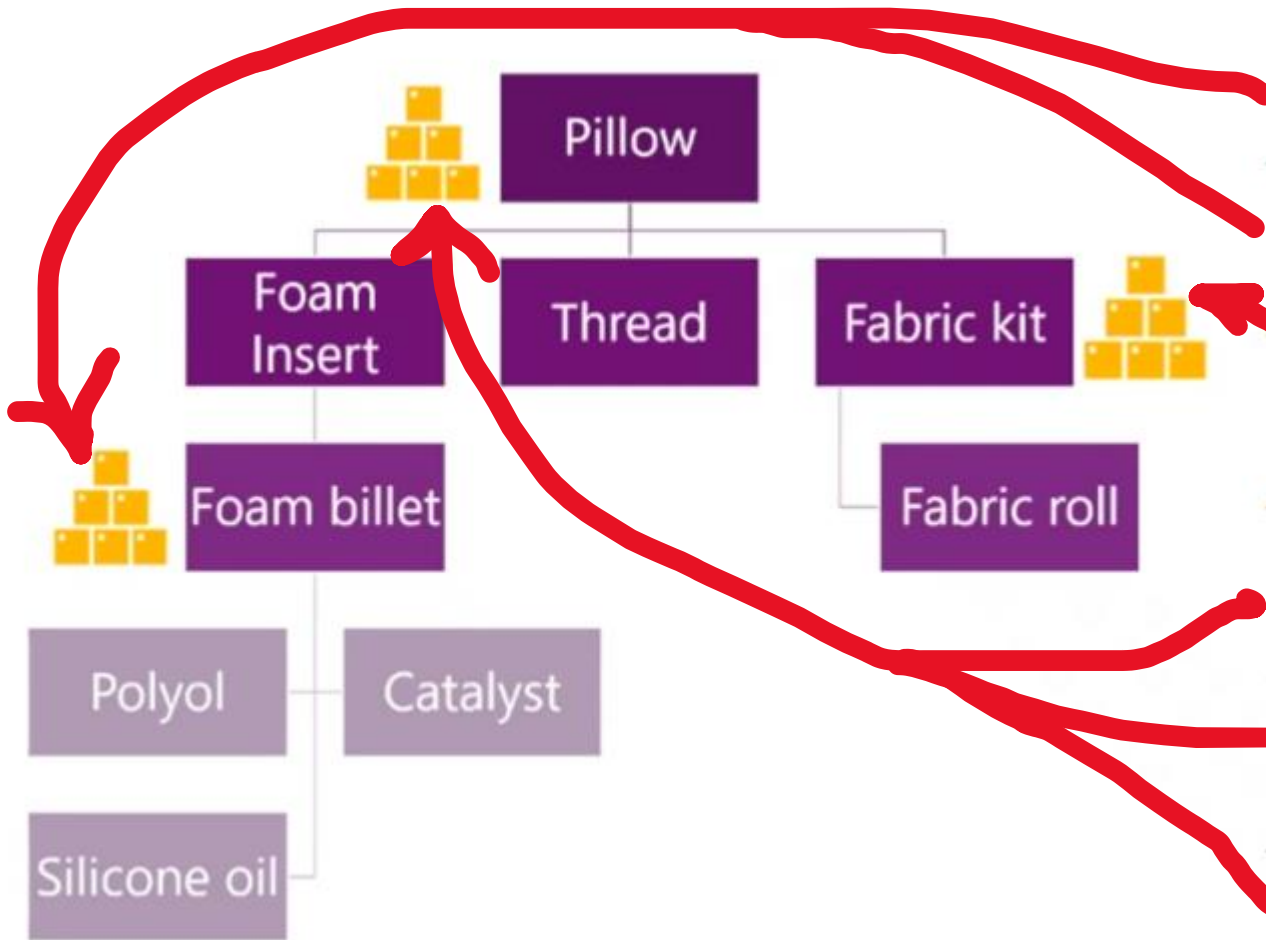
External variability

Inventory leverage and flexibility

Critical operation protection

Customer tolerance time

Sales order visibility horizon

Market potential lead time

How does the new Demand Planning App fit in?

- Like the legacy Demand Forecasting the output is the Demand Forecast in D365 (Object hasn't really changed in more than 15 years)

- Both the legacy and new app can drive legacy MPS AND Optimized planning

- The New App eclipses the Legacy module in so may ways
  - Handles Unit of Measure !!! ☺
  - Designed to work with any source and any target (e.g. SAP)
  - Better designed for Forecast Collaboration
  - Flexibly designed as a base for AI/Copilot
    - Shipping history can be easily tweaked (e.g. Outliers, Preferred Warehouse for a Customer or Lost Sales)
    - Forecast Calculation can be easily tweaked (e.g.
      - New algorithms, Trained/Training AI)
      - Promotions, Cannibalization
      - Start of life/end of life)
    - Export can be easily tweaked

- Is clearly designed to be extended which I bet Microsoft will do hard

Where does Scheduling fit in?

- Takes over at Production Release and Transfer firming

- Is "Executing to plan" and focusses on making appropriate deviations easy

- Way improved Release workbench (Material and Capacity Availability)

- Improved Resource "Dispatching"

- Now supports Projects demand

- Now supports "Material availably workbench" for Operation Scheduling

- Gantt chart only available for Job Scheduled

How does Optimized Planning compare to third party offerings?

Most Third Party:

More mature and more expensive

Already built in targeted, pre-delivered AI as well as "open"

Cope "out-of-box" with:

Collaboration

Promotions/Cannibalization

Start/End of life

. . . And more

What about Co-Pilot and Artificial Intelligence?

Time will tell!

Clearly top-of-mind for Microsoft

Some possibilities (pure speculation)

  AI recommended, dynamic Safety stock

  AI detection of Start/End Life

  AI recommended start/end of life Safety stock ramp

  AI recommended Action message resolution (what a dream!)

    Modifying Lot Sizing based on project on-hand available

    Dynamic Out-sourcing (Make-Buy and Subcontract options)

    Alternate Item, Alternate BOM/Route, Alternate source Warehouse

    Robbing which Peter to pay which Paul