



# Microsoft Business Applications Summit





# Dynamics 365 Supply Chain Management: Best practice recommendations for Warehouse Management implementations

Zach Greenvoss – Solution Architect, FastTrack

---

# Agenda

---

Implementation Guidance

Testing Strategies

Complex Implementations

# Business Applications Communities

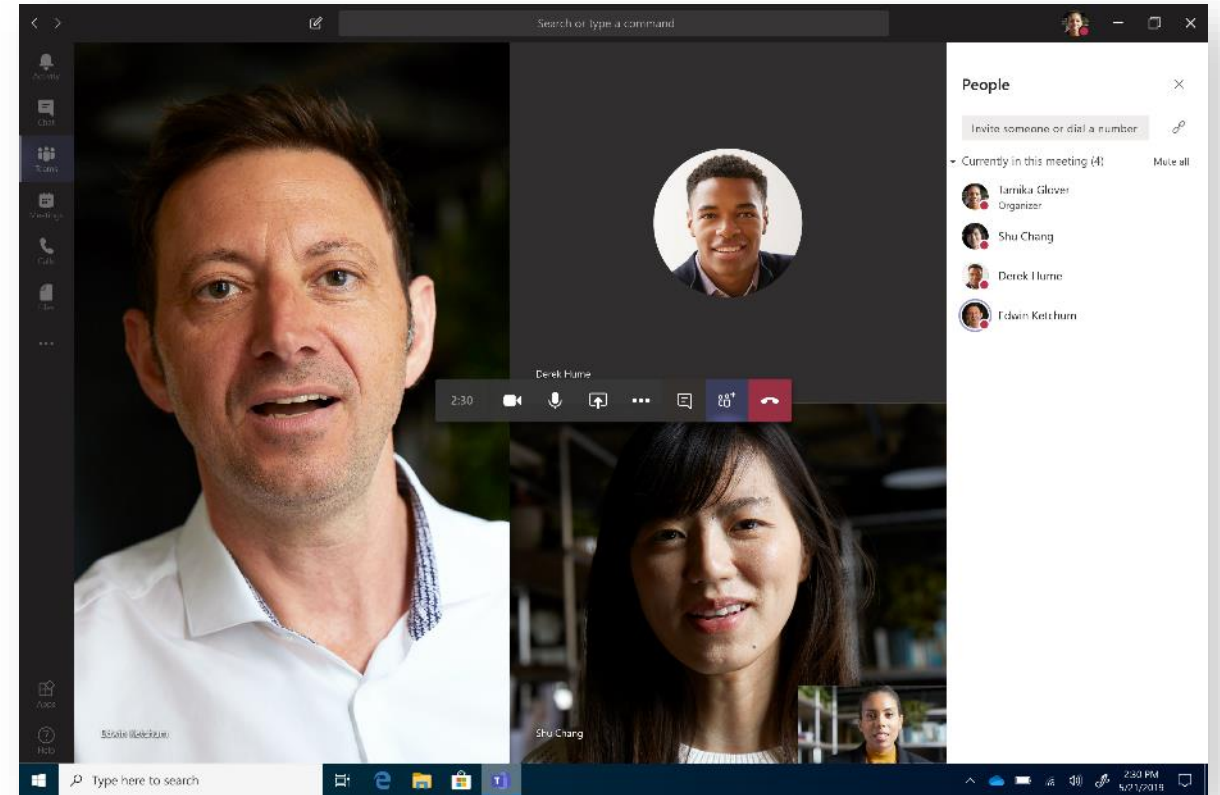
Join free for these benefits:

**Connect** with peers and experts in online communities and local user groups

**Learn** from engaging discussions and informative blogs, webinars, and videos

**Share** and get answers to technical questions

**Inspire** others, and be inspired by data galleries, product use examples, and more



Continue your  
MBAS experience  
in Communities

Microsoft Dynamics 365  
Microsoft Power Platform

Online Communities

[community.dynamics.com](https://community.dynamics.com)

[community.powerplatform.com](https://community.powerplatform.com)

User Groups

[www.d365ug.com](https://www.d365ug.com)

[www.powerplatformug.com](https://www.powerplatformug.com)

# Implementation Guidance

# Warehouse Implementations

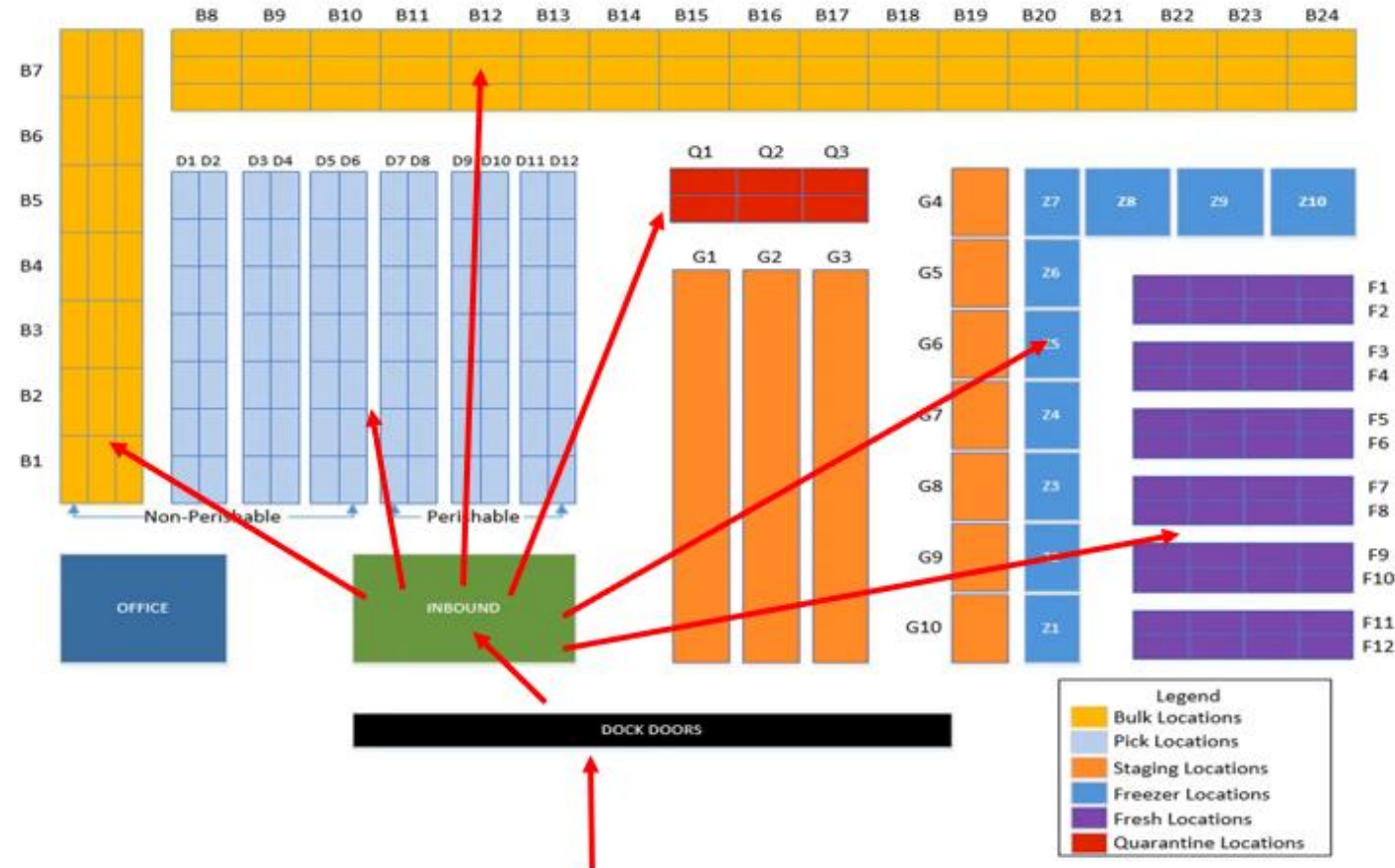
- No different than other ERP implementations
- Must define required business processes
  - Do not just copy existing legacy system
- Document current processes
- Document to-be processes

# Warehouse Implementations – Physical Space

- Important to understand physical layout
  - Inbound, outbound, QC, returns, claims, etc.
  - Identify major zones
    - Inbound put away
    - Outbound picking
    - Replenishment
    - Packing
    - Temperature-controlled
  - Look at location sizing, item storage strategies and handling units
- Identify hardware used
  - View the aisle configuration, racking equipment
  - Know what picking equipment, material handling / automation is used (and why)
  - Understand the labor and workforce environment - who can operate what equipment

# Warehouse Physical Layout

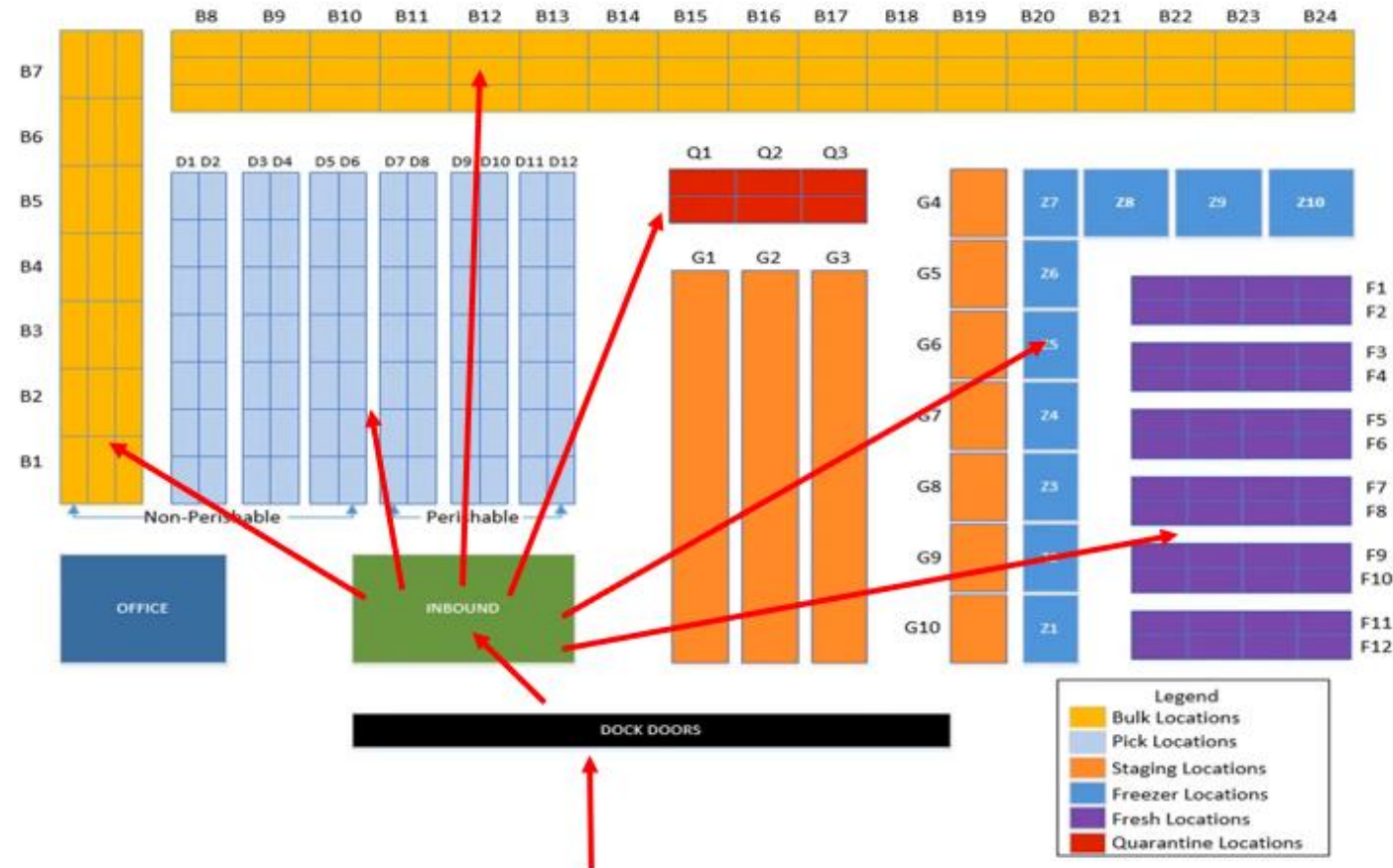
- Map distinct physical zones to location profiles
- Receiving
  - Typically LP controlled
  - Mixing allowed – no system limits
- Bulk
  - Typically non-LP controlled
  - No mixing (items, status, batch)
  - Sometimes requires special equipment
- Pick face
  - Typically LP controlled
  - Mixing – depends on space restrictions
  - Define max qty or volumetrics
  - Typically allow cycle counting
- Staging / Outbound Dock
  - Typically LP controlled
  - Mixing allowed
  - Typically no max qty defined
  - Dock Management Profile – exclude order / load mixing





# Zoning

- Defining Zone/Zone Groups
- More flexible than Location Profiles
- Can cross types
- Useful for reporting / location directives



# Warehouse Implementations – Material Handling

- Important to identify material handling requirements
  - Typical picking quantities vs size of picking locations
  - Replenishment strategies
  - Short picking strategies
- How are labels used
  - GS-128 requirements?
  - Printing requirements?
- How are new items defined?

# Warehouse Implementations – Investigation

- Important to fully understand processes
- Some sample leading questions:
  - How many order lines are processed in normal vs peak day?
  - How large are picking routes, how many items will a typical worker pick per order?
  - Do you have more products than locations in your warehouse?
  - How many items can location store, are there any limits there?
  - Do you have A/B/C classifications on your products?
  - How full will locations typically be before you consolidate?
  - What is the historical picking performance?
  - Are our warehouse workers experienced?
  - How many pallets/shipments do you receive in average per dock?
  - Can you perform all outbound picking for a day without replenishment? If not, how often does replenishment need to execute in a day?
  - What special equipment is required in the warehouse and are there restrictions on who can operate it?
  - Do you assign warehouse workers to across different working stations and tasks or do they work with same area each day?
  - How long do we expect each steps in the inbound and outbound workflow to take?
  - Will there be a 3PL integration?

# WMS Best Practices - Usability



Minimize the number of different warehouses at a physical site.



Minimize the number of mobile device menu items.

# WMS Best Practices – Wave Processing



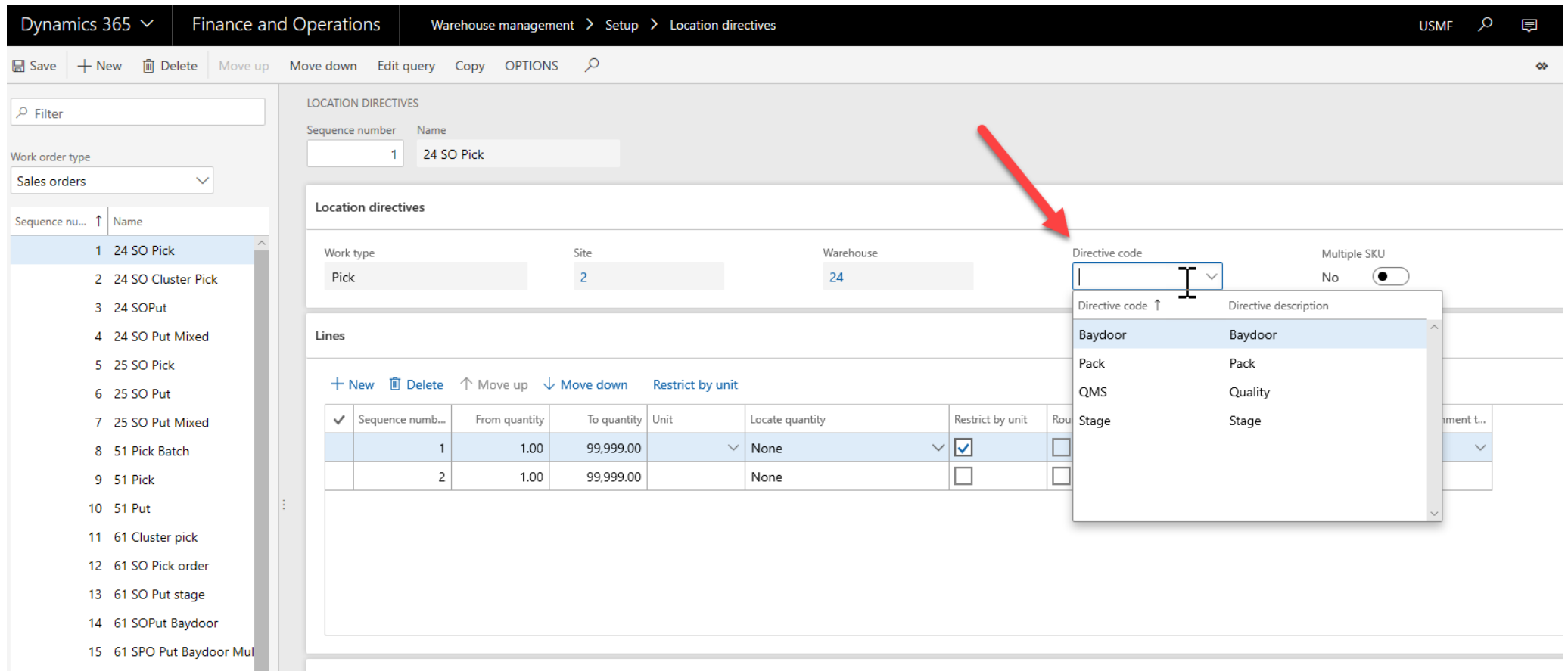
Utilize Min/Max Replenishment in conjunction with demand replenishment to improve wave processing time.



Utilize multiple wave processing tasks to improve wave processing performance.

# WMS Best Practices – Location Directives

- Utilize Directive Codes to limit the query selection



The screenshot shows the Dynamics 365 Finance and Operations interface for Warehouse management Setup > Location directives. The main area displays the 'LOCATION DIRECTIVES' form for sequence number 1, named '24 SO Pick'. The 'Location directives' section shows work type 'Pick', site '2', and warehouse '24'. The 'Directive code' dropdown is open, showing a list of options: Baydoor, Pack, QMS, and Stage. A red arrow points to the dropdown menu.

**Location directives**

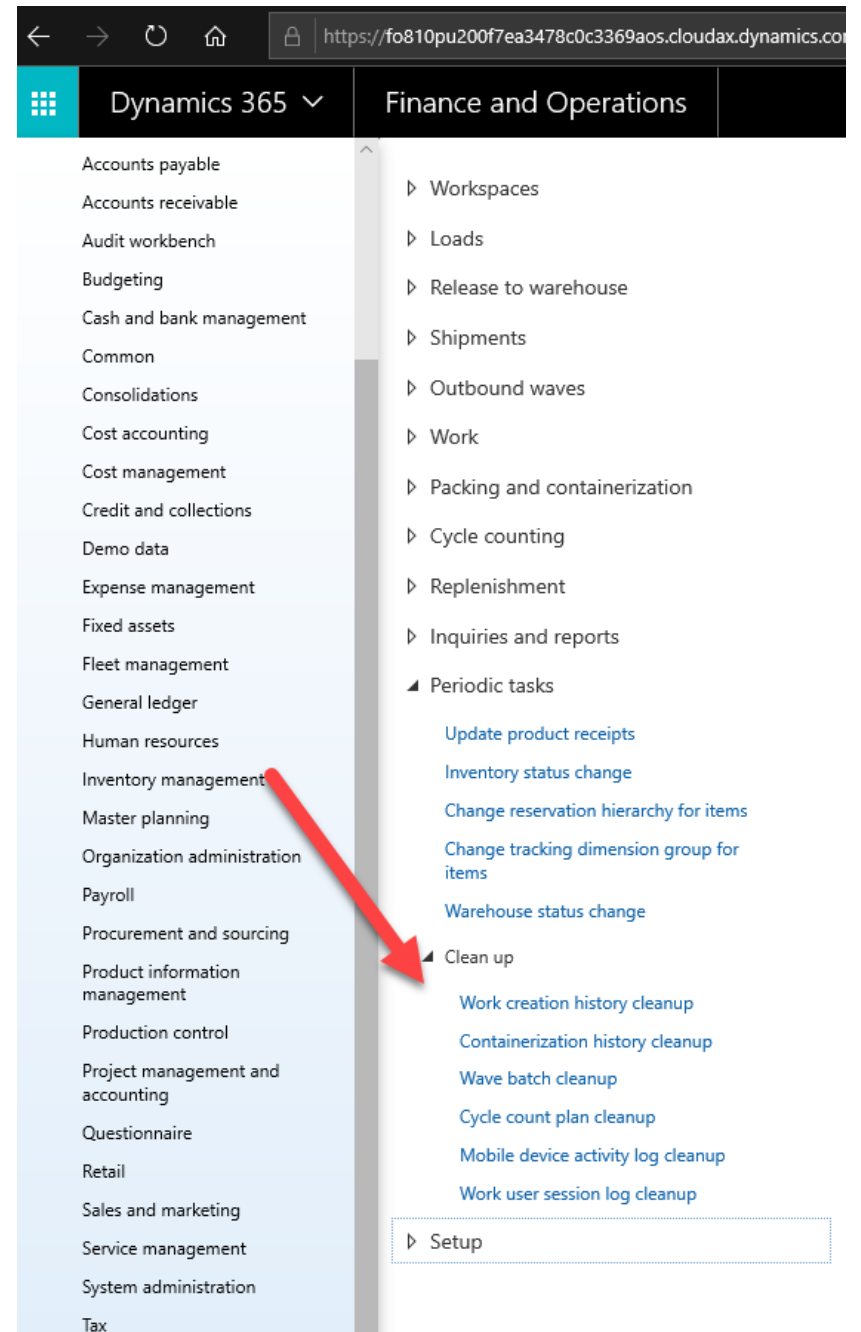
Work type	Site	Warehouse	Directive code	Multiple SKU
Pick	2	24		No

**Lines**

✓	Sequence numb...	From quantity	To quantity	Unit	Locate quantity	Restrict by unit	Round
	1	1.00	99,999.00		None	<input checked="" type="checkbox"/>	
	2	1.00	99,999.00		None	<input type="checkbox"/>	

# WMS Best Practices - Performance

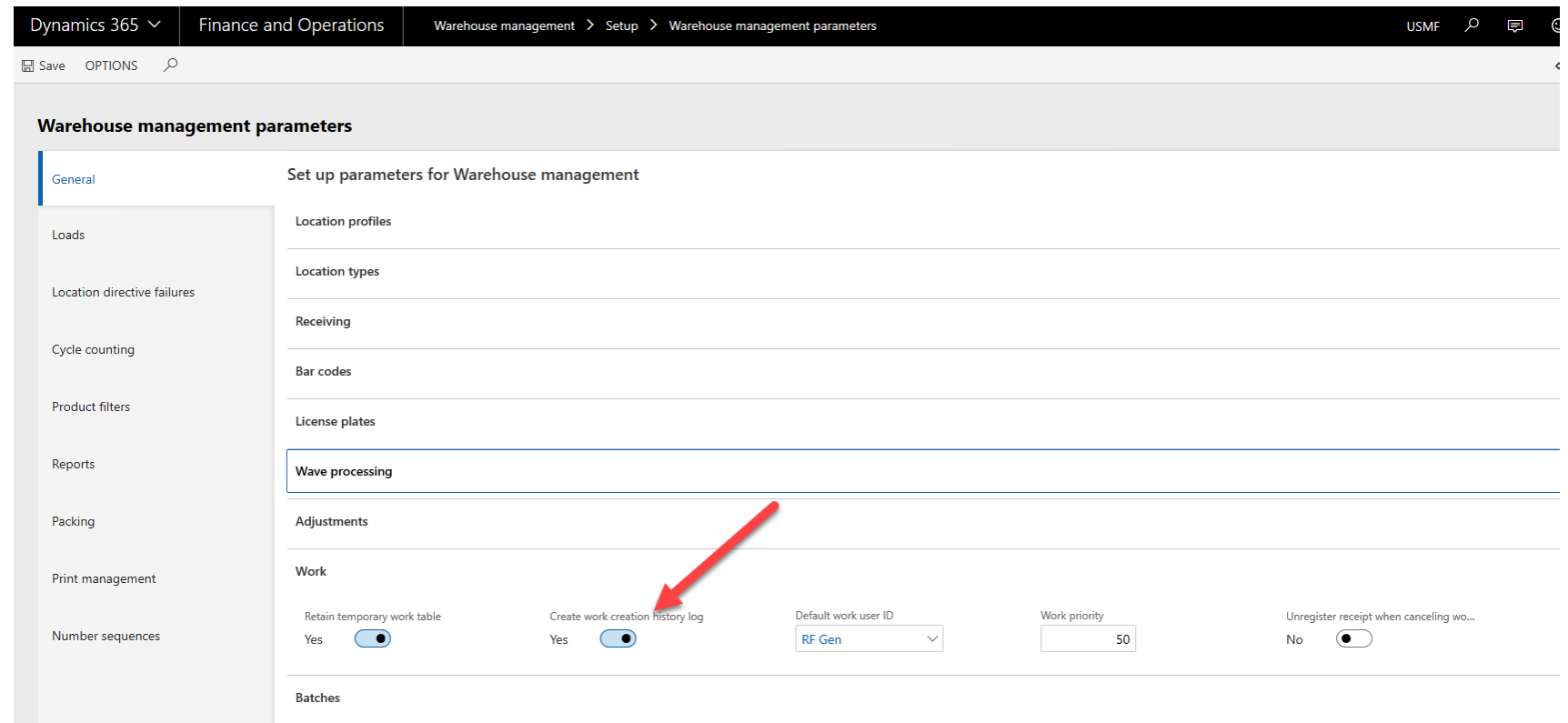
- Configure the clean-up jobs in the PRODUCTION environment to improve system performance.
  - <https://aka.ms/WHSCleanup>



The screenshot displays the Dynamics 365 Finance and Operations navigation pane. The left sidebar lists various functional areas, including Accounts payable, Accounts receivable, Audit workbench, Budgeting, Cash and bank management, Common, Consolidations, Cost accounting, Cost management, Credit and collections, Demo data, Expense management, Fixed assets, Fleet management, General ledger, Human resources, Inventory management, Master planning, Organization administration, Payroll, Procurement and sourcing, Product information management, Production control, Project management and accounting, Questionnaire, Retail, Sales and marketing, Service management, System administration, and Tax. The right pane shows a list of tasks and reports, including Workspaces, Loads, Release to warehouse, Shipments, Outbound waves, Work, Packing and containerization, Cycle counting, Replenishment, Inquiries and reports, and Periodic tasks. Under Periodic tasks, several options are listed: Update product receipts, Inventory status change, Change reservation hierarchy for items, Change tracking dimension group for items, Warehouse status change, and Clean up. A red arrow points to the 'Clean up' option. Below the 'Clean up' option, a list of specific cleanup tasks is shown: Work creation history cleanup, Containerization history cleanup, Wave batch cleanup, Cycle count plan cleanup, Mobile device activity log cleanup, and Work user session log cleanup. A 'Setup' option is also visible at the bottom of the right pane.

# WMS Best Practices – Performance

- **Don't** leave the work creation history logs enabled in the production environment. These should only be used for testing/tracking configuration changes. Once work is being created as expected, disable these parameters.



The screenshot shows the Dynamics 365 interface for configuring Warehouse management parameters. The breadcrumb trail is: Dynamics 365 > Finance and Operations > Warehouse management > Setup > Warehouse management parameters. The page title is "Warehouse management parameters". The left sidebar lists various configuration categories: General, Loads, Location directive failures, Cycle counting, Product filters, Reports, Packing, Print management, and Number sequences. The main content area is titled "Set up parameters for Warehouse management" and contains several sections: Location profiles, Location types, Receiving, Bar codes, License plates, Wave processing, Adjustments, Work, and Batches. The "Work" section is expanded, showing four parameters: "Retain temporary work table" (Yes, toggle on), "Create work creation history log" (Yes, toggle on, highlighted with a red arrow), "Default work user ID" (RF Gen, dropdown menu), and "Work priority" (50, text input). The "Unregister receipt when canceling wo..." parameter is also visible with a "No" toggle.



# WMS Best Practices – Latest news and how-to guides

- **Do** join the Dynamics AX WHS TMS feedback community on Yammer!

<https://www.yammer.com/dynamicsaxfeedbackprograms/>

# Testing Strategies

# Different Types of Testing

Unit Testing

Process Testing

System/Integration  
Testing

Performance/Load  
Testing

Mock Go-Live

Regression Testing

# Unit Testing



Lowest level – typically developer or consultant



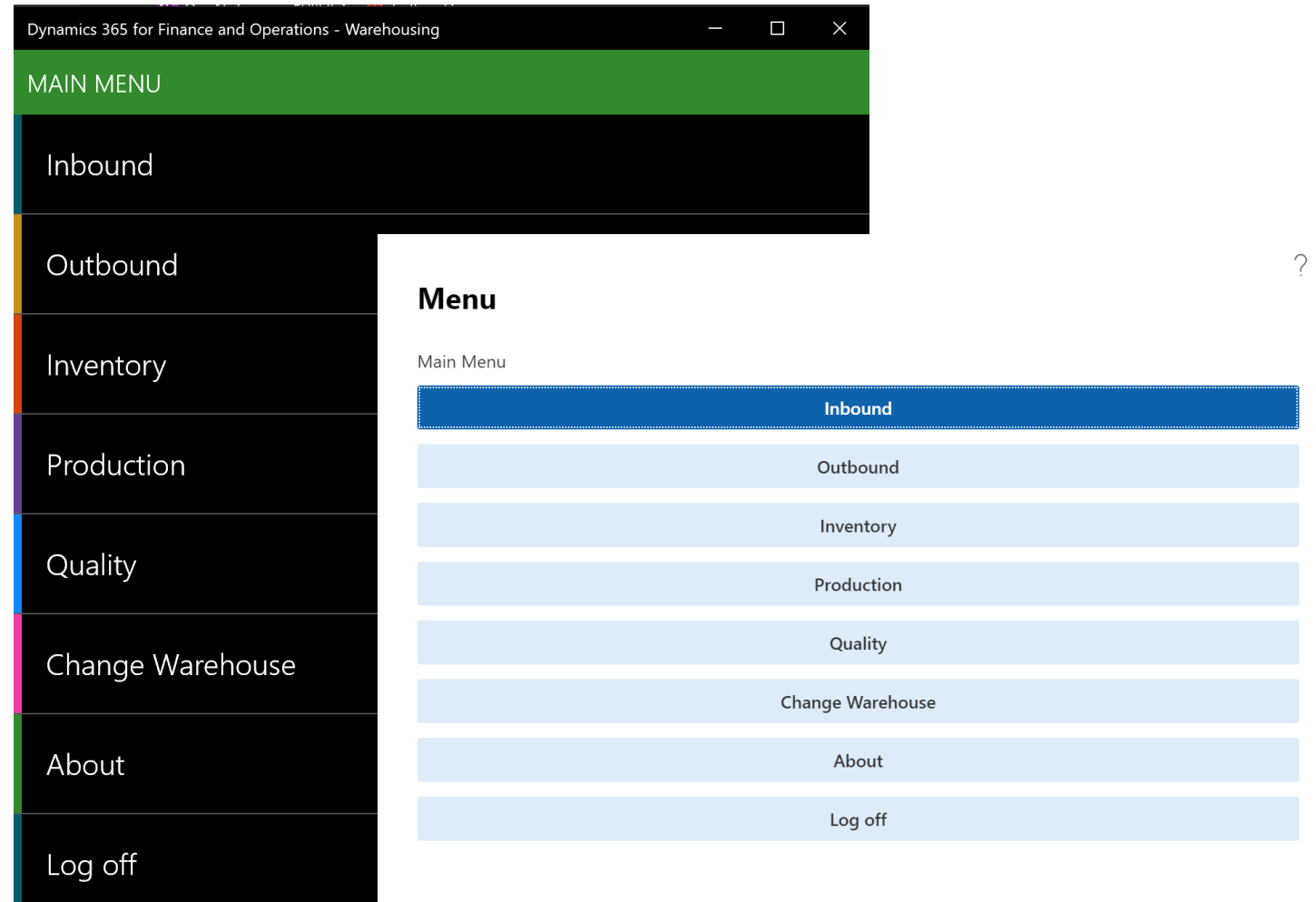
Testing single workflow or functionality



Important to consider edge cases and unexpected input

# Emulator vs. Warehouse Mobile App

- Test on the warehouse mobile app whenever possible vs. using the built-in emulator.
- There are differences between them
- Don't do all your testing on the emulator, then go-live with the mobile app!



# Process Testing



Testing an end-to-end process



Must be done in T2+ environment



Utilize real data

# System / Integration Testing



Complete system test – not just warehouse



Must involve users from customer



Scenarios should be documented in and tracked in ADO

# Performance / Load Testing



Goal is to simulate go-live usage



Might involve tooling automation and/or realistic load



Carefully analyze system and database performance



# Performance test considerations



Identify scenarios



Determine the roles



Document the expected transaction load and rate



Generate data to facilitate load testing

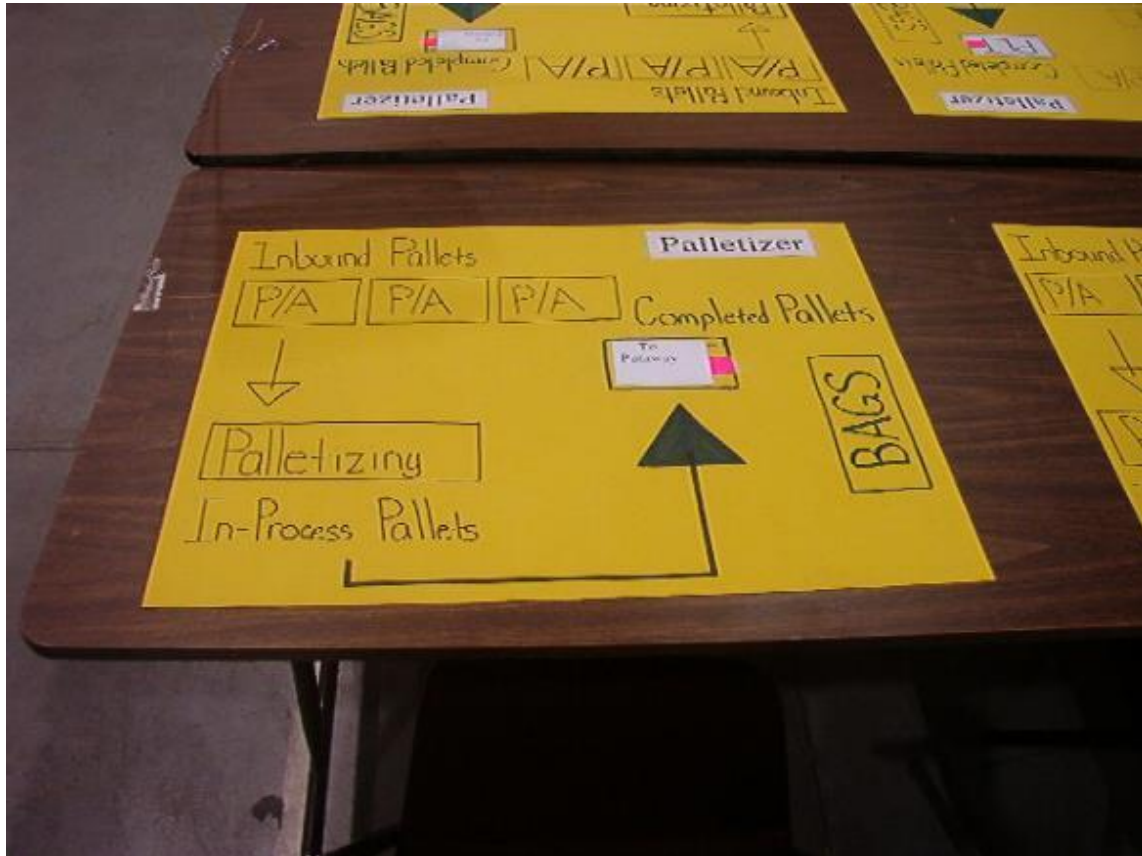
Data management framework

Data expansion tool



Execute tests at load

# Design a "real" performance test



Stations for each role

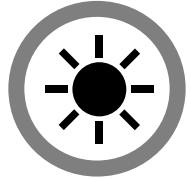
# Design a “real” performance test



Actual Stress Test

- 8:50 If everything looks like it is a “Go”, Steve will contact Sue and tell her to tell corporate to download order set #R85 which is used to generate the 136 Replens during this scenario. **(Sue)**
- 8:58 Record the sequence # of the last replen task created using the script provided by Julie for doing this. **(Sue)**
- 8:58 HQ downloads rush order set #R85
- 9:00 **GO!**  
Steve will announce over the radio that Inbound 1 Trial A has started. The participants should begin performing their jobs. Alternates should observe the roles they may have to play should they be needed in the next Trial. **(Steve)**
- 9:00 HQ downloads Order Set N1 containing 30 minutes of regular orders **(HQ)**
- 9:01 HQ will download the POs associated with PO Set #P1 **(HQ)**
- 9:02 Sue will kick off ReplenNeed to create Replens from the RPC01B file.  
(Sue)

# Execute Mock Go Live



Configuration Deployment



Data Migration / Upgrade



Certification Testing



Day in the Life Test



Final Performance Validation

# Regression Testing



Reduce manual testing efforts



Regression Suite Automation Tool (RSAT)



Warehouse App Task Validation Tool for Warehouse regression testing

# Complex Implementations

# Reduce Risk – Limit Scope



Pilot warehouse



Subset of business processes



Time of year

# Focus on the business not the software



Do not replicate legacy functionality



Build modern solutions



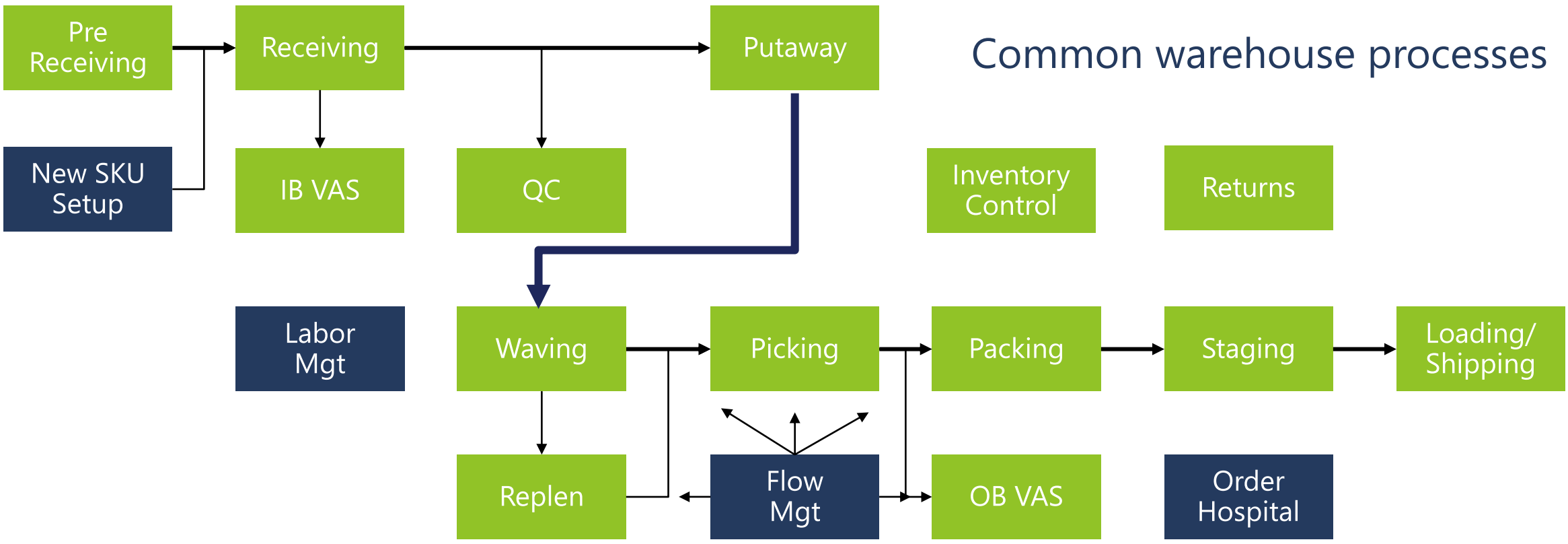
Be ready to adapt to changing requirements



# Exception management

- Common missed area
- Make sure you have documented and tested:
  - Short picking
  - Cancel picking
  - "Stuck" work
  - Move and consolidate loads and shipments
- Build standard processes for when an order has issues.
  - Order hospital concept

# Large warehouses need these 4 processes



# 4 key processes missing in warehouse implementations

New SKU Setup	The process of defining the attributes of a new SKU including its forward pick location and linking it to the rules that will drive its putaway, allocation
Flow Management	This is the process of releasing work and moving people to maximize the throughput of the site and to meet service level promises.
Labor Management	This is the process of first planning the number of associates you need in each area each day or week and then holding them accountable to minimum levels of performance
Order Hospital	This is the area and the process for repairing outbound orders that are short good merchandise

# New SKU Setup



Capture physical dimensions



Quality control



Product attributes



Unit of measures and carton sizes

# Flow Management



Demand across different areas of the warehouse



Incoming loads and shipments



Outgoing flow



Reporting and tools

# Labor Management



PRODUCTIVITY REPORTS



WHAT IS EXPECTED  
NUMBER OF PICKS/HOUR



BUILD MODELS BASED  
ON EXPECTED VOLUME

# What does an Order Hospital do?



- Holds orders that are deemed incomplete by picking
- Verifies the product is not in the pick face
- Requests "hot" replenishments if necessary
- Tracks those replenishments until they are in the pick face
- Picks the order complete once the product is there or shorts the order.
- In short – it dedicates resources to fixing problems

---

# Review

---

Implementation Guidance

Testing Strategies

Complex Implementations



