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Integrating AVEVA Model-Driven MES Forms into AVEVA OMI

Presented by: Dan Scott and Jean-Pierre Caron

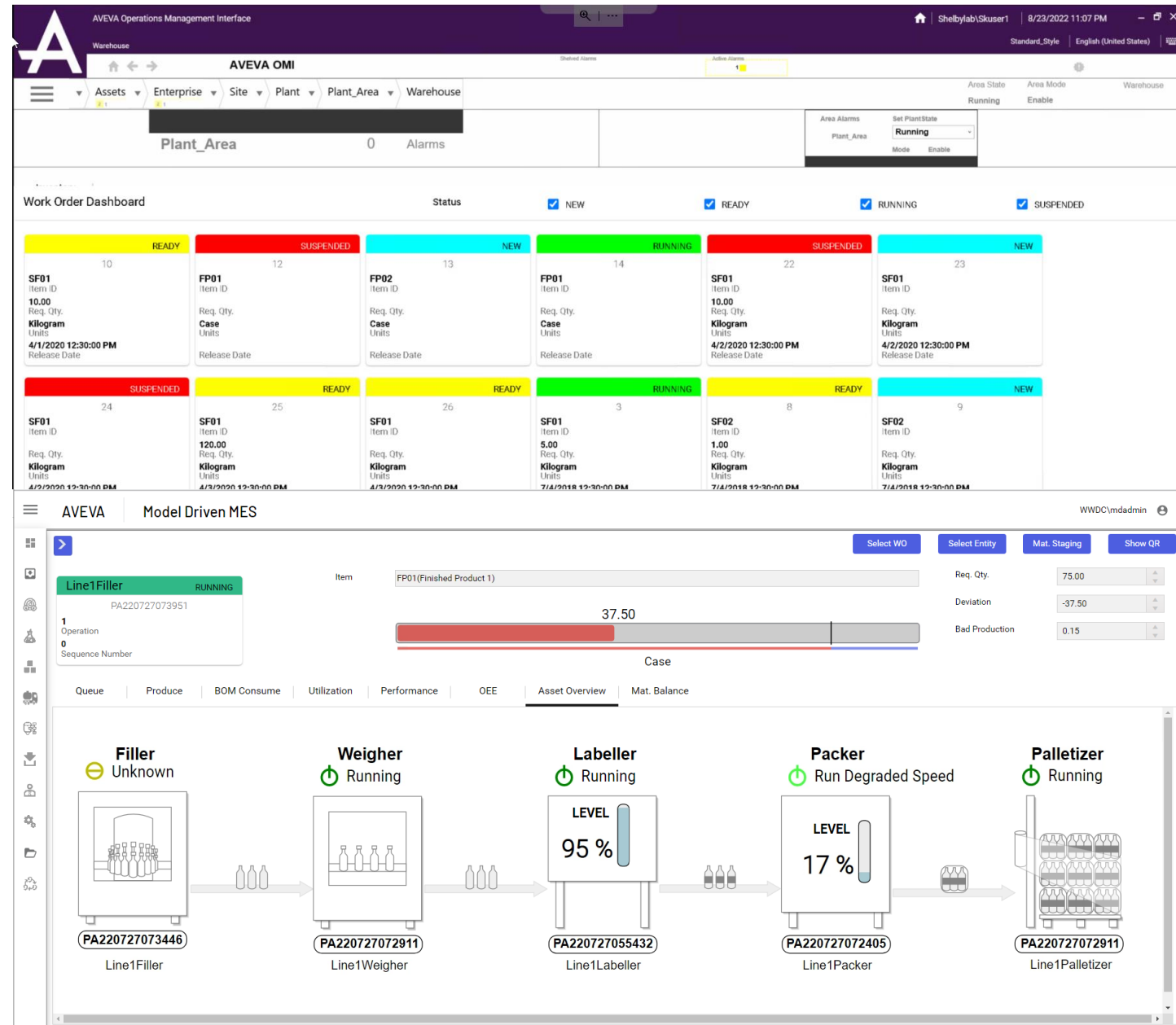


Agenda

- Integrating MDM Forms in OMI
 - Prerequisites
 - Galaxy Configuration
 - OMI Configuration
- Integrating OMI in Work Tasks

Bidirectional Embedding

- Embed Model-Driven MES Work Task Forms into OMI
- Embed OMI/Web Graphics into Work Tasks



Integrate Operations Management and Operations Control



Prerequisites to Embed MDM Forms in OMI

Prerequisites for Using Model-Driven MES Forms in OMI

Properly configured and integrated per the Model-Driven MES and other Product Installation Guides

AVEVA System Platform 2020 R2*

- Galaxy configured for OS security
- System Management Server (SMS)
- AVEVA OMI installed on view nodes
 - New or existing OMI application

AVEVA Manufacturing Execution System 2020 (MES)*

- MES configured for OS security

AVEVA Model-Driven MES Application Content v5.5

- All included hotfixes installed
- Work Tasks Connector for MES v6.7

AVEVA Work Tasks 2020 U2

- Active Directory security with Token authentication
- System Platform Connector and Extension for Work Tasks
- Work Tasks OMI Application
- Workflow Gateway object
- Galaxy platform deployed to Work Tasks server

Integration covered in Model-Driven MES Installation Guide

*System Platform 2020 R2 SP1 and MES 2020 Patch 02 is also a valid combination

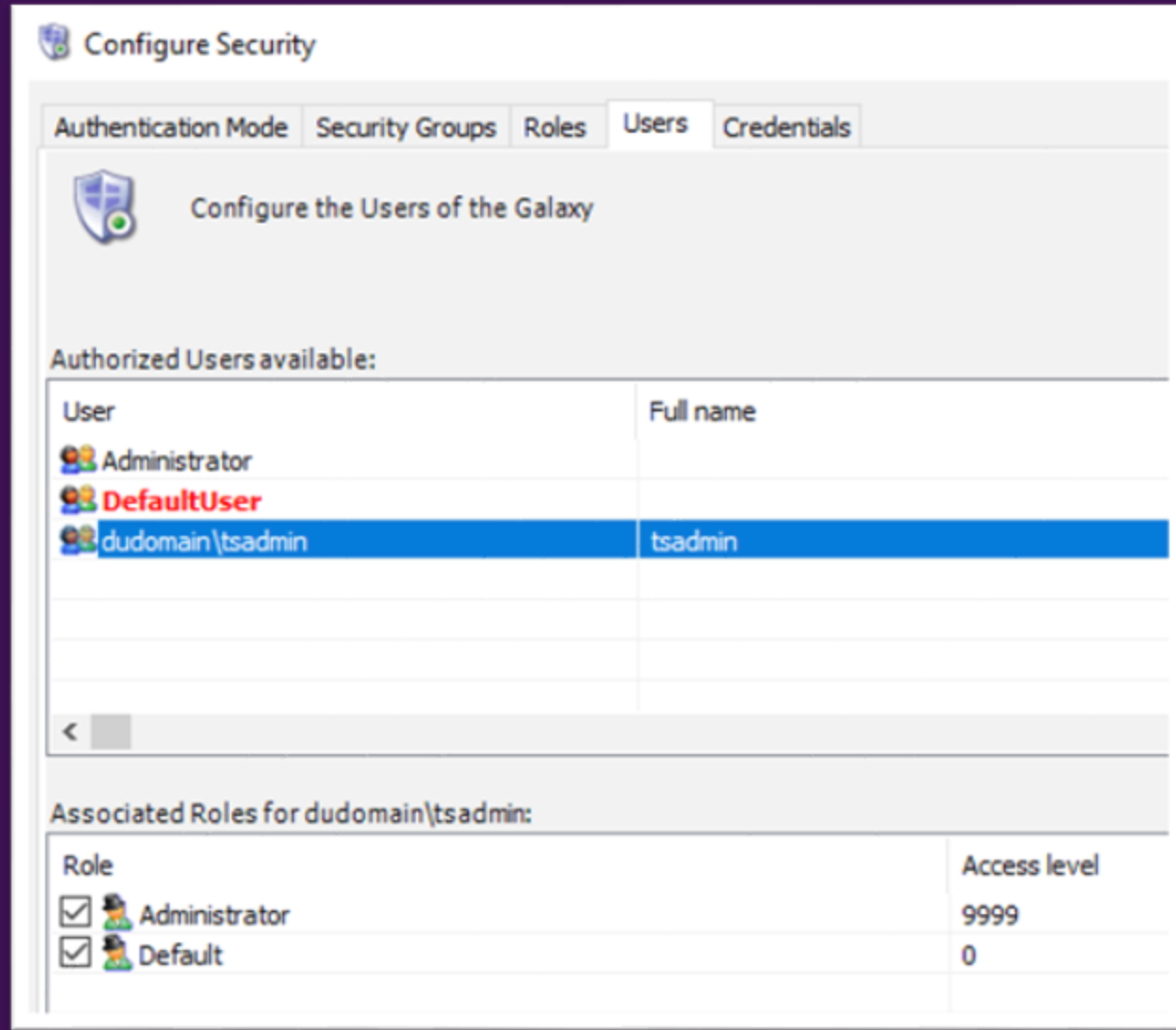
Galaxy and Workflow Gateway Configuration

System Platform IDE




Configure Galaxy Security

- Users appear in this list when configured or after logging on to a system
 - **System Platform IDE - Galaxy – Configure Security**
- Workflow Gateway object will sync galaxy users to Work Tasks repository






Configure Security

Authentication Mode | Security Groups | Roles | **Users** | Credentials



 Configure the Users of the Galaxy

Authorized Users available:

User	Full name
 Administrator	
 DefaultUser	
 dudomain\tsadmin	tsadmin

< [Progress bar]

Associated Roles for dudomain\tsadmin:

Role	Access level
<input checked="" type="checkbox"/>  Administrator	9999
<input checked="" type="checkbox"/>  Default	0

Configure Workflow Gateway

Gateway Configuration – General tab

- **Unique environment name:** Galaxy name
- **Passphrase:**
Set during Work Tasks farm creation
- **Server Address:** Work Tasks server
- **Authentication User Domain:**
Work Tasks server domain
- **Authentication User ID:**
Access to both Work Tasks and MES
- **Authentication User Password**

The screenshot shows the 'WorkflowGateway_001' configuration window with the 'General' tab selected. The 'Provision' section is active, displaying 'Workflow Repository Authentication Info' and 'Inbound Connection Authentication Info'.

Workflow Repository Authentication Info

- ☒ Use AD Provider same as Repository
- Providers: Active Directory (dropdown)
- User Name: tsadmin
- Password: [masked]

Inbound Connection Authentication Info

The following Windows user should have access rights on the platform on which the gateway object will be deployed.

- Authentication User Domain: DUDOMAIN
- Authentication User Id: tsadmin
- Authentication User Password: [masked]

Buttons: Authorize & Provision

Configure Workflow Gateway

Gateway Configuration – Advanced tab

- **Enterprise Console Site URL**
 - Remove the leading dashes
 - URL contains the Fully Qualified Domain Name

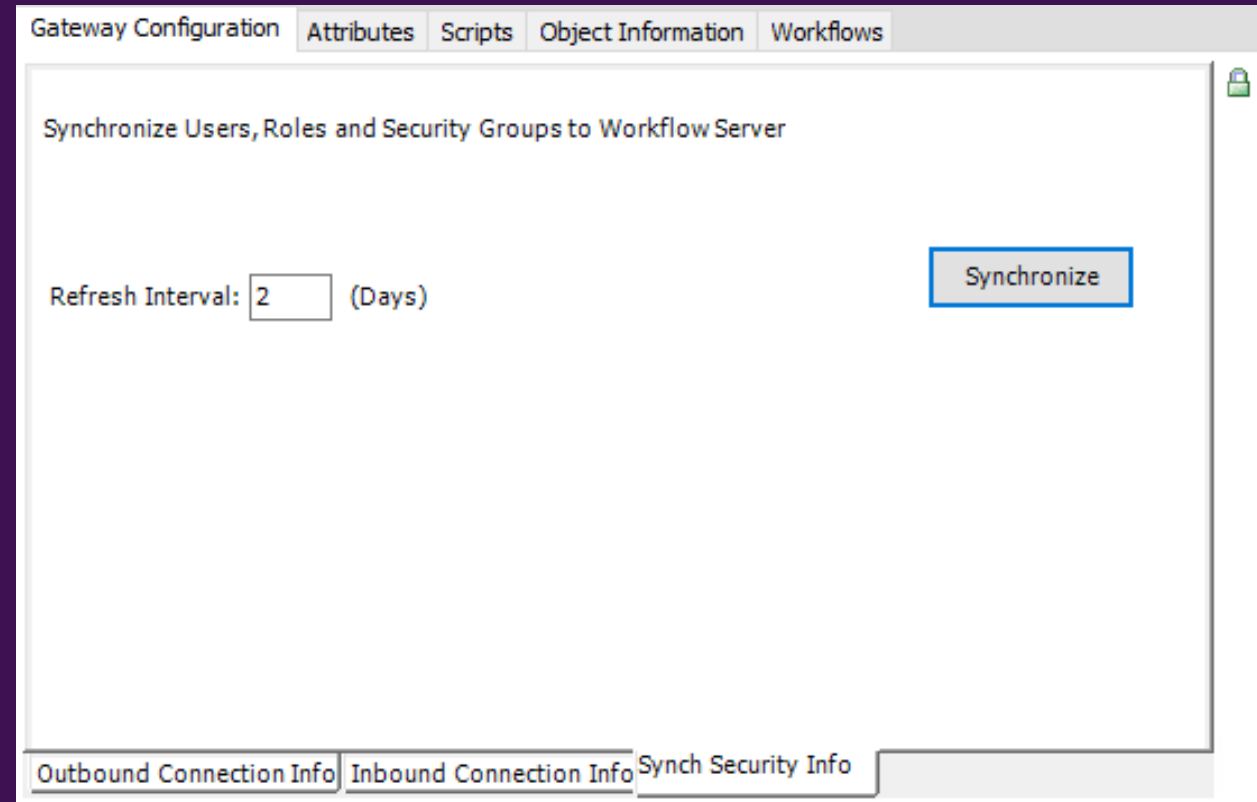
The screenshot shows the 'Gateway Configuration' window with the 'Advanced' tab selected. The window has tabs for 'Attributes', 'Scripts', 'Object Information', and 'Workflows'. The main area is titled 'Enter the following information to connect this Galaxy to the AVEVA Work Tasks Server:'. It contains several fields: 'Outbound Connector Port' (4000), 'Outbound Connector Binding' (TCP), 'User Provider Name' (TestGalaxy), 'Enterprise Console Site URL' (https://.dudomain.com:8001/En), 'Repository Auth User Id' (tsadmin), 'Repository Auth User Password' (masked with asterisks), and 'Repository Auth User Provider' (activedirectory). A red arrow points to the 'Enterprise Console Site URL' field. On the right side, there are tabs for 'General' and 'Advanced'. At the bottom, there are tabs for 'Outbound Connection Info', 'Inbound Connection Info', and 'Synch Security Info'.

Field	Value
Outbound Connector Port	4000
Outbound Connector Binding	TCP
User Provider Name	TestGalaxy
Enterprise Console Site URL	https://.dudomain.com:8001/En
Repository Auth User Id	tsadmin
Repository Auth User Password	*****
Repository Auth User Provider	activedirectory

Configure Workflow Gateway

Security Synchronization

- Manually synchronize initial user list
- Setup sync refresh interval



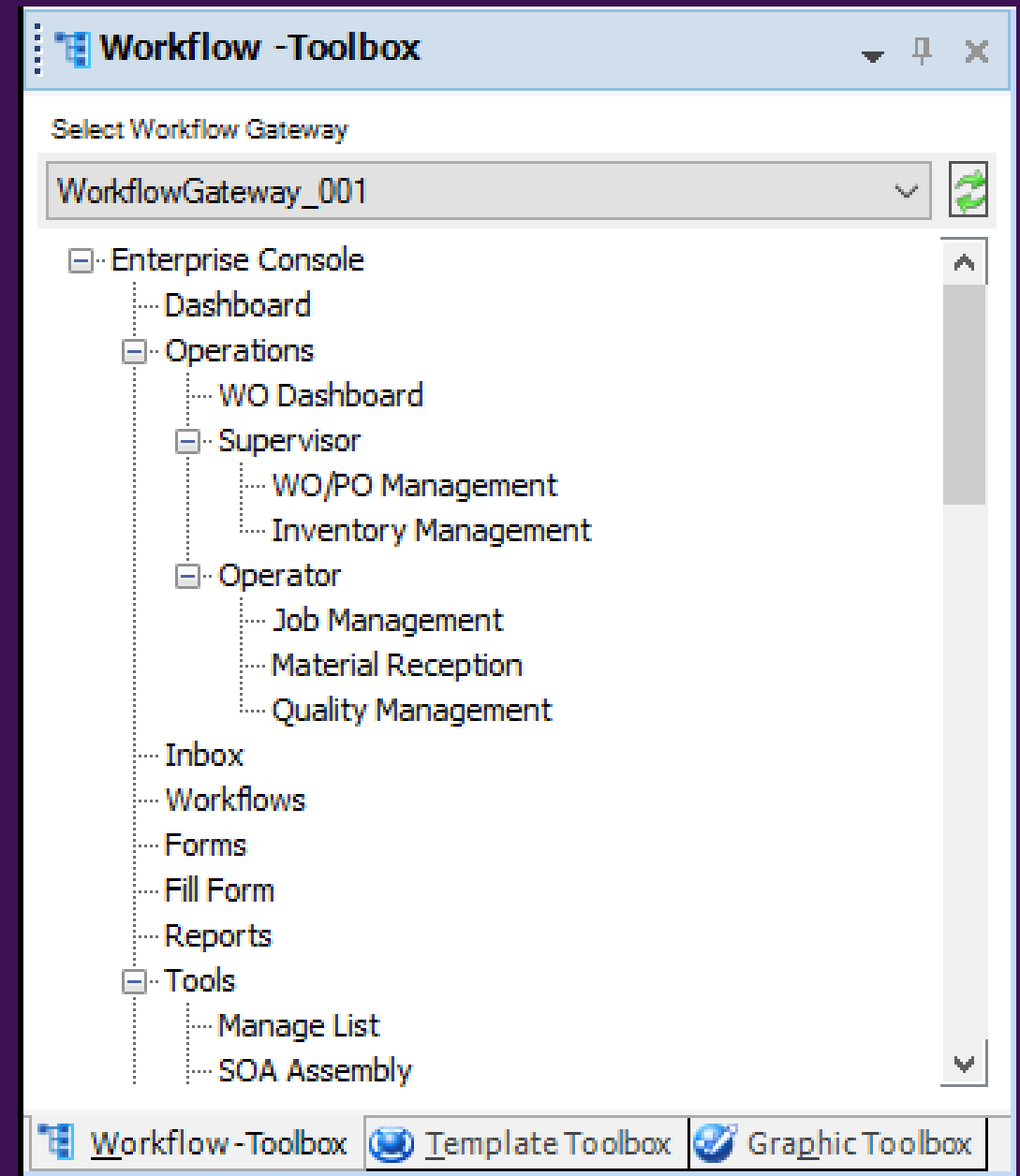
The screenshot displays the 'Gateway Configuration' window with the 'Workflows' tab selected. The main heading is 'Synchronize Users, Roles and Security Groups to Workflow Server'. Below this, there is a 'Refresh Interval' field set to '2' with the unit '(Days)' to its right. A 'Synchronize' button is located to the right of the input field. At the bottom of the window, there are three sub-tabs: 'Outbound Connection Info', 'Inbound Connection Info', and 'Synch Security Info', which is currently selected.

Gateway Configuration	Attributes	Scripts	Object Information	Workflows
Synchronize Users, Roles and Security Groups to Workflow Server				
Refresh Interval: <input type="text" value="2"/> (Days) Synchronize				
Outbound Connection Info		Inbound Connection Info		Synch Security Info

Configure Workflow Gateway

Verify Connection and Deploy

- **Workflow – Toolbox** displays repository contents
- **Deploy** an instance of the Workflow Gateway





AVEVA OMI Configuration



Enabling OMI for Token Security

- Enable OMI token security by editing the **view.exe.config** file in the OMI application directory
- The application directory could be in multiple locations:
 - Individual OMI deployed application:
C:\Program Files (x86)\ArchestrA\Framework\Bin\ViewAppFramework
 - Preview application launched by the IDE:
C:\Program Files (x86)\ArchestrA\Framework\Bin\ModernEditors\Preview\ViewAppFramework

Editing OMI view.exe.config

Before

```
<!-- Configure the Archestra Identity Manager Service (the OpenId Connect endpoint) by adding the following key value pairs.
  Replace "your_token_server" and "your_client_id" with proper values.

  <add key="TokenServiceBase" value="https://your_token_server/IdentityManager" />
  <add key="ClientId" value="your_client_id" />
  <add key="Scope" value="openid profile system offline_access" />
-->
```

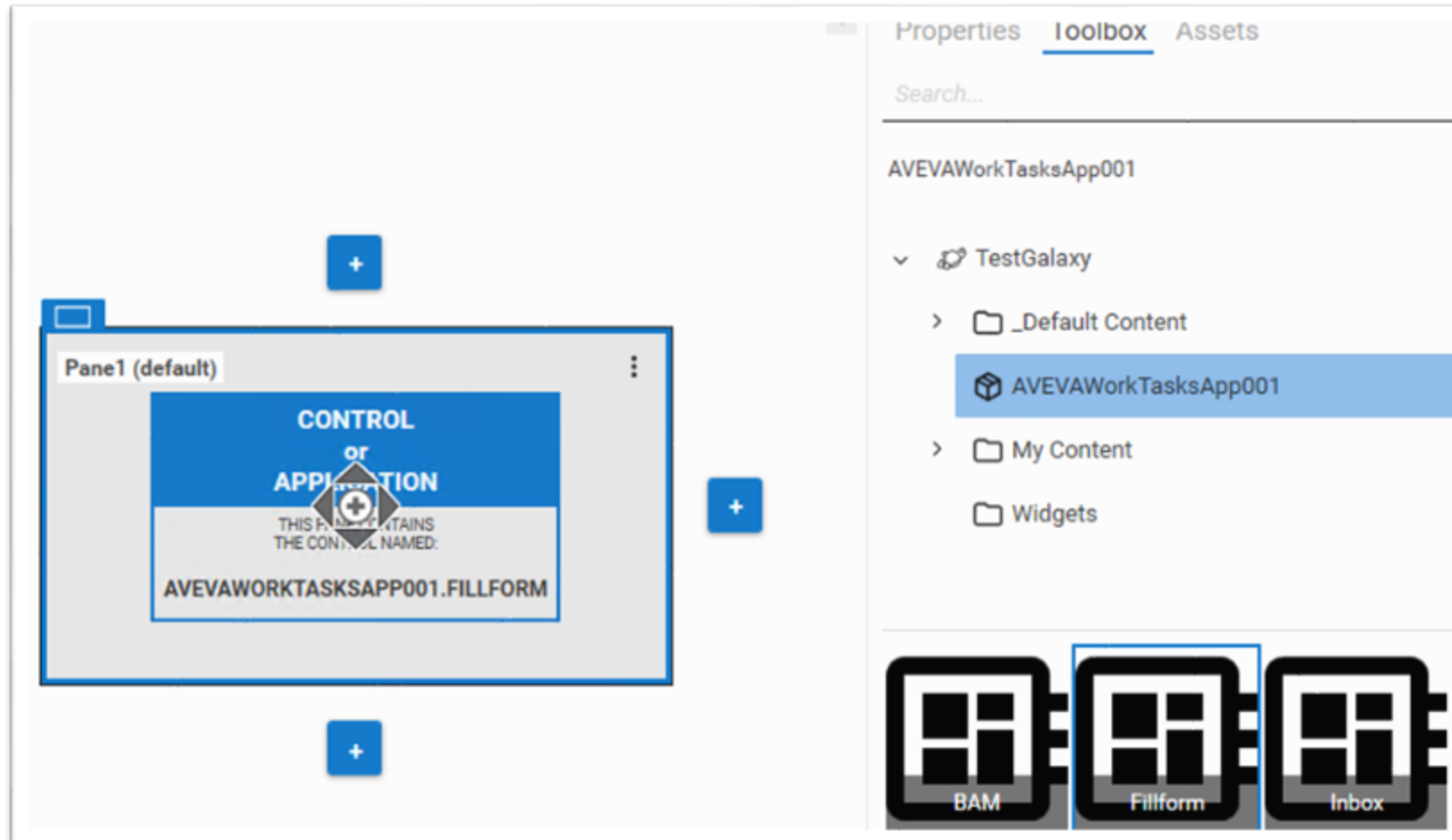
After

```
<!-- Configure the Archestra Identity Manager Service (the OpenId Connect endpoint) by adding the following key value pairs.
  Replace "your_token_server" and "your_client_id" with proper values. -->

  <add key="TokenServiceBase" value="https://MySMSServer.mydomain.com/IdentityManager/connect/token" />
  <add key="ClientId" value="SE_WSP_NG" />
  <add key="Scope" value="openid profile system offline_access" />
```

Embedding MDM Forms in OMI

Add Work Tasks FillForm OMI Application in an OMI Layout



Fillform Properties

- **Workflow Gateway:**
Work Tasks Gateway object
- **Form Name:** MDM form name
- **Form Version:** 0 (or alternate version #)
- **Input XML:** Formatted as provided
- **Default User:** Domain\MES_OS)user or the current logged on user view app attribute: MyViewApp.Security.LoggedInUserName passed logged on OMI user to MES WEB API via Work Tasks
- 3 options for setting Form Name, Version, Input XML
- Settings can be Constant or Input

The screenshot shows the 'Properties' tab of the 'Fillform1' object. The 'General' section shows the name 'Fillform1'. The 'Fill Form' section has a dropdown menu open for 'Form Name', showing options: 'Constant', 'In', 'Out', 'InOut', and 'Reset'. The 'Form Version' is set to 'Constant'. The 'Display Alert Message' is set to 'In'. The 'Input XML' is set to 'nInputXML}'. The 'Gateway' section shows 'Workflow Gateway' set to 'WorkflowGateway_001'. The 'Security' section shows 'Default User Always' set to 'G' with a checkmark, and 'Default User' set to 'MyViewApp.Security.L...'. The 'Event Handlers' section shows 'Available Events' as 'Click to Add...nts/ 0 Handled)'.

Content properties	
Search...	
General	
Name	Fillform1
Fill Form	
Form Name	{FormName}
Form Version	Constant
Display Alert Message	In
Input XML	nInputXML}
Gateway	
Workflow Gateway	WorkflowGateway_001
Security	
Default User Always	G [x]
Default User	MyViewApp.Security.L...
Event Handlers	
Available Events	Click to Add...nts/ 0 Handled)

Fillform Properties Options

Hardcode (Constant)

Properties

Toolbox

Assets

>

Content properties

Search...

Q

General

Name	Fillform1
Content	AVEVAWorkTasksApp001.Fillfor
Pane	Pane1

Fill Form

Form Name	MDMJobQueue
Form Version	0
Display Alert Message	<input type="checkbox"/>
Input XML	<SKRootDefinition><hfW

Gateway

Workflow Gateway	WorkflowGateway_001
------------------	---------------------

Security

Default User Always	<input checked="" type="checkbox"/>
Default User	MyViewApp.Security.L

Galaxy Object.Attribute (In)

Properties

Toolbox

Assets

>

Content properties

Search...

Q

General

Name	Fillform1
Content	AVEVAWorkTasksApp001.Fillfor
Pane	Historyplayback

Fill Form

Form Name	Ent100.MDMFormNam
Form Version	0
Display Alert Message	<input type="checkbox"/>
Input XML	Ent100.MDMFormInpu

Gateway

Workflow Gateway	WorkflowGateway_001
------------------	---------------------

Security

Default User Always	<input checked="" type="checkbox"/>
Default User	MyViewApp.Security.L

Selected Asset in OMI (Constant)
wrapped in curly braces

Properties

Toolbox

Assets

>

Content properties

Search...

Q

General

Name	Fillform1
Content	AVEVAWorkTasksApp001.Fillfor
Pane	Pane1

Fill Form

Form Name	{MDMFormName}
Form Version	0
Display Alert Message	<input type="checkbox"/>
Input XML	{MDMFormInputXML}

Gateway

Workflow Gateway	WorkflowGateway_001
------------------	---------------------

Security

Default User Always	<input checked="" type="checkbox"/>
Default User	MyViewApp.Security.L



MDM Form Displayed in OMI

AVEVA Operations Management Interface

Ent100

Home

Back

Forward

AVEVA OMI

Shelved Alarms

Active Alarms

Standard_Style

English (United States)

Assets

Enterprise

Site

Plant

Plant_Area

Ent100

Area State

Area Mode

Ent100

Plant_Area

0

Alarms

Area Alarms

Set Plant State

Plant_Area

Running

Mode

Enable

Select WO

Select Entity

Ent100

RUNNING

6

Op2

Operation

0

Sequence Number

Item

Example Item(Not a Real Item)

Req. Qty.

110

Deviation

-110

Bad Production

0

0

Queue

Produce

BOM Consume

Utilization

Performance

Details

Edit

Delete

Start

Suspend

Cancel

Complete

Refresh

Help

Filter

Current Filter: Status=[READY, RUNNING, SUSPENDED]; Entity=Ent100; Auto Refresh=60

Item ID	Work Order	Operation	Sequence Num...	Req. Qty.	Status	Entity
Example Item	6	Op2	0	110	RUNNING	Ent100
Example Item	7	Op1	0	1000	READY	

Job Details

Job Description

Op2

Batch Size

1

Start Qty.

110

Pieces

Req. Qty.

110

Pieces

Job Priority

50

Last Start Time

6/2/2022 10:00:00 AM

Due Date

6/7/2022 12:00:00 AM

MDM Input XML Parameters

FORM NAME	CONTEXT	INPUT XML Format
MDMWorkOrderManagementForm	Not applicable	
MDMJobManagementForm	Work Order ID and/or Entity Name	<pre><SKRootDefinition> <hfWold>WoX</hfWold> <hfEntName>Blender1</hfEntName> </SKRootDefinition></pre>
MDMJobQueue	Work Order ID and/or Entity ID	<pre><SKRootDefinition> <hfWo_Id>WoX</hfWo_Id> <hfEntityID>12</hfEntityID> </SKRootDefinition></pre>
MDMJobProduce	Entity ID Work Order ID Operation ID Sequence Number	<pre><SKRootDefinition> <ParameterWold>Wo1</ParameterWold> <ParameterOperId>Blending</ParameterOperId> <ParameterSeqNo>0</ParameterSeqNo> <hfEntID>12</hfEntID> </SKRootDefinition></pre>

MDM Input XML Parameters

FORM NAME	CONTEXT	INPUT XML Format
MDMJobConsume	Entity ID Work Order ID Operation ID Sequence Number	<SKRootDefinition> <ParameterWold>Wo1</ParameterWold> <ParameterOperId>Blending</ParameterOperId> <ParameterSeqNo>0</ParameterSeqNo> <hfEntID>12</hfEntID> </SKRootDefinition>
MDMInventoryForm	Entity ID	<SKRootDefinition> <hfEntityId>12</hfEntityId> </SKRootDefinition>
MDMUtilizationForm	Entity ID	<SKRootDefinition> <hfEntityID>12</hfEntityID> </SKRootDefinition>

MDM Input XML Parameters

FORM NAME	CONTEXT	INPUT XML Format
MDMPerformanceMonitorForm	Entity ID	<SKRootDefinition> <hfEntityID> 12 </hfEntityID> </SKRootDefinition>
MDMQualityManagementForm	Entity Name	<SKRootDefinition> <hfEntName> Blender1 </hfEntName> </SKRootDefinition>

Tech Tips

- OS security must be enabled across all involved AVEVA software
- Carefully follow the MDM Installation Guide
 - FQDN is mandatory in certain configuration areas (but not all)
 - Hotfixes included with MDM installation are required for some MDM content to work properly
- Work Tasks documentation contains generic instructions for installing and configuring the Workflow Gateway, OMI Applications, and supporting components
- Work Tasks upgrades and hotfixes require running a separate upgrade utility manually. Details are in the instructions.
- If running System Platform 2020 R2 Sp1, you MUST install MES 2020 p02.
 - Patch installer is located on the System Platform 2020 R2 Sp1 installation media only.
- MES 2020.x is not supported with System Platform 2023
 - MES 2023 (Q1 2023*), Work Tasks 2023 (Q4 2022*), and MDM v6 (Q2 2023*) will be minimum versions for use with SP 2023

**Estimated release timeframe at the time of this presentation. Subject to change.*



Reference

Tech Note TN000033860 for step-by-step instructions and more details

<https://softwaresupportsp.aveva.com/#/okmimarticle/docid/tn000033860>

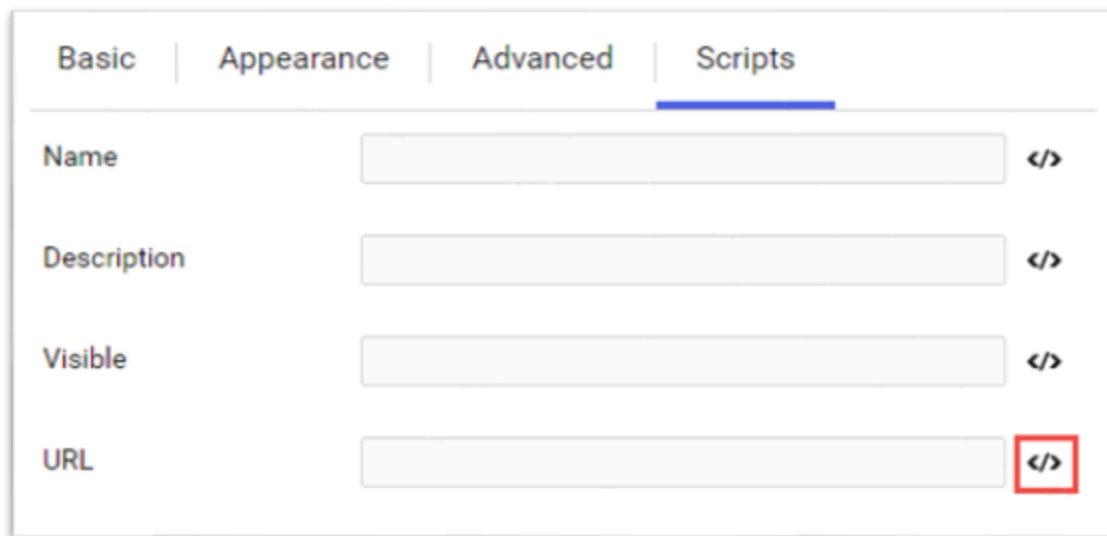
Model-Driven MES v5.5 Installation Guide

<https://gcsresource.aveva.com/support/Wonderware/MES/MDM/55/MDM%20Installation%20Guide.pdf>

Integrating OMI Web Inside Work Tasks

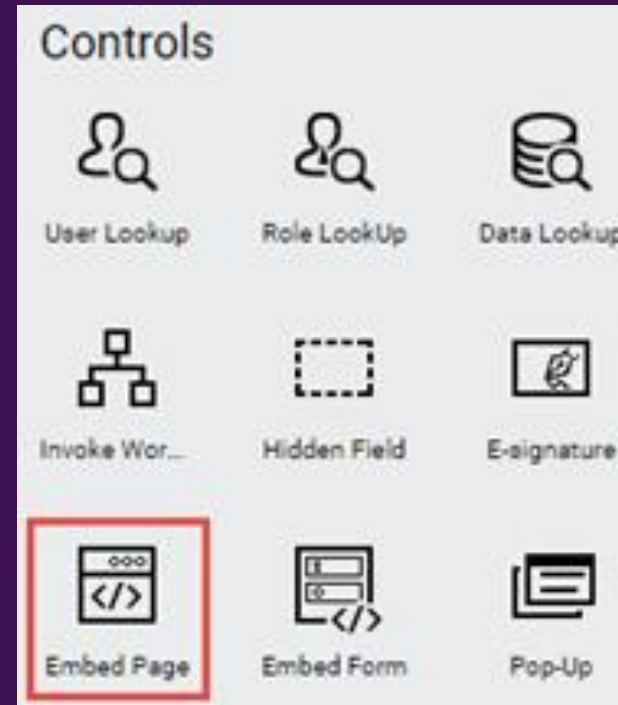
Embed a Web Page

- Create a new form or modify an MDM form in Work Tasks Enterprise Console – Forms
- Drag an Embed Page control onto the form
- Edit the control's Properties
- Go to the Scripts Tab and edit the URL parameter



The screenshot shows the 'Scripts' tab of a form editor. It contains four properties: Name, Description, Visible, and URL. Each property has a text input field and a code icon (</>). The 'URL' property's code icon is highlighted with a red square, indicating where to click to edit the URL parameter.

Basic	Appearance	Advanced	Scripts
Name	<input type="text"/>	</>	
Description	<input type="text"/>	</>	
Visible	<input type="text"/>	</>	
URL	<input type="text"/>	</>	



Example script

embITWebGraphics (

Basic | Appearance

Name

Description

Visible

URL

```
1 // sets the URL for the embedded page to open InTouchWeb in Process Graphics tab
2 // Date Created: 3-8-2019
3 // Author: Nick Nicholas
4 // Version: 1.0
5 // Modified to include share url
6
7 $('#E7frameEmbedPage').removeAttr("sandbox");
8
9 var entName = control.findById("H1").value;
10
11
12 if(entName && entName != "")
13 {
14     //nn test
15     if( entName.startsWith("Line")) {
16
17         var AreaNum = entName.substr(4,1);
18         var formsURL = "https://mddemo.wwdc.local/InTouchWeb/?iframe=true&symbol=L" + AreaNum + "Overview";
19
20     }
21     else {
22
23         var AreaNum = entName.substr(entName.length - 1);
24         var formsURL = "https://mddemo.wwdc.local/InTouchWeb/?iframe=true&symbol=P" + AreaNum + "Overview";
25     }
26 }
27
28 console.log ("+++++ URL == " + formsURL);
29
30 return formsURL;
31
32 //changed from https://mddemo.wwdc.local/InTouchWeb/api/symbol/L1Overview
33 // to https://mddemo.wwdc.local/InTouchWeb/?iframe=true&symbol=L1Overview
```

do

Revert

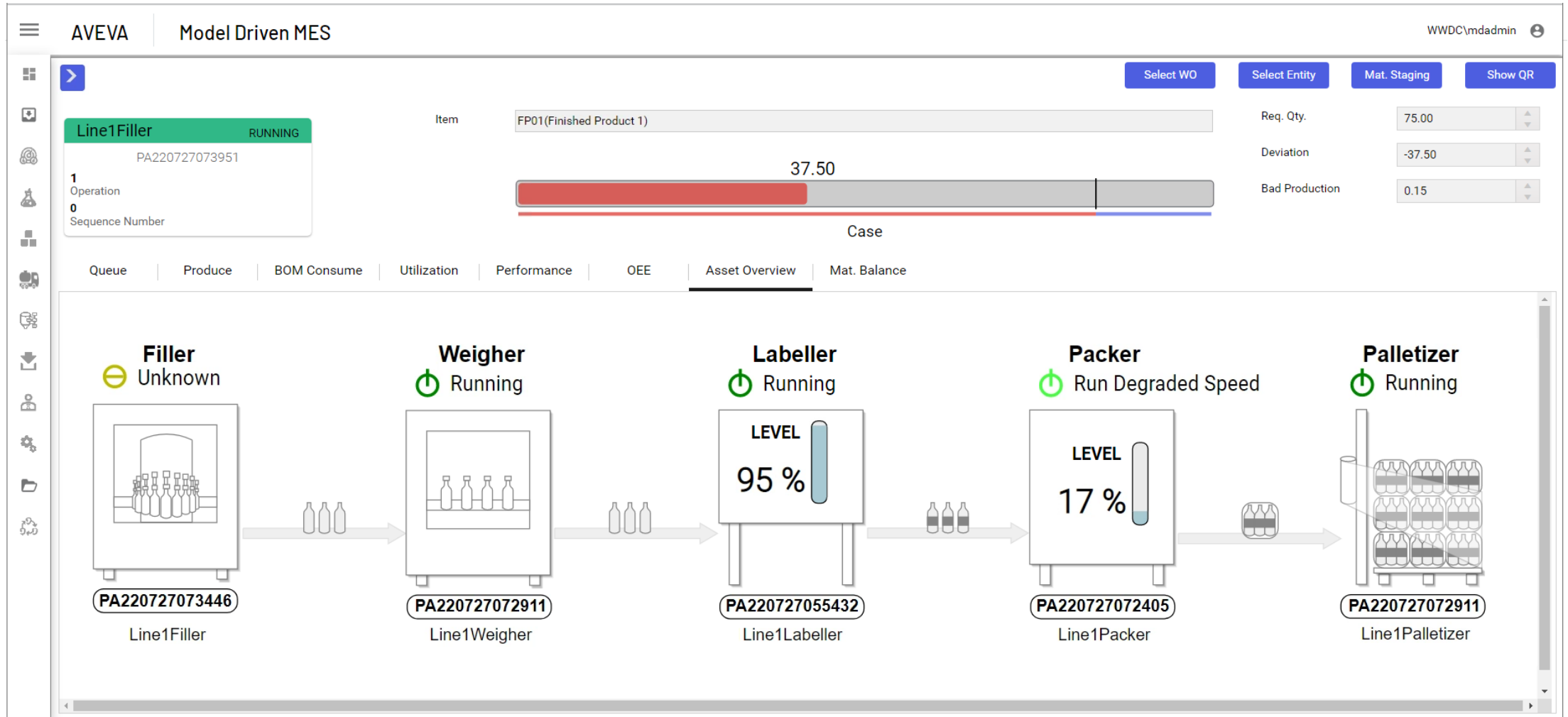
Clear All

In

um + "Overview";

lum + "Overview";

OMI Asset Overview in Work Tasks





Dan Scott

Sr. Principal Customer Support Engineer

- AVEVA Software
- dan.scott@aveva.com



Jean-Pierre (JP) Caron

Product Manager –
Model Driven MES & Scheduling

- AVEVA Software
- jean-pierre.caron@aveva.com



Questions?

Please wait for the microphone.
State your name and company.



Please remember to...


Navigate to this session in the mobile
app to complete the survey.



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