

Customer Input Session MRO and MES

Graeme Taylor
Craig Currie

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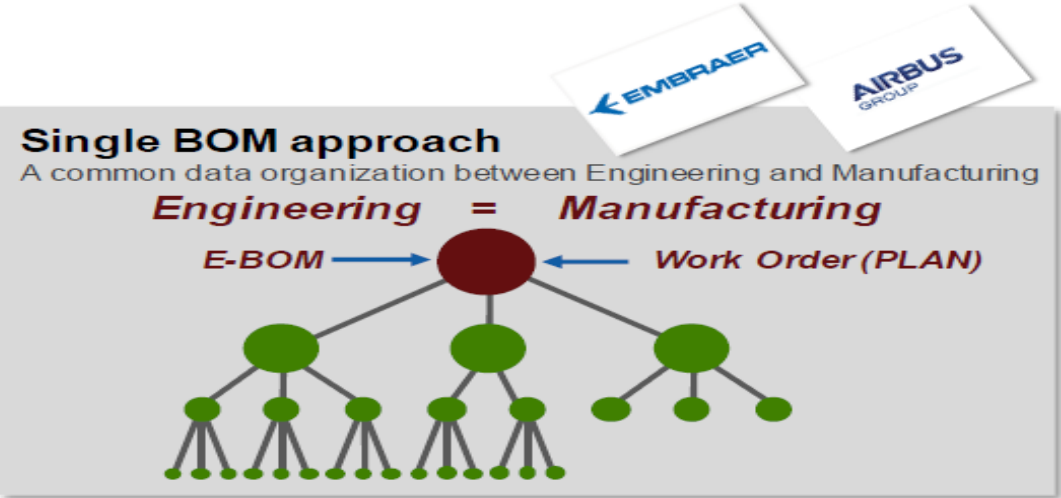
Session Agenda

- Similarities between MRO and MES
- BOM's away !!
- Manufacturing Process Planning (MPP) – One stop solution.
- Component MRO Prototype Demo.
- MVP – Confirmation of direction
- MES – Customer Input

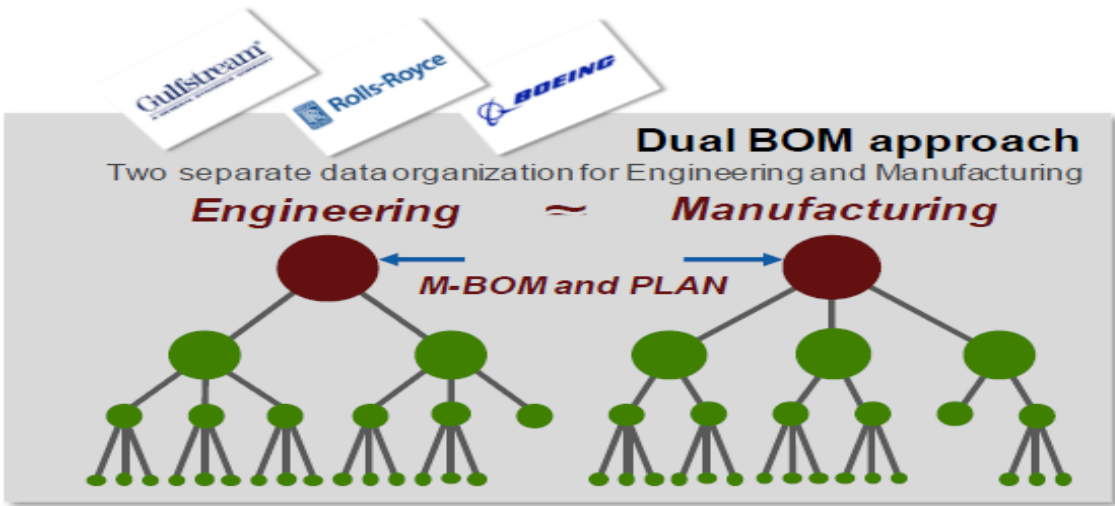
Similarities between MRO and MES

BOM's Away !!

Multiple View Bill of Material – Problem Statement and Desired State



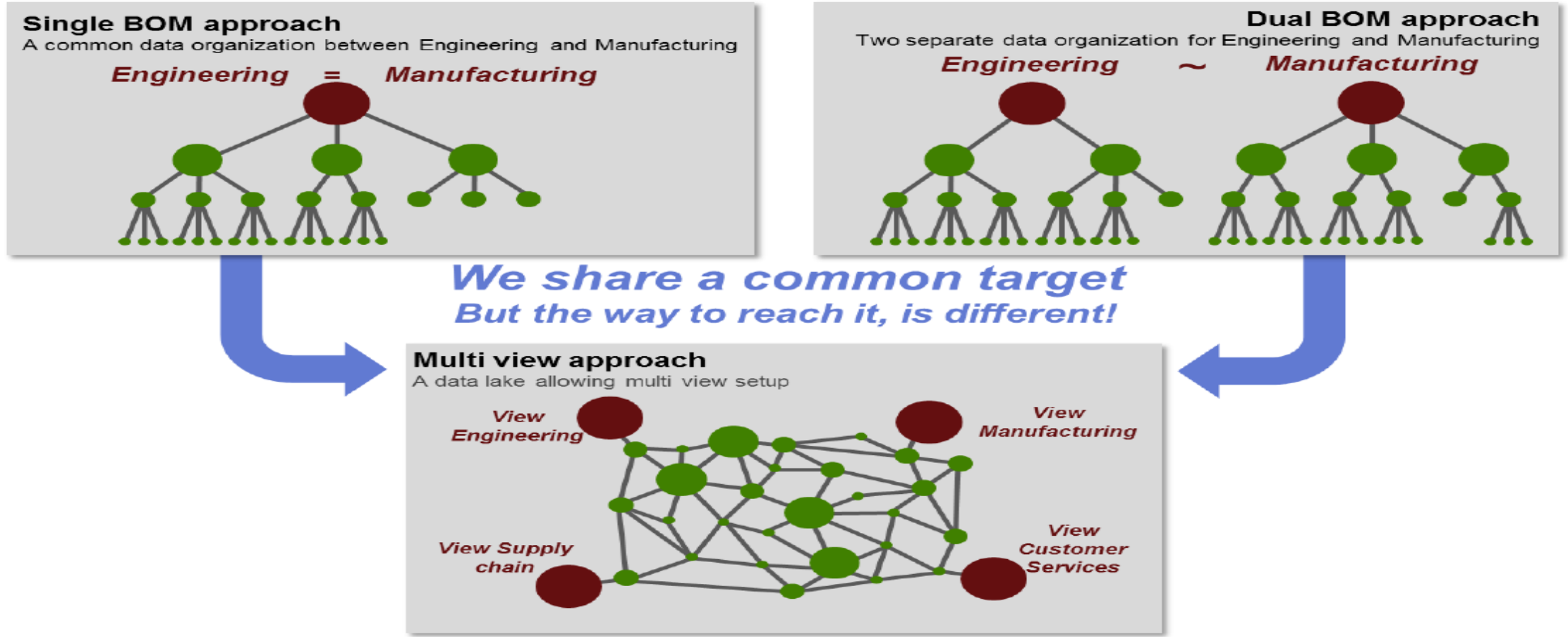
EBOM completed on a single plan



EBOM completed on a more than one plan

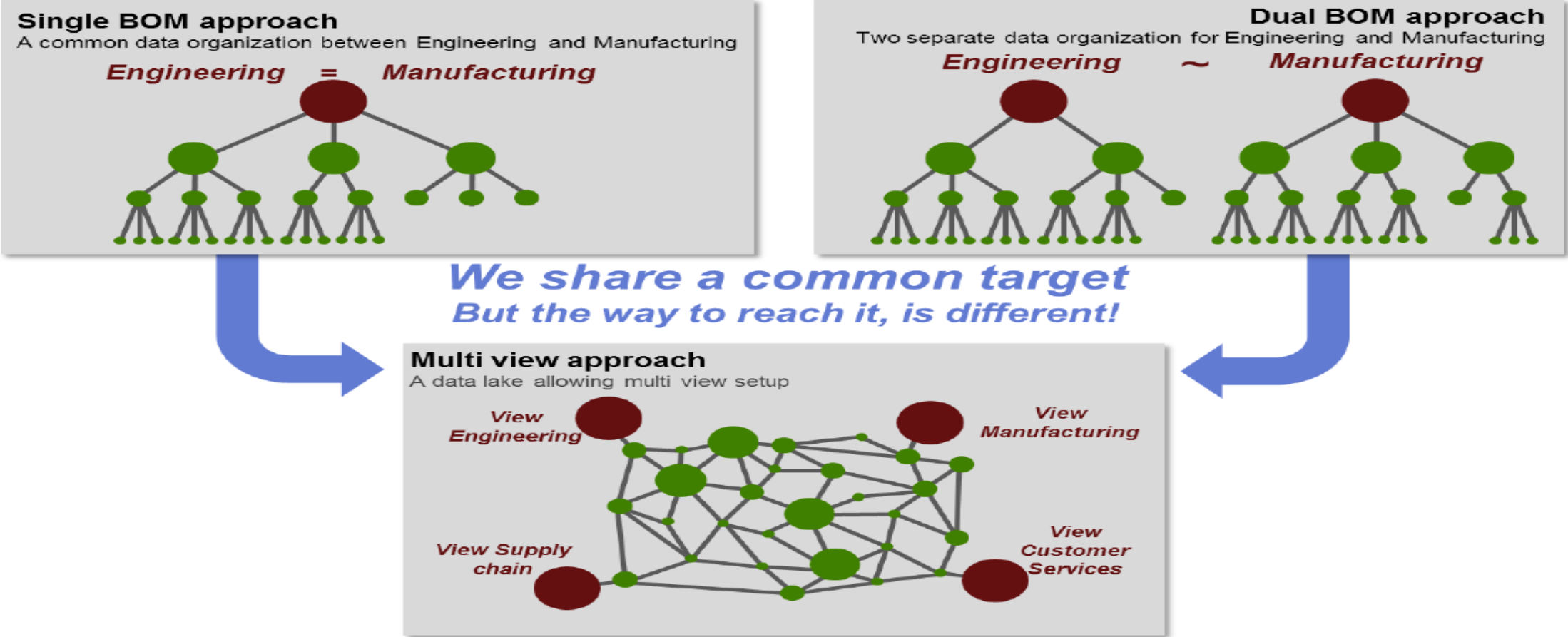
BOM's Away !!

This Conceptual Solution shall be considered independent of a single or multiple PLM deployment in a company.



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BOM's Away !!

EBOM

Engineering
BoM

MBOM

Manufacturing
BoM

PBOM

As Built
BoM

DBOM

As Commissioned
As Delivered
BoM

CBOM

Consumable
BoM

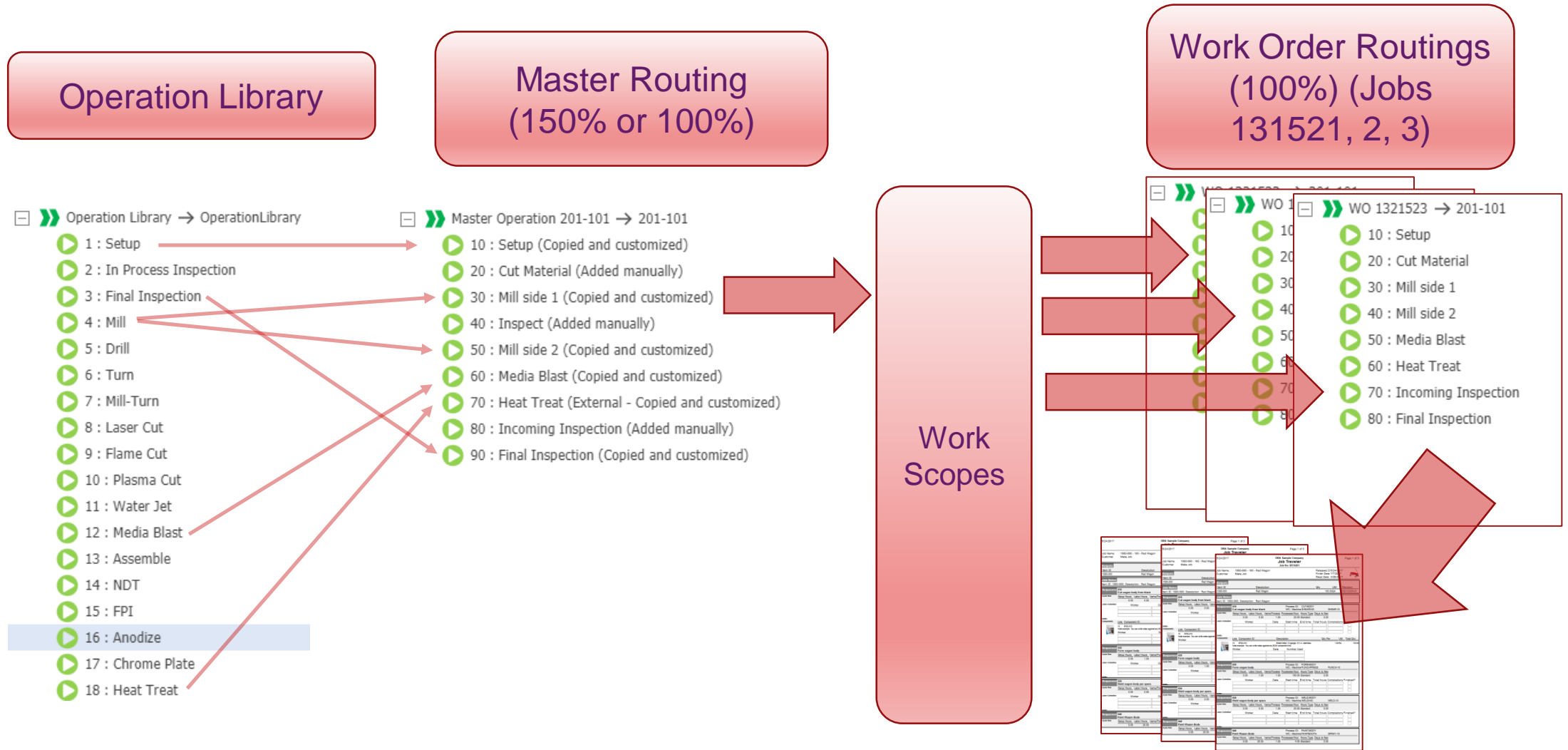
SBOM

As Maintained
Service BoM

IBOM

Inspection
BoM

Manufacturing Process Planning (MPP)



SYSTEM DEMO

Component WO Generation Prototype

Component MRO MVP - Plan





- Component MRO – BOM's [Foundation Services / Parts / MBOM-IBOM]
- Component MRO – Routing [Master MRO Routing / Manufacturing Routing]
- Component MRO – Work Order [Work Order / Sales Order]
- Basic Scheduling – Sequential Scheduling applied to WO Operations
- Component MRO Inventory – Warehouses and Bins
- Component MRO Tooling - Tool Definitions



Component MRO MVP - Stretch

- Component MRO – BOM's [Foundation Services / Parts / MBOM-IBOM]
- Component Inventory – On hand balances, Order Dependent Demands, Alternates, Material Allocation, Pick and Issue.
- Component MRO Tooling - Calibration , Checkin/Checkout
- Component MRO Physical Part – Digital Twin Physical Controls, Physical Parts
- Component MRO WIP – WIP Material, WIP Labor, Labor Booking
- WO scheduling – Parallel Operations, Constraints(Queues, Efficiency etc.)


MES Input

Manufacturing Execution

PROCESS PLAN		
	OP 10	?
	OP 20	T
	OP 30	REV
	OP 40	S/N

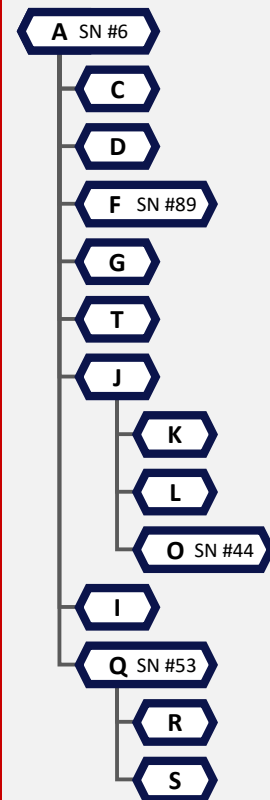
TRAVELER		
	OP 10	✓
	OP 20	9.7
	OP 30	B
	OP 40	2

WORK CENTER

- 
- 
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DEVIATIONS

WAIVERS

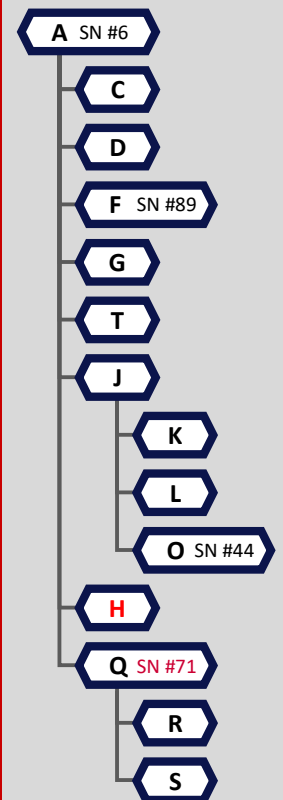


AS BUILT

REWORK ORDERS

TEST RESULTS

QUALITY AUDITS



AS DELIVERED

MES Discussion Topics

Show of hands!

- How many have MES system currently implemented?
- Developed on Innovator Platform or Commercially Available?
- Is there an integration / interface to Innovator data?
- How well are they working?



MES Discussion/Input

What's important in an MES system?

- Operator tracking (log on and off jobs)?
- Operator training / certification?
- Shop floor routing...
 - Paper based (traveler)?
 - Electronic workstation based? Remote Device signoff (electronic signatures)?
- Serial number recording and tracking?
- Produced unit tracking and reporting?

MES Discussion/Input

What's important in an MES system?

- Integration to ERP system?
- Shop floor scheduling?
 - Constraint based?
 - Line balancing?
- Inventory management?
- Labor Management?

MES Discussion/Input

Input from shop floor?

- Deviations
- Non-conformance?
- Measurements?
 - Compared against limits/tolerance?
- Data collection?
- ??

Thank You

Craig Currie

CCurrie@aras.com

Graeme Taylor

GTaylor@aras.com

Manufacturing Process Planning (MPP) – One stop solution.

