



EXCELERATE '22

NO LIMITS

Tracing the Value of Solumina: MES Best Practices

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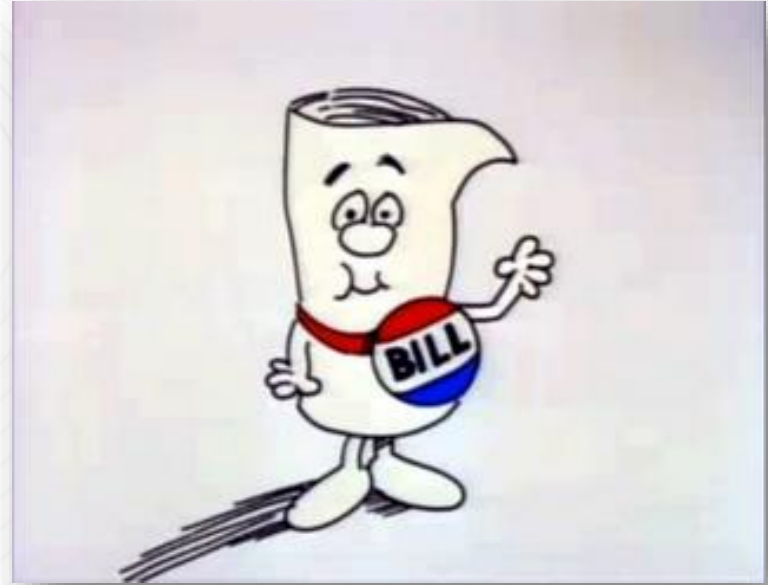
How We Got Here

- Earlier Max discussed MES "A Day in the Life"
- Now, the Backbone of the "Day in the Life"
- Solumina Implementation Methodology (SIM)

Today we will begin a series of presentations identifying value drivers, how they are represented in our implementation methodology, and how they translate to meaningful Best Practices.

Who Remembers?

"How a Bill Becomes a Law?"



How a Value is Realized



Identification



Representation



Realization



Indoctrination

Today's Agenda

- Value Identification
- Value Representation
- Value Realization
 - Best Practices for MES
- Time for Questions



Value Identification

Customer Example

- Robot, Inc. – from paper to paperless
- Key Value – streamline shopfloor operations
- In need of a robust MES with Quality and MRO capabilities
- Sales to services – a seamless transition



Value Identification

- Presales & Sales
 - Conversations with Stakeholders
- Sales to Service Transition
 - Interlock Meeting and Document
- Service Implementation
 - SIM Methodology



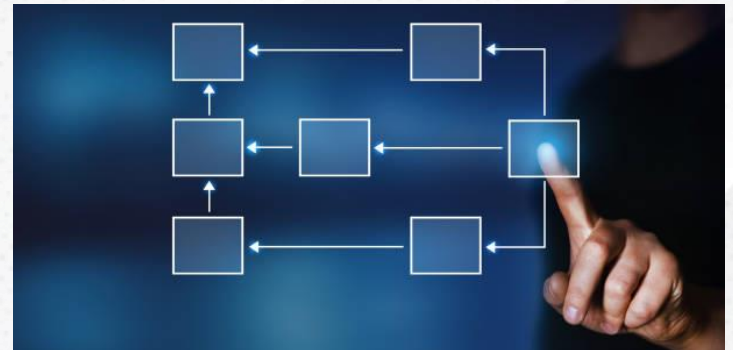


Value Representation

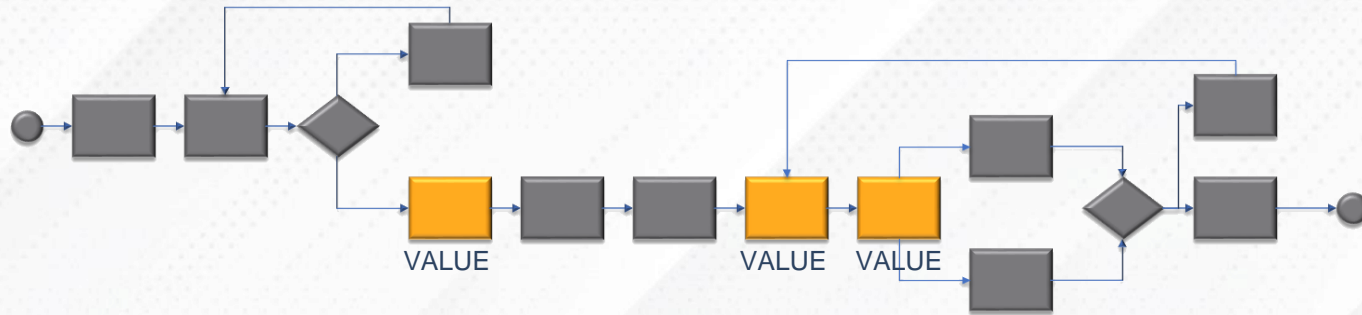
Representation of Identified Values

Solumina Implementation Methodology (SIM)

- Process Mapping
 - As-Is
 - To-Be
-
- Standard Functionality User Stories



Process Maps

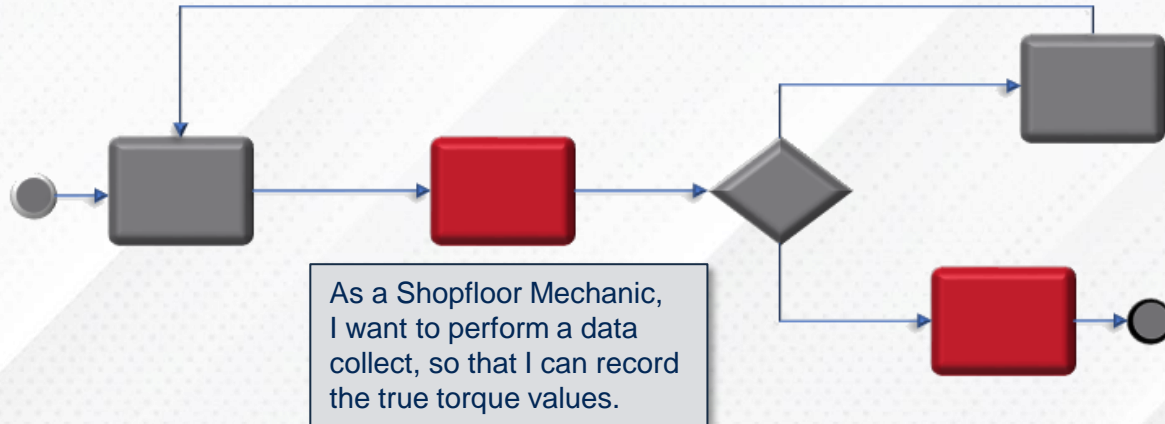


- Constructed with the Project Team
- Focuses on a specific Role or Area
- Values Identified on the map itself



Value in Process Maps & User Stories

- Specifically identifies when a VALUE is represented and subsequently learned
- Teaches team members how to use Solumina
- Used in conjunction with Process Maps





Value Realization MES

Value of Paperless Work Orders



Quick view of Operation status and relevant data

Work Order	Part, Rev	Qty	Holds	Progress
WO200916-01	PART-0002_04	3/3	2	100%
WO200916-01	PART-0002_04	2/3	2	66%
200921-01	PART-0003_3	0/1	0	0%
WO20200914	PART-0001_01	3/4	0	75%
WO20200914	PART-0001_01	3/4	0	100%

- Utilize Dashboards as Supervisors or Technicians to easily assign crew, place holds, find, manage & prioritize work orders

Need to Collect Panel One-stop-shop for Operator

Need to Collect items in instructions

Change Acknowledgement

- Please read Work Instructions because it has
- Please read Work Instructions because there has

I have read all Operation Instructions

Operation Title: FILM ADHESIVE APPLI...
Work Center: Assembly
Part: 113A4500-601
Rev: 05
Unit: 062

Skills Required: CLEANROOM I - 0 Crew Member - 0 Hour Required - 0 Hour Assign

NOTE! Operation must be performed in Cleanroom

KIT FROM FREEZER
Kit pre-cut plies from freezer - allow to acclimate to room temperature before removing from bag(s)

Parts Needed

- BMS5-101 - N/A - ... Qty: 5/5
- BMS5-129 - N/A - ... Qty: 0/5
- BMS8-79 - N/A - B ... Qty: 0/5

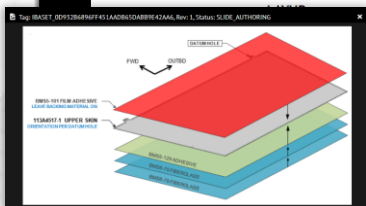
Variable Collection and Certifications Needed

Total Out Time recorded in ERP - min Time Out for this Op - min

BMS5-129 adhesive to Upper Skin per allowed per specification.

BMS8-79 fiberglass to Upper Skin per

- Access digital work orders with Solumina's modern, personalized, easy to use Web User Interface
- Capture labor, consume parts, collect data, view models, standard documents, select bulk processing, etc. as authored in Process Plans to efficiently execute work



Value of Quality Validation

- Access all quality buyoffs ready to be executed and any discrepancies to be updated and dispositioned with the Inspection Dashboard
- Reduce errors with validation of user certifications, tool calibration data and OOT data collection notifications

Tools Collected

MULTIMETER - N/A - Multim...

'This tool serial MM001 has exceeded the max usage for Calibration Type = DAYS. Tool serial is set to CALIBRATE status'

Serial

MM001

Validation throughout execution process

Need to Collect

Adhesive Cure Complete - QA

Sorry, you are required to have Inspector, Level II certification to complete this buyoff.

Need to Collect

TST Temperature - °C

Warning: At least one entry has Actual Value outside limits

Value: 105

User: Kim Archibald (KARCHIBALD)

Time: 6/29/21 03:19:46 PM

Test Complete - MFG

Cannot execute Buyoff because data collections are outside limits

Complete?

Accept Reject

Dashboard

Sort By: Work Order (desc)

Part_Rev	Work Order	Operation	Buyoff	QA
113A4500-601,05	W000636	050	CERTIFIED MFG ...	QA INSPECTOR
113A4500-601,05	W000620	030	QA	QA INSPECTOR
113A4500-601,05	W000619	030	QA	QA INSPECTOR

Dashboard

Sort By: Discrepancy Id (asc)

Discrepancy Line	Part_Rev	Work Order	Operation	Serial(s)	Affected Qty	Disposition	Workflow	Status
DI00015, 1	113A4500-601,05	W000507	030	1	1	REPAIR	MR	QA_MR
DI00017, 1	TR-G8-UBW-PTH00234, A	W0000061	070	1	1	PR	DISC_INITIATION	
DI00032, 1	AM-14860-01, 03	W000536	030	1	1	PR	QA_PR	
DI00042, 1	4500-749-501, 05			1	1	REWORK	PR	QA_PR

Value of Process Planning

Digital Work Instruction

Authoring is focused on setting up the Shop Floor for success

- Detailed, organized & controlled work instructions including planned flow
- Incorporation of all resources for build, assemble and test – making the work order a one-stop-shop for execution
- Controlled libraries for commonly used/standard items:
 - Data Collectors
 - Illustrations/Specs
 - Standard Text
 - Standard Operations

Value of Change Management



All Actions Planned

All Actions Planned	Type	Affected Name	Rev	Affected Title	Resulting Name	Rev	Resulting Title
✓	MBOM	97-837485/A	2				
⚠	MBOM	H007081/A	2				
⚠	PART	97-837485	A	Wing			
⚠	PART	H007081	A	FRAME, GLOBAL CLASS			
✓	Process Plan	0000070	1	New Plan			
✓	Process Plan	0000233	1	Process Plan for today			

Impacted Orders (Used For)

Action Planned	Order Type	Order Subtype	Order No	Title	Order Status
⚠	Process Order	Manufacturing	WO00186	New Plan	ACTIVE
⚠	Process Order	Manufacturing	WO00187	New Plan	IN QUEUE

Instructions

- PLAN HEADER DATA
- PLAN HEADER TEXT
- TEXT
- IMAGE LIST
- OPERATION #10
- HEADER DATA
- HEADER META DATA
- STANDARDS AND SKILLS
- STANDARDS
- PLANNING
- OPERATION HEADER BLOCKS
- TEXT
- IMAGE LIST
- PARAMETER DC
- TOOL DC
- PART DC
- PLANNING

Operation Header

Inspect parts and record serial and/or lot numbers

Part	BOM	Part No	Part	Part Title
B	USE	N/A	JC-DHR-LH-002	N/A
				Left Sub-Assembly

Status	Planned Action	Action Notes	Planned?	Object Name	Object Type	Object Subtype	Object Rev	Object Title	Affected
IN QUEUE	Alter Process Order		Y	W000573	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	UOM LSL Target Value
IN QUEUE	Alter Process Order		Y	W000568	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	N/A
COMPLETE	Create Process Order Hold		Y	W000569	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	mm. 0.50 0.61
IN QUEUE	Create Process Order Hold		Y	W000568	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	
IN QUEUE	Edit Process Plan		Y	0000086	Process Plan	Manufacturing	4	MODULE ASSEMBLY, QUAD C PART	
IN QUEUE	Order Supersede (Entire Scop		Y	W000584	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	
IN QUEUE	Order Supersede (Entire Scop		Y	W000579	Process Order	Manufacturing		MODULE ASSEMBLY, QUAD C PART	

- Automatically identify all entities impacted by a change available for actioning
- Improve communication across design engineering, manufacturing engineering and shop floor
- Reduce issues or missed incorporations of engineering changes

Work Order: W000277, Operation: 040, Order Qty: 1

Change Acknowledgement

Read work instruction.
I have read all Operation Instructions

Operation Title: TEMP ID, Work Center: Assembly, Part: EM-DEMO-0521, Rev: A, Unit: 052021-1

Using red ink, temporarily identify ass...

Part Number / Revision, Work Order Number, Lot/Serial Number

Change Notifications forcing acknowledgement

Acknowledged? [Yes]

Completed? [Yes]

Read work instruction. Complete? [No] [Yes]

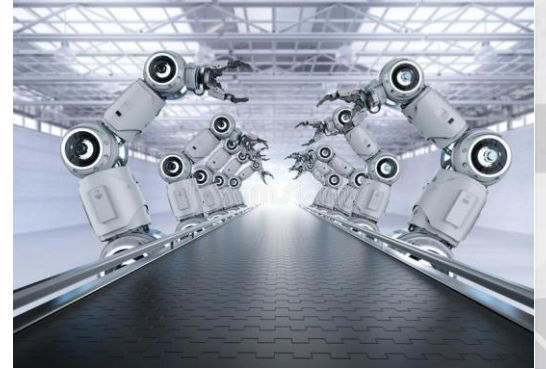
MES Best Practices

- Author with execution in mind
- More consumption, better visibility
- Master in MES
- Recycle, reuse, and repeat!
- Change is everything



Checkup on Robot, Inc.

- **VALUE REALIZED!** Robot, Inc. has streamlined their shopfloor operations by using Solumina!
- Learning how to best use Solumina
- Working towards their first robot!



Key Takeaways

- Value Traceability
- Standard Streamlined Implementation
- Follow Best Practices
- You Are Not Alone!





THANK YOU

QUESTIONS?

Don't forget to visit the Experts' Lounge