



 **DUGMEETUP**

August 29, 2024

**TEXAS REGIONAL**



# Manufacturing for D365 SCM

## A comprehensive overview

Plus Clinic if there's time

Plus Tips if there's time

It will make you dizzy !



August 29, 2024

**TEXAS REGIONAL**



Rex

Nigel Cox



- Nigel Cox, Delta-Magnum.com
- D365 Manufacturing Specialist
- Implemented MAPICS in 1975
- Used 5 ERP's, Consulted for 4 ERP's
- 19 years of consulting for AX/D365



Rex

Nigel Cox



# What does ERP stand for?

Enterprise Resource Planning



# Where did Enterprise Resource Planning come from?

Manufacturing Resource Planning (MRP II)



# Where did Manufacturing Resource Planning come from?

Material Requirements Planning (MRP)

All modern day ERP systems started as  
Manufacturing Planning Systems  
including

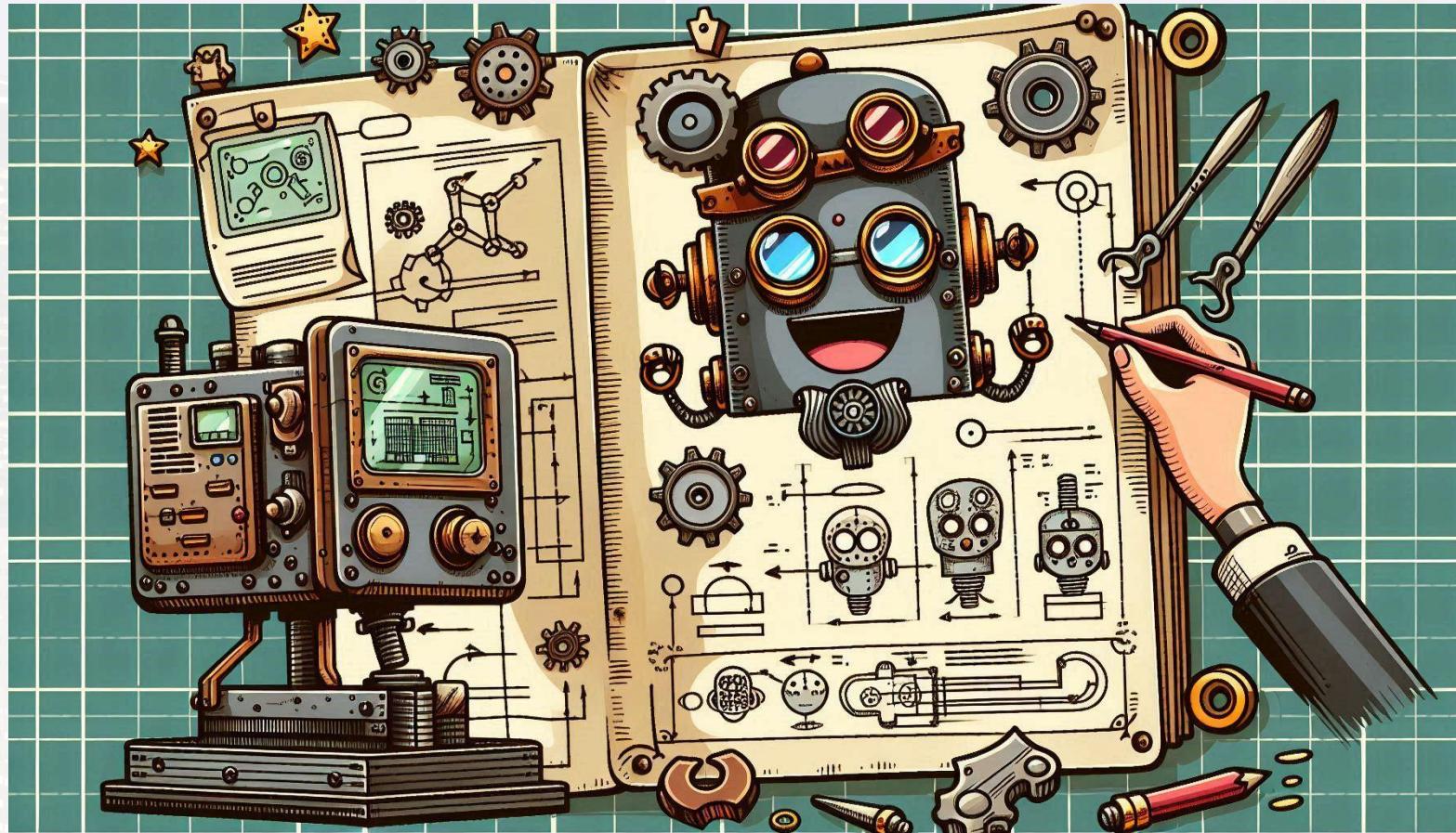
Dynamics 365 Finance and Operations





# What's in it?

- The Manufactured and Purchased Items





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- Their Inventory





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- The Manufactured and Purchased Items
- Their Inventory
- Item BOMs





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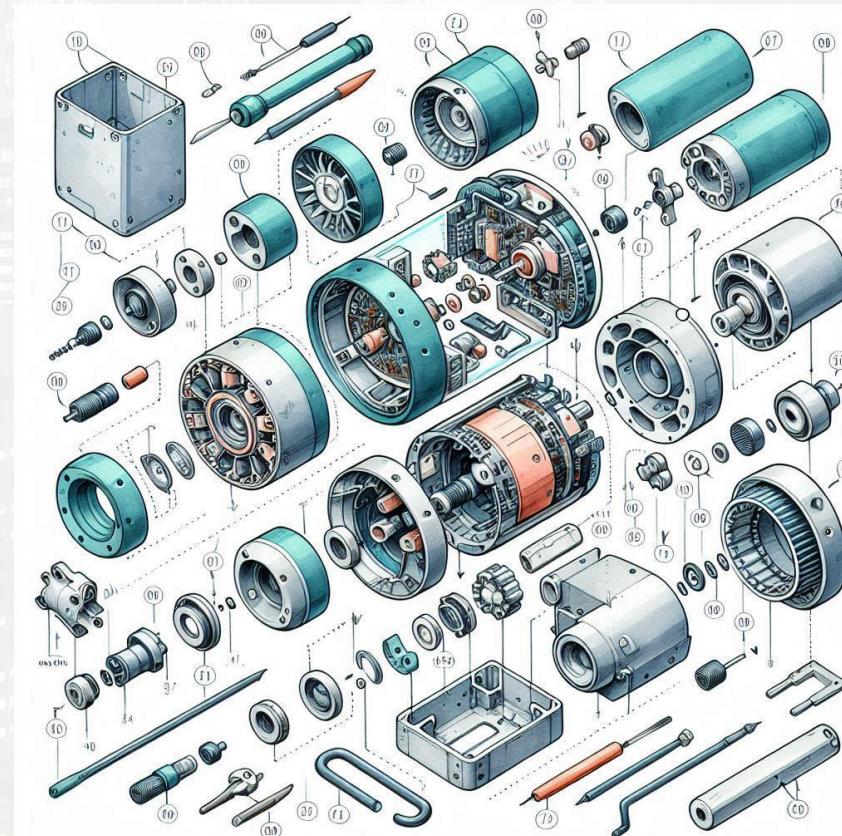
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# What's in it?

- The Manufactured and Purchased Items
- Their Inventory
- Item BOMs and their Configurability





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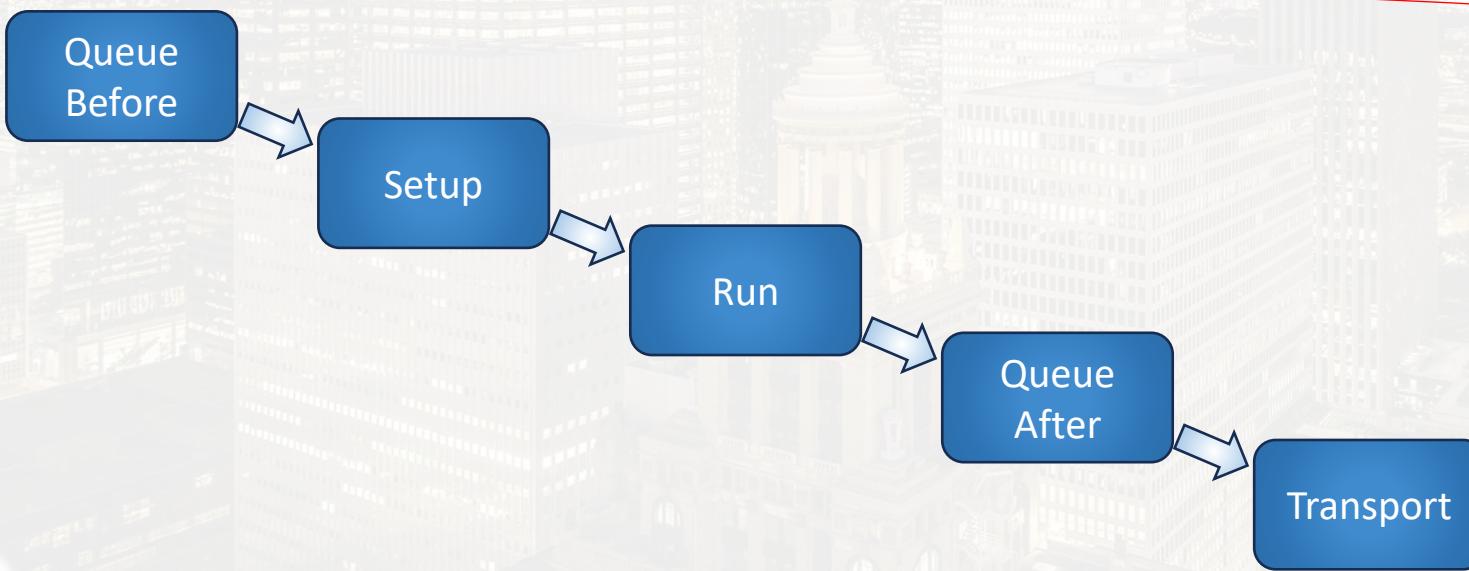
- The Manufactured and Purchased Items
- Their Inventory
- Item BOMs and their “Configurability”
- Manufacturing Resources/Assets





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- Item Routes





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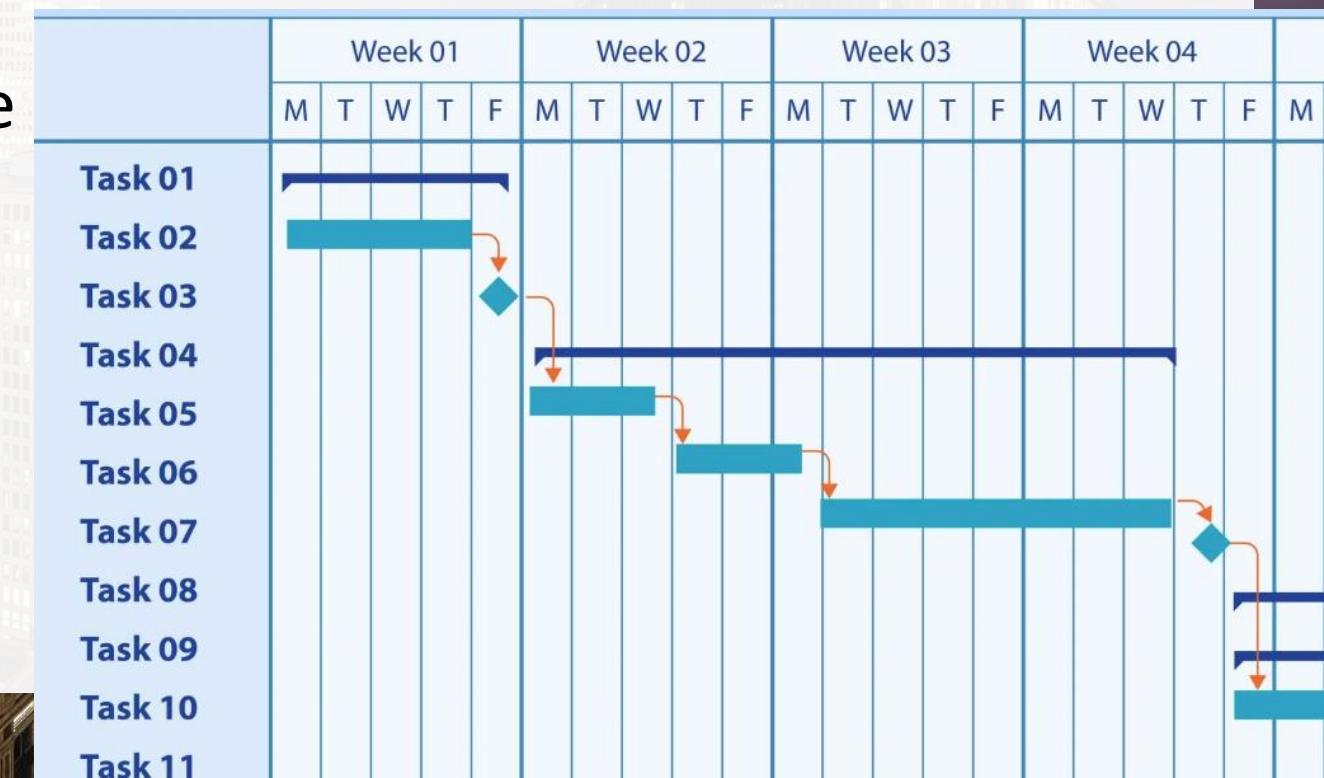
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- Costs
- Planning

|                                 | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Jan |
|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| calendar week                   | 6   | 7   | 8   | 9   | 10  | 11  | 12  | 13  | 14  | 15  | 16  | 17  |
| national holidays               |     |     |     |     |     |     |     |     |     |     |     |     |
| parallel project 1              |     |     |     |     |     |     |     |     |     |     |     |     |
| CONCEPT PHASE                   |     |     |     |     |     |     |     |     |     |     |     |     |
| Project Kick-off                |     |     |     |     |     |     |     |     |     |     |     |     |
| Process workshops               |     |     |     |     |     |     |     |     |     |     |     |     |
| Requirement specification       |     |     |     |     |     |     |     |     |     |     |     |     |
| Workshops with vendors          |     |     |     |     |     |     |     |     |     |     |     |     |
| Vendor evaluation               |     |     |     |     |     |     |     |     |     |     |     |     |
| Technical concept               |     |     |     |     |     |     |     |     |     |     |     |     |
| Project status meeting          |     |     |     |     |     |     |     |     |     |     |     |     |
| IMPLEMENTATION PHASE            |     |     |     |     |     |     |     |     |     |     |     |     |
| Kick-off implementation phase   |     |     |     |     |     |     |     |     |     |     |     |     |
| Software implementation         |     |     |     |     |     |     |     |     |     |     |     |     |
| Connection with vendor platform |     |     |     |     |     |     |     |     |     |     |     |     |
| Pre-test                        |     |     |     |     |     |     |     |     |     |     |     |     |
| Migration of test data          |     |     |     |     |     |     |     |     |     |     |     |     |
| Functional test                 |     |     |     |     |     |     |     |     |     |     |     |     |
| Integration test                |     |     |     |     |     |     |     |     |     |     |     |     |
| Re-test of open issues          |     |     |     |     |     |     |     |     |     |     |     |     |
| Create user documentation       |     |     |     |     |     |     |     |     |     |     |     |     |
| Project status meeting          |     |     |     |     |     |     |     |     |     |     |     |     |
| CLOSING PHASE                   |     |     |     |     |     |     |     |     |     |     |     |     |
| Kick-off closing phase          |     |     |     |     |     |     |     |     |     |     |     |     |
| End-user training               |     |     |     |     |     |     |     |     |     |     |     |     |
| Data migration                  |     |     |     |     |     |     |     |     |     |     |     |     |
| Perform changes in live system  |     |     |     |     |     |     |     |     |     |     |     |     |
| Go-Live                         |     |     |     |     |     |     |     |     |     |     |     |     |
| Go-Live support                 |     |     |     |     |     |     |     |     |     |     |     |     |
| Project status meeting          |     |     |     |     |     |     |     |     |     |     |     |     |



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- The Manufactured and Purchased Items
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- Item BOMs and their “Configurability”
- Manufacturing Resources/Assets
- Item Routes
- Manufacturing Order Life-Cycle
- Costs
- Planning
- Production Schedules





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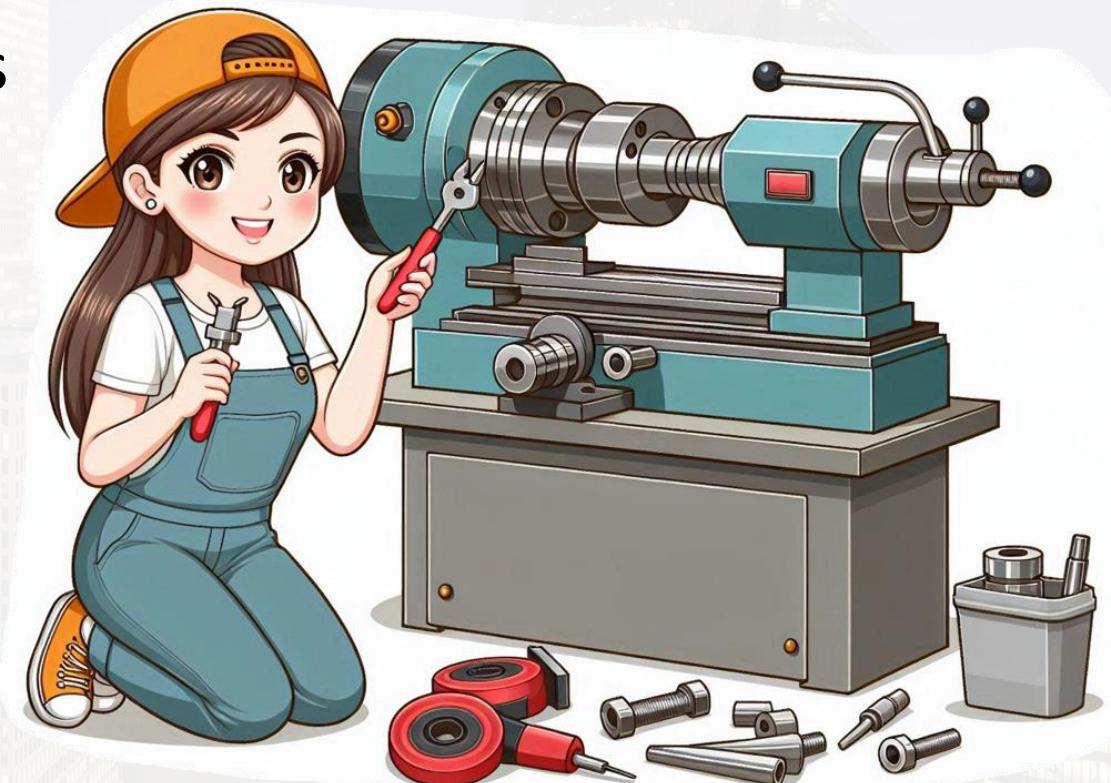
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- Asset Life-Cycle





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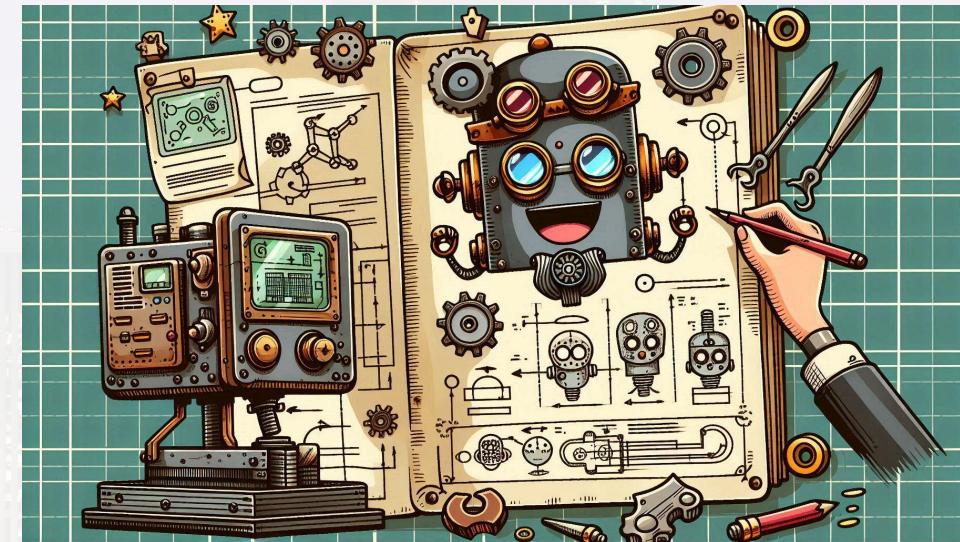
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- Asset Life-Cycle
- Asset Maintenance Work Order Life-Cycle





# The Manufactured and Purchased Items

- Inventory/non-Inventory and Stocked/non-Stocked (Balance Sheet vs. P&L)
- Discrete, Process, Project, or Lean
- Variant, batch/serial capability
- Distinct coverage rules at Group and Item level
  - Safety stock – time phased
  - Lot sizing
  - Sourcing by warehouse
  - Planning criteria
- Seamlessly defined with Advanced Warehouse
- Configurable item capability
- Sequence Groups (Process items only)
- One click away from all related data





# Item Inventory

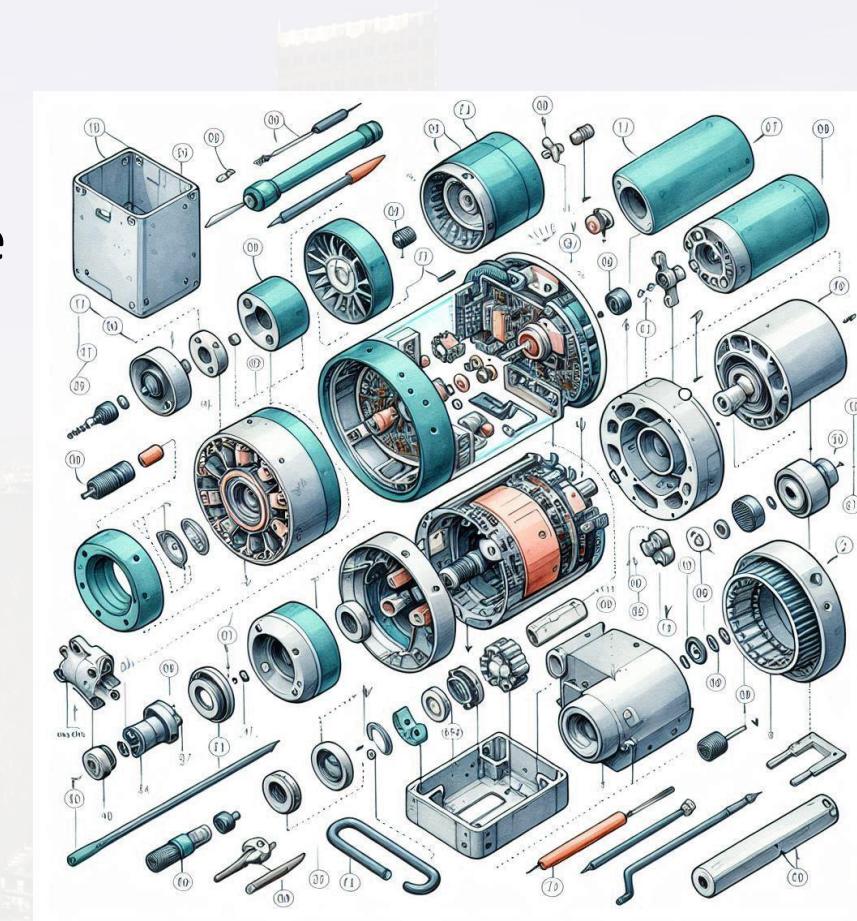
- Strong batch traceability
  - New App
  - Inheritance
  - Quality orders and Test definitions
- Advanced Warehouse
  - Tier 1 Mobile Warehouse Management
    - Both Warehouse and Manufacturing transactions
    - Cross-docking
    - Pick face replenishment from Bulk
    - Cycle counting
  - Shipping dock management
- Transportation Management
- Vendor managed inventory





# Item Bills of Materials and Formulae

- Many BOMS to an Item
  - Only one Active and Approved for a given Site, Quantity, Date
- Many items can share a BOM
- Version Control with or without Engineering Change module
- Circularity options
- Quantity, Per series, Percentages
- Per unit, per order, Co-products, Biproducts
- Nominal Scrap
- Phantom, Pegged supply, and Vendor BOM lines
- Tie to Routing operation
- Expensed line option (e.g. subcontract value add)





# Item Configurability

- Configurable BOM using Configuration Groups
- Product Configurator
  - Product Models
  - Constraint based
  - Dialog input
    - Product features and options
  - Dialog output (every field preset or derived from dialog answers)
    - Variant
    - BOM
    - Route
    - Implied cost
    - Sales Price
    - Preconfigured, at sales entry, or production order creation





# Manufacturing Resources and Assets

- Resource Groups and Capabilities

Group 1

Resource 1.1

Capability A

Resource 1.2

Capability A

Resource 1.3

Capability A

Capability B

Resource 1.4

Capability C

Group 2

Resource 2.1

Capability D

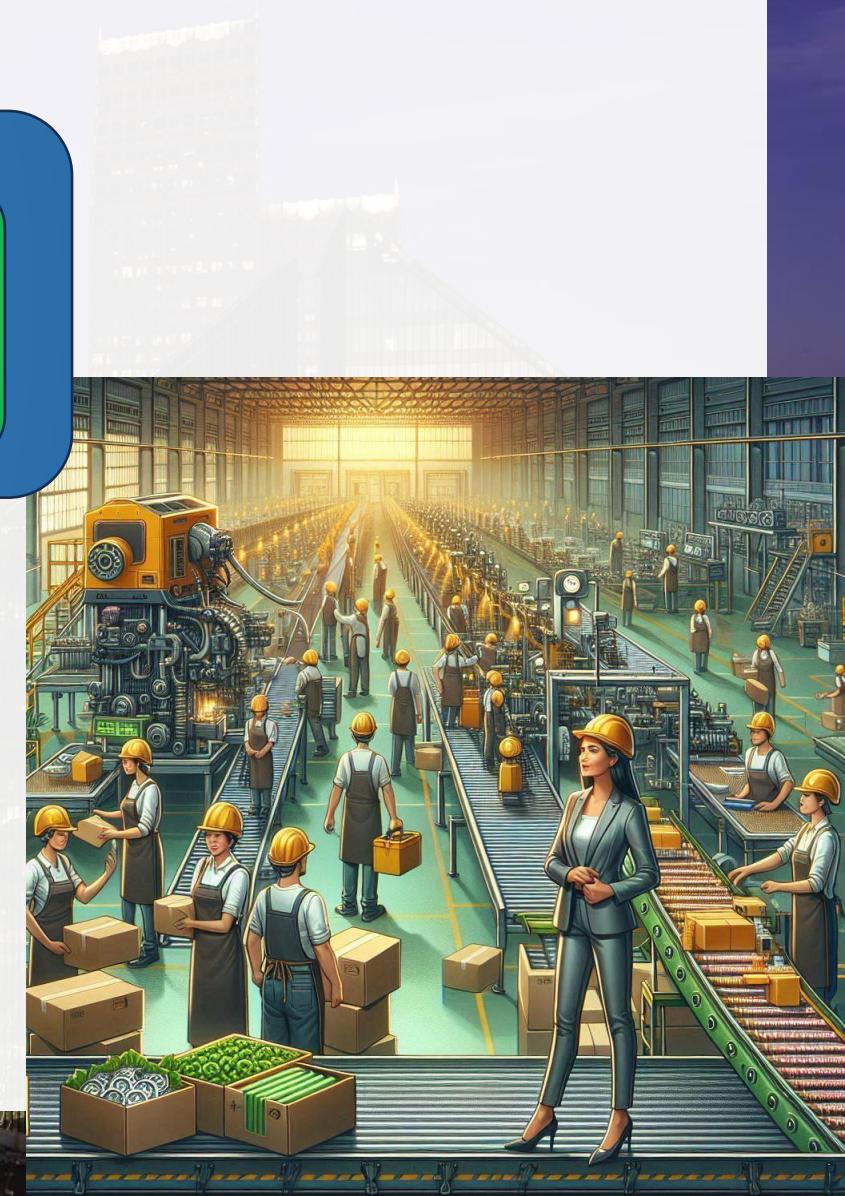
Resource 2.2

Capability D

Resource 2.3

Capability C

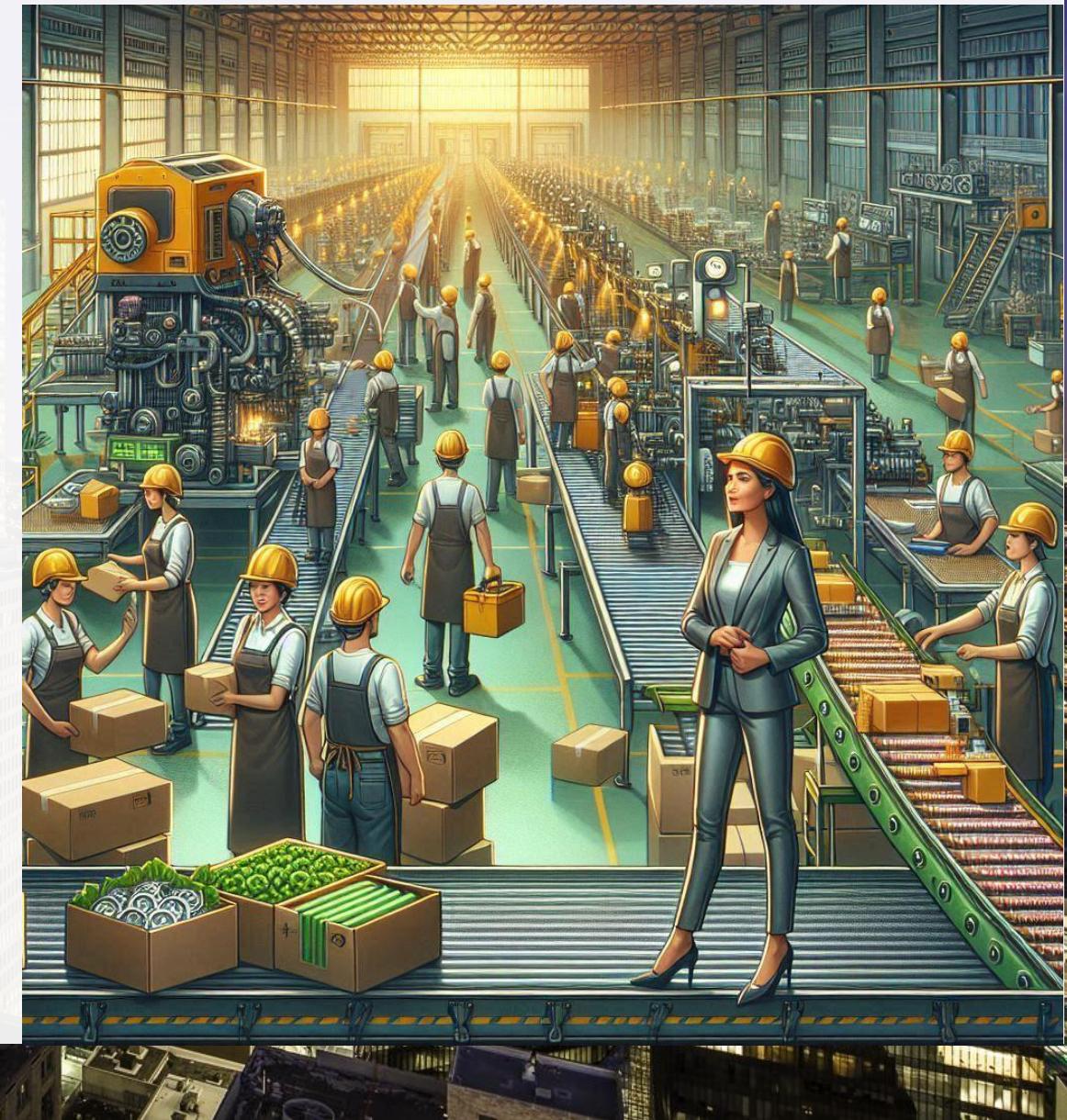
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# Manufacturing Resources and Assets

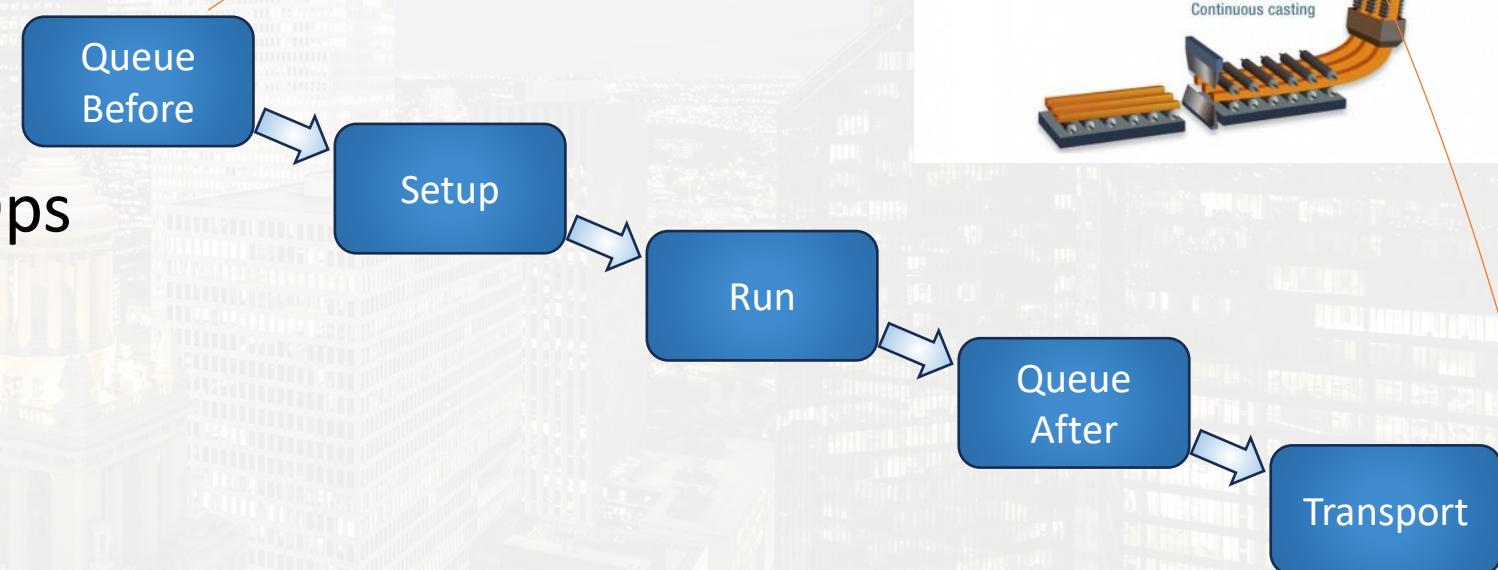
- Resource Groups and Capabilities
- Route networks
- Human, Machine, Tooling
- Crew size
- Used in both Manufacturing and Project Accounting





# Item Routes

- Many Routes to an Item
  - Only one Active and Approved for a given Site, Quantity, Date
- Many Items can share the same Route (kinda)
- Handles Phantoms
- Route network option
- Parallel Routing steps
- Primary and Secondary Ops
- Subcontract Ops
- Overlapped Ops
- Batch quantity
- Packaging





# Manufacturing Order Life-Cycle

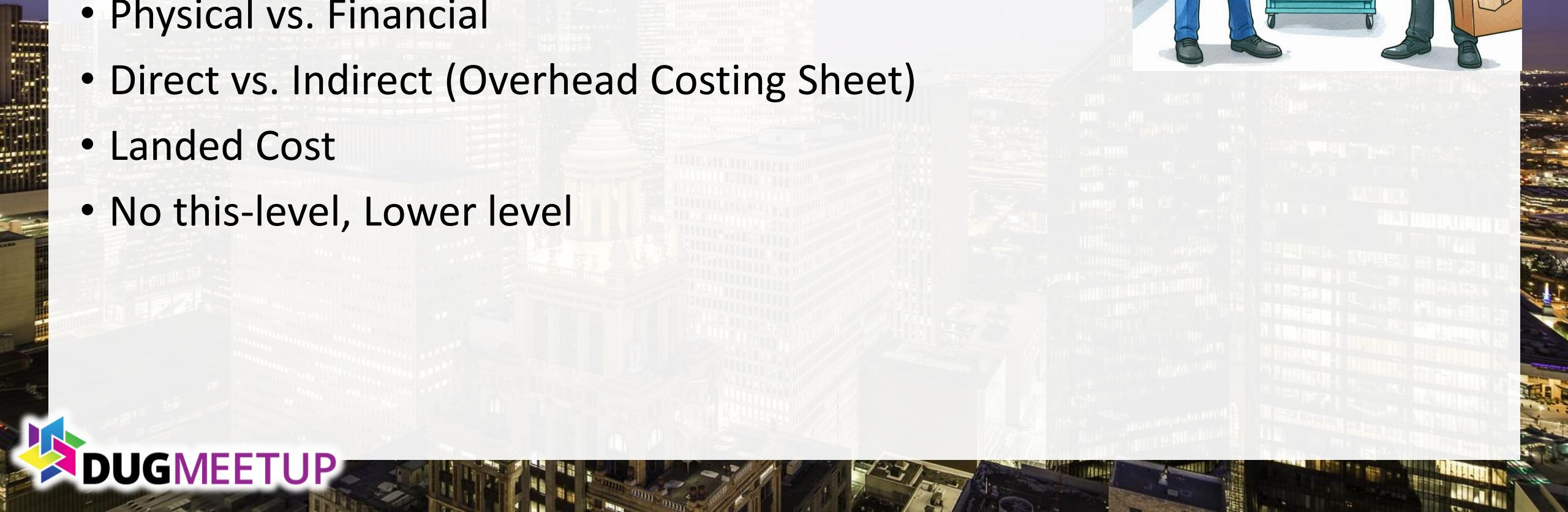
- Created state if created manually, from Sales line, or Configurator
- Scheduled state from Planning
- Operations vs. Job Scheduled
- Steps skippable
- Ops and RAF Little End
- Only (big) Ended is irreversible
- Pick, Setup and Run can be manual or automatic
- Full Production Floor Execution module
- IoT stub





# Costing

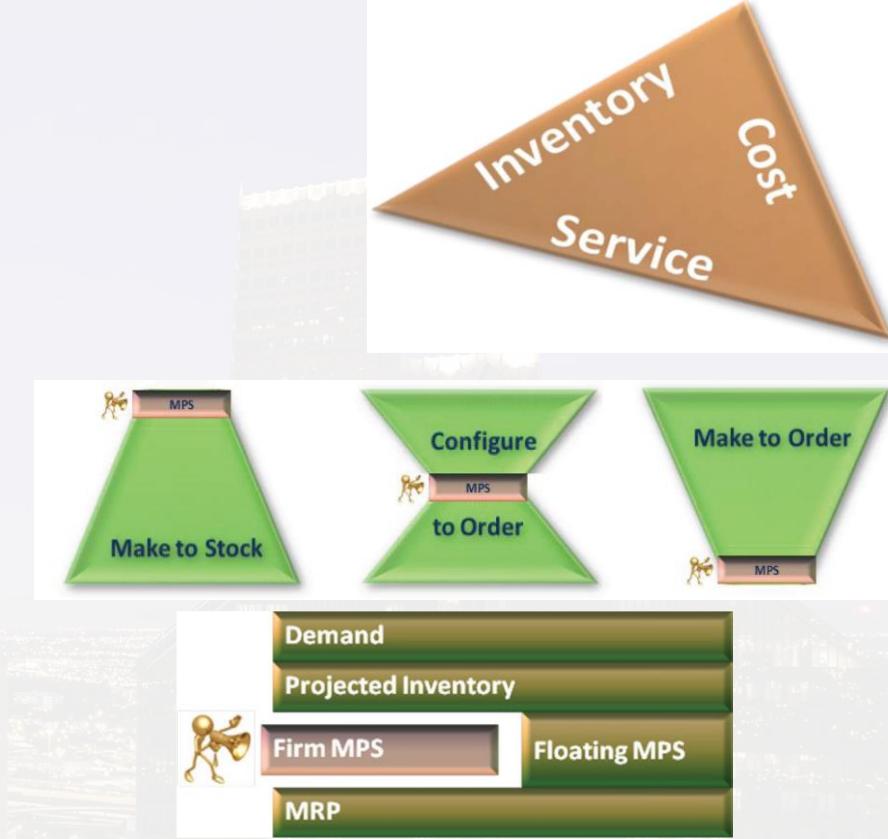
- Standard Cost
  - Immediate Inventory revaluation upon change
- Actual Cost
  - Moving, Average, Date weighted, LIFO, FIFO
- Physical vs. Financial
- Direct vs. Indirect (Overhead Costing Sheet)
- Landed Cost
- No this-level, Lower level





# Master Planning

- Demand Planning App for Forecast
- Master Scheduling and MRP
- Capacity Planning
- Finite and Bottleneck Planning
- Actions and Delays
- Phantoms and Pegged Supply outside MRP
- Supply Forecast
- Bucketed, Bucket-less and Explode Up/Down views
- Sequencing (Process only)
- Unprocessed, Processed, Approved
- Planned orders delaying Sales view

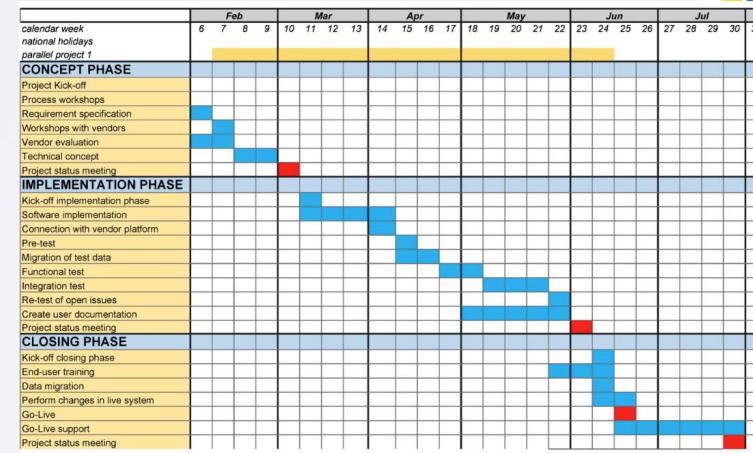


Planning Optimization  
Priority Planning  
DDMRP



# Project Planning

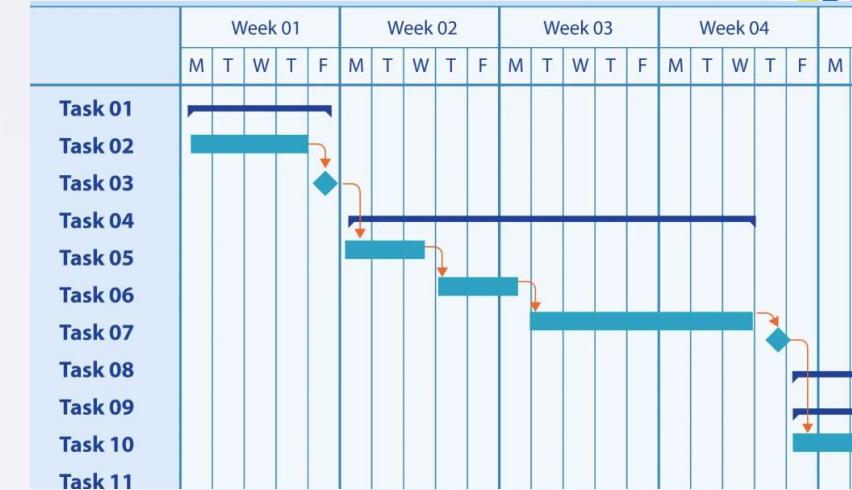
- Fixed vs. Time and Materials
- Hierarchy
- Work breakdown structures
- Budget vs. Actual s. Revised
- Revenue recognition, Grants, Funds
- Tied Sales lines, Purchase and Production orders
- Separate WIP accounting
- Shared MRP with Production





# Production Scheduling

- Operations and Job Scheduling (as mentioned)
- Excellent Release workbench
- Backward/Forward/Dated/Dragged Scheduling
- Job Scheduling only:
  - Good Gantt scheduling
  - Finite Scheduling
  - Resource Dispatching





# Asset Life-Cycle

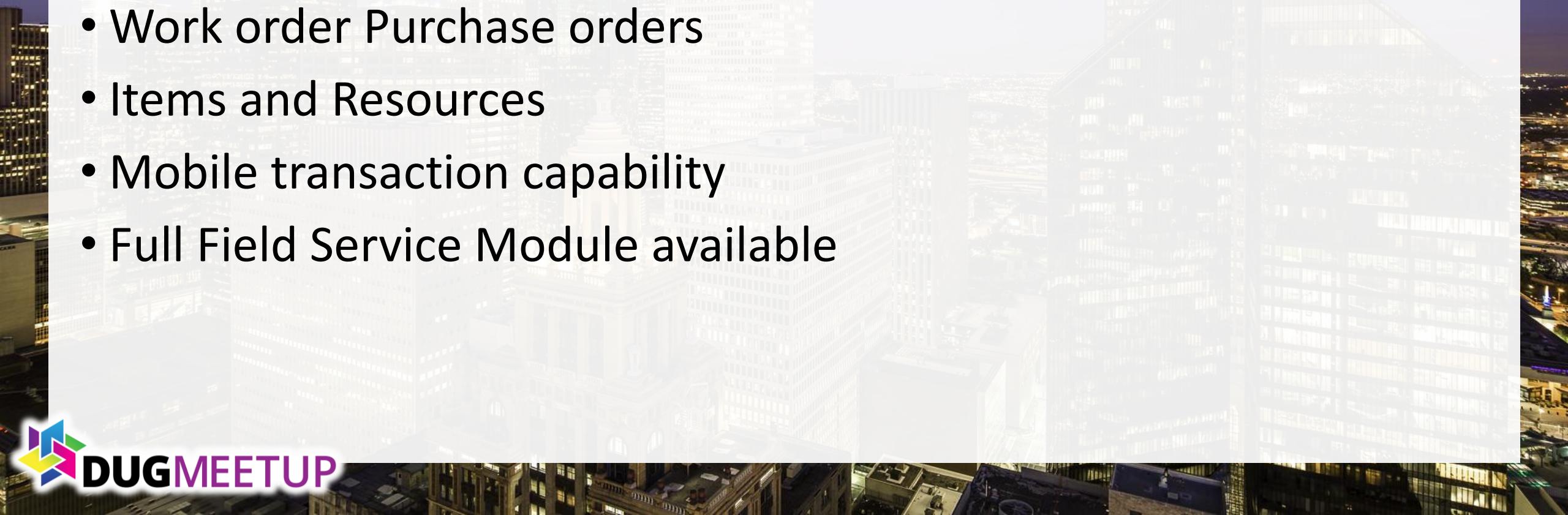
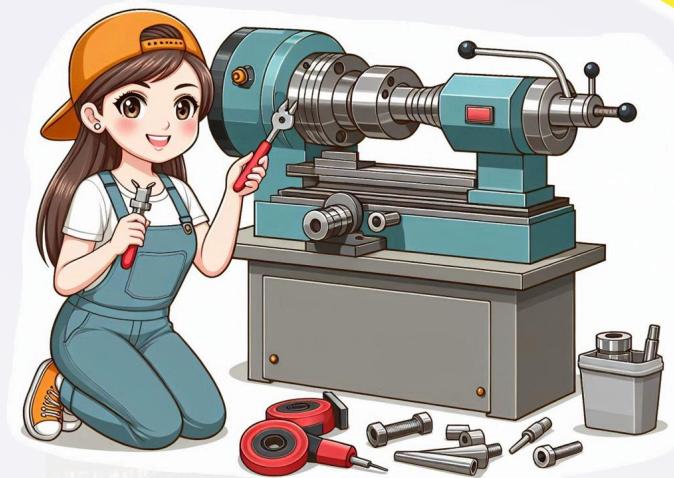
- Full Asset Management
  - Can be tied to Fixed Assets
  - Asset Hierarchy
  - Maintenance and Preventive Maintenance Plans
  - Recommended Spare Parts
  - Uses DE365 base
    - Project Accounting
    - Warehouse management
    - Purchasing
    - MRP
    - Costing

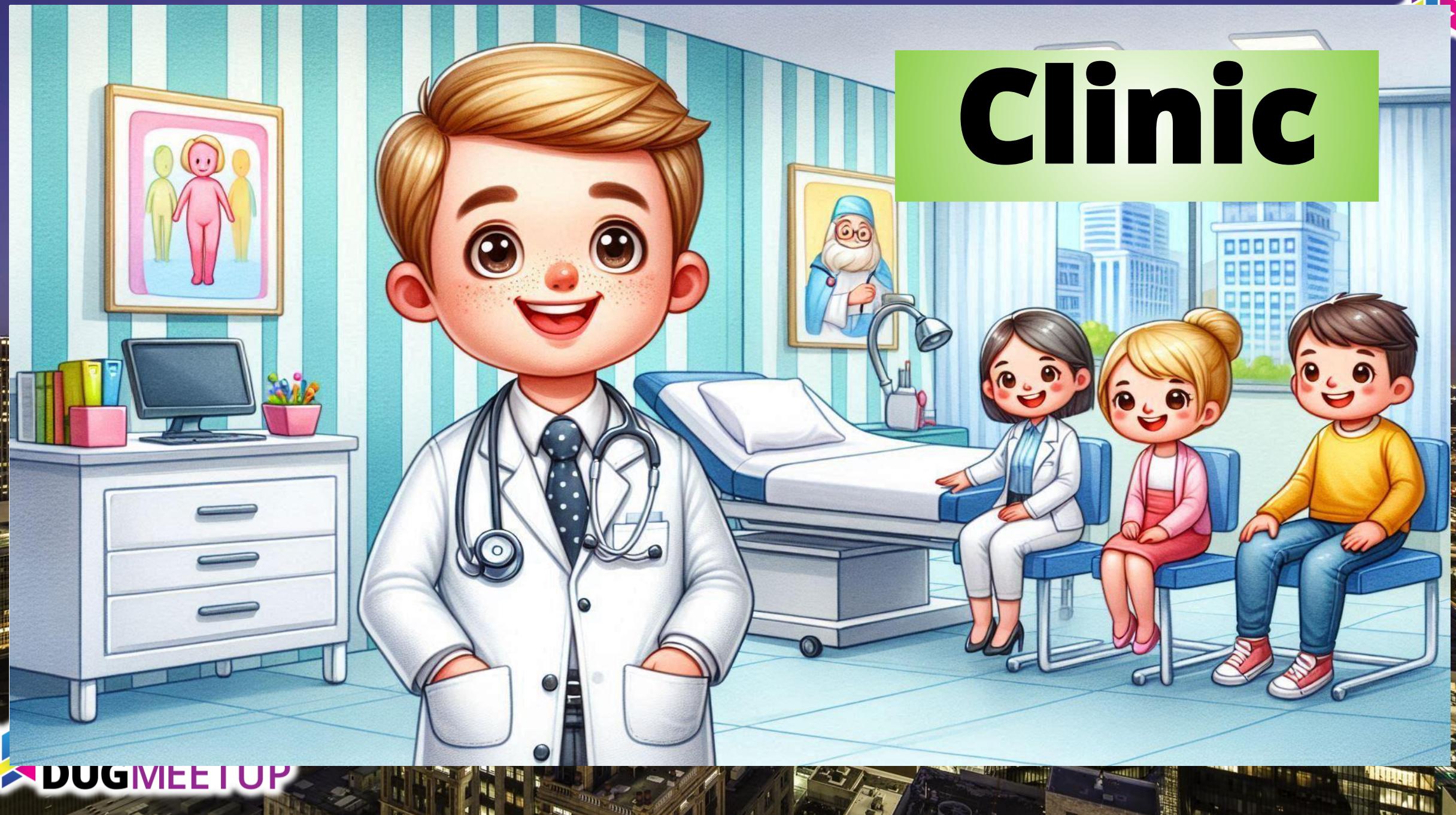




# Work order Life-Cycle

- Workflow based:
  - Maintenance request
  - Repair Work order creation
  - Preventive Maintenance Work order creation
- Work order Purchase orders
- Items and Resources
- Mobile transaction capability
- Full Field Service Module available







# Tips and Tricks Manufacturing Planning

- Beware of Lead Time Margins
- Consider developing a manual Master Production Schedule
  - . . .and a formal Sales and Operations Planning process
  - Use a Supply forecast and a Freeze time fence
- Attack Action Messages
  - Implement **MPS**, above
  - Understand that MRP **solves nothing**
  - Mastery of **Explode Up and Down**
  - Never use **Increase** for Actions
  - Safety stock and lot size by **ABC**
  - Start with slack **Action** tolerances





# Tips and Tricks Manufacturing

- Consider Variants
- Make use of Phantoms
- Consider Product Configurator
  - Configure or Assemble-to-order
  - Just Pricing?
- Consider Project Accounting
  - Engineer-to-order
  - Contract Manufacturing
  - R&D
    - Product Development
      - No BOM?
    - Pre-Production runs



# TEXAS REGIONAL

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