

# The Magical World of SAP EWM for ABAPers

Presented by Jelena Perfiljeva

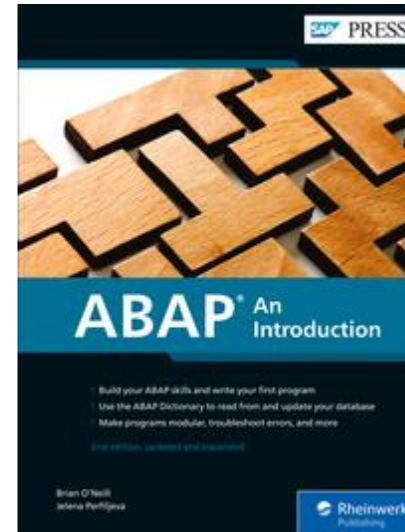


# About Me



**Jelena Perfiljeva**  
Expert SAP Developer (not an expert in EWM)

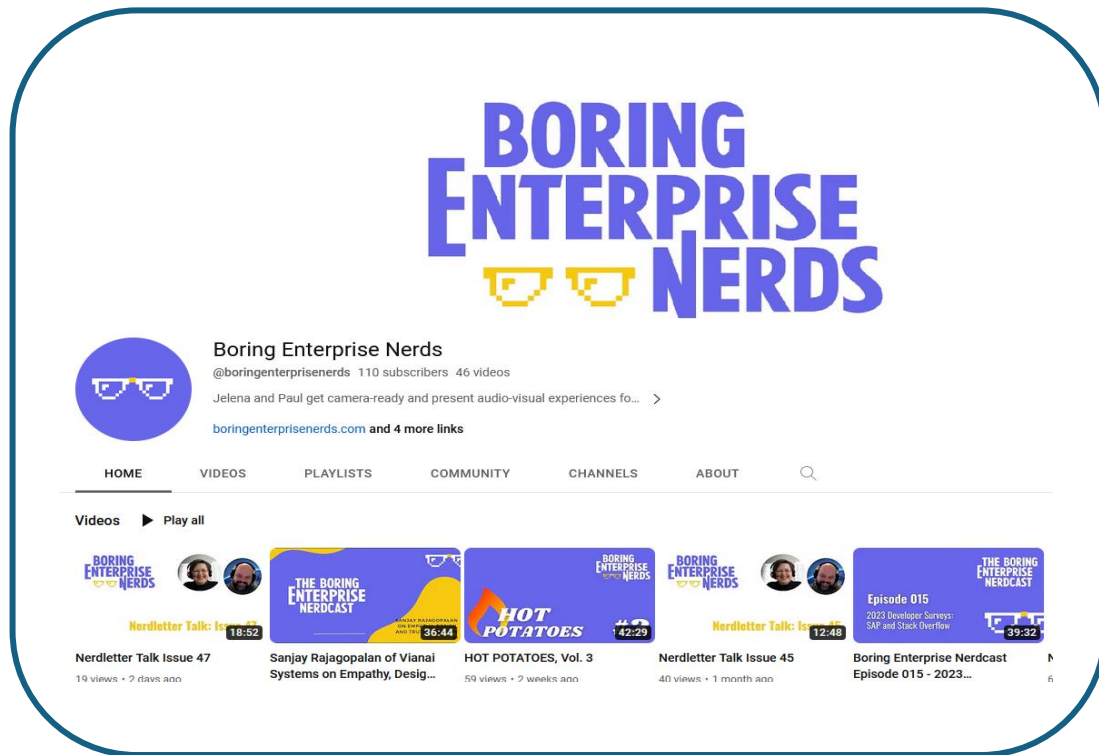
**MINDSET**



Special thanks to:  
Vijay Manem,  
Kurt Briesemeister

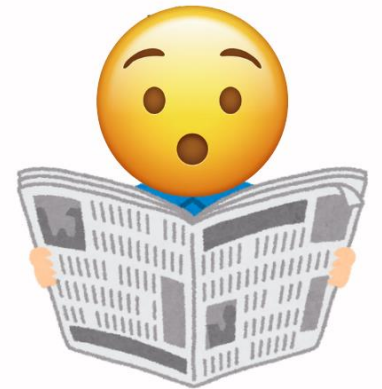


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# What This Session Is And Is Not

- This is an introduction into SAP EWM for ABAP developers (experienced and beginners)
- Based on presenter's real-life experience and impressions
- This is NOT a comprehensive overview of SAP EWM solution or all the relevant ABAP techniques

# Agenda

- What on Earth is SAP EWM?
- Boring Non-ABAP Stuff
- Framework Galore
- Custom Development Example
- Tips for Efficiency
- Where to Find More Information
- Conclusion

**What on Earth is SAP EWM?**

# What on Earth is SAP EWM?

- EWM = Extended Warehouse Management
- Not “WM on steroids”. But is replacing WM.  
And there is another WM
- Related to SAP SCM (Supply Chain Management)
- Can be implemented as “embedded” and as a stand-alone system (“decentralized”)
- This presentation is based on SAP EWM in S/4HANA on-premise / Private Cloud



# First Impression



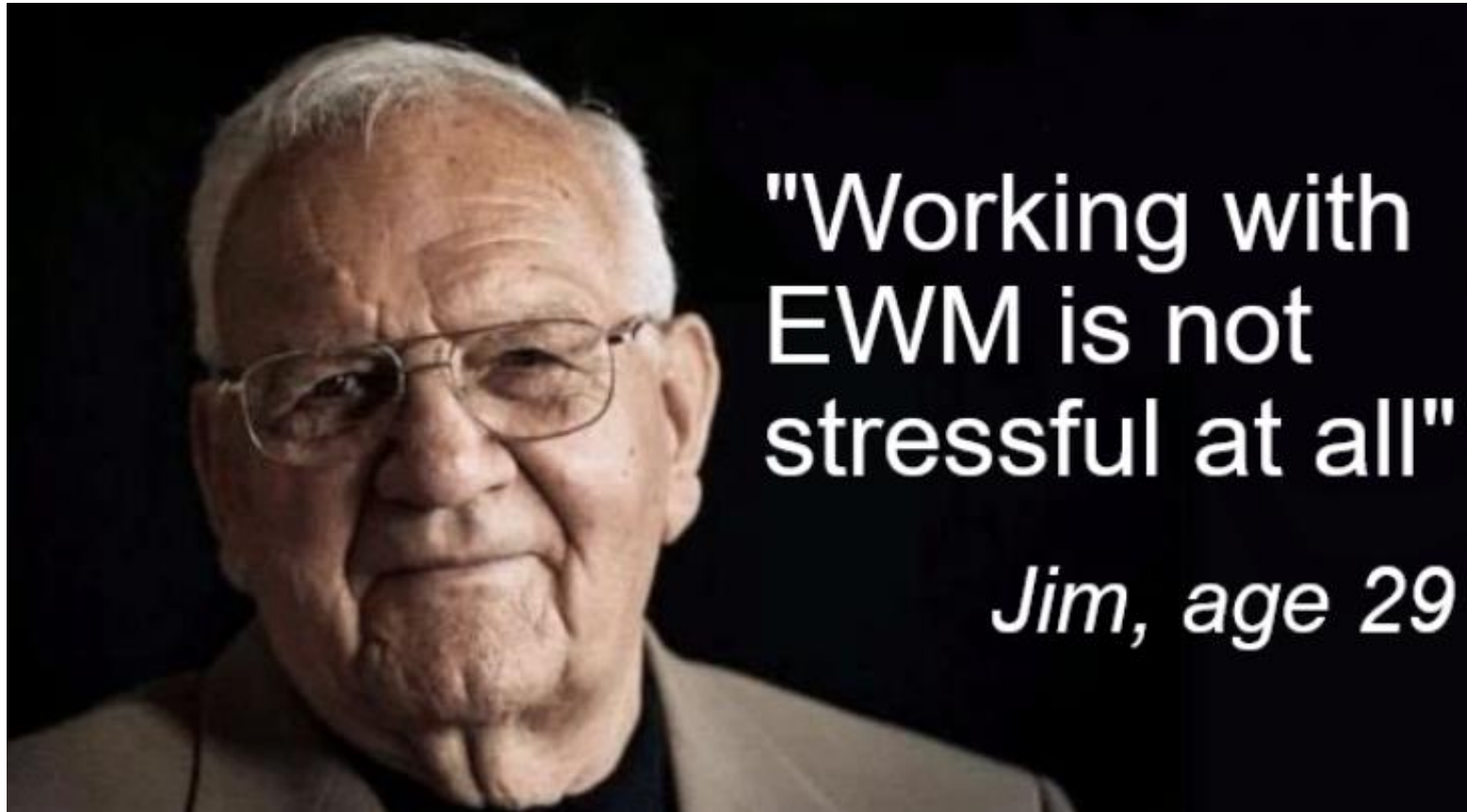


# Second Impression



[Video link](#)

# It's Not So Bad



# Boring Non-ABAP Stuff

# Warehouse Organization

- Warehouse ->
  - Storage Type ->
  - Storage Section ->
  - Storage Bin
- Goods of different sizes / weights
- Fast vs slow moving goods



# Process Examples

- Inbound (put away purchased goods, customer return)
- Outbound (pick/pack, goods issue)
- Cross-docking (inbound/outbound hybrid)
- Production (raw materials, finished goods)
- Internal: replenishment, quality inspection, physical inventory



# Integration Examples

- Lots of IDocs (from the core ERP, TM, etc.)
- Core Interface (CIF) and qRFC (queued RFC) calls between core ERP and EWM for master and transactional data
- Warehouse automation:
  - [MFS](#) (Material Flow Systems, e.g. conveyors, pick by voice) is preferred way, uses ABAP Push Channels
  - [EWM-WCU](#) (Warehouse Control Units) is another way
- Odd devices: RF, label printers, etc.



# Framework Galore

# Just Some Examples

- Radio Frequency (RF)
- Warehouse Management Monitor
- Post Processing Framework



# Radio Frequency (RF)

- Used to develop simple, utilitarian transactions to run on special RF devices
- Can run in SAP GUI or on in a browser (including mobile devices)



# RF Screen Examples

**SAP**

F1 Logof

01 System-Guided

02 Manual Selection

03 Inbound Process

04 Outbound Process

05 Internal Process

Menu

**SAP**

F1 Delet F2 Close

HU 916.821.011-00

1000000000 CGrp 5000000001

SrcBin 8010-DEKONS

ToWtHU 28,694

MaxWHU 0 KG

TotVHU 0,144

MaxVHU 0 M3

Length ExVolT

0 M

Width ExWtTo

0

Height LogPos

0

F3 Cond F4 Conv >

**SAP**

F1 Rever F2 Skip

Src Bin

GR-ZONE

Src HU

12200000000110

F3 Skip F12 Quer



F7 key = “green arrow back”  
F9 key to see full message text

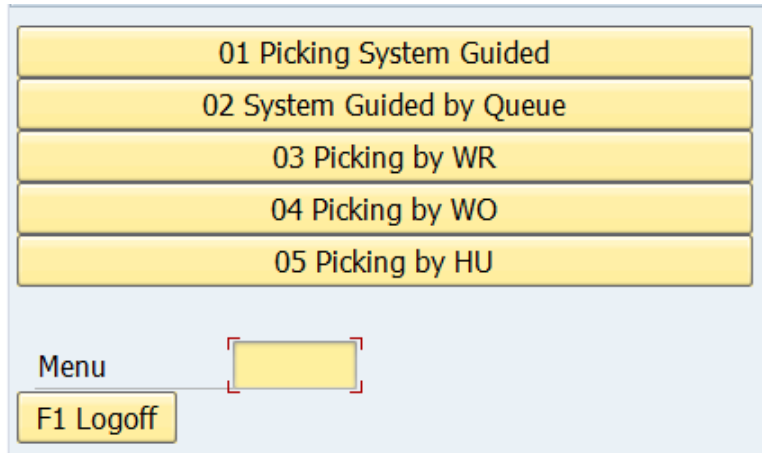
# RF UI

- Transaction /SCWM/RFUI
- If you see something like this, your user ID needs to be assigned to a “resource” (/SCWM/USER, /SCWM/RSRC or just ask)

A screenshot of the SAP RFUI transaction screen. The header bar is blue with the SAP logo. Below it, there are three input fields: 'Whse No.' with a yellow selection box, 'Resource' with a long white text box, and 'Dflt Dvc.' with a small white text box.

SAP	
Whse No.	<input type="text"/>
Resource	<input type="text"/>
Dflt Dvc.	<input type="text"/>

# RF Flow



01 Picking System Guided

02 System Guided by Queue

03 Picking by WR

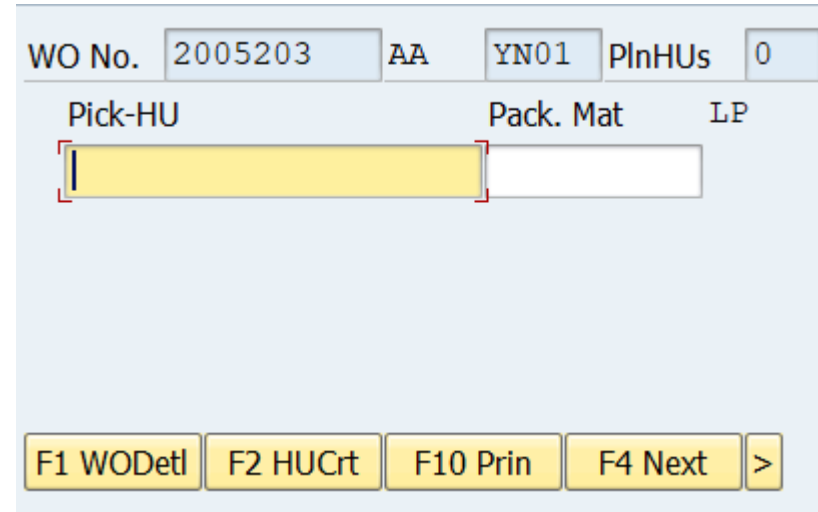
04 Picking by WO

05 Picking by HU

Menu

F1 Logoff

PAI  
(FM)



WO No. 2005203 AA YN01 PlnHUs 0

Pick-HU	Pack. Mat	LP
<input type="text"/>	<input type="text"/>	

F1 WODetl F2 HUCrt F10 Prin F4 Next >

PBO  
(FM)

Key/button user pressed =  
function code

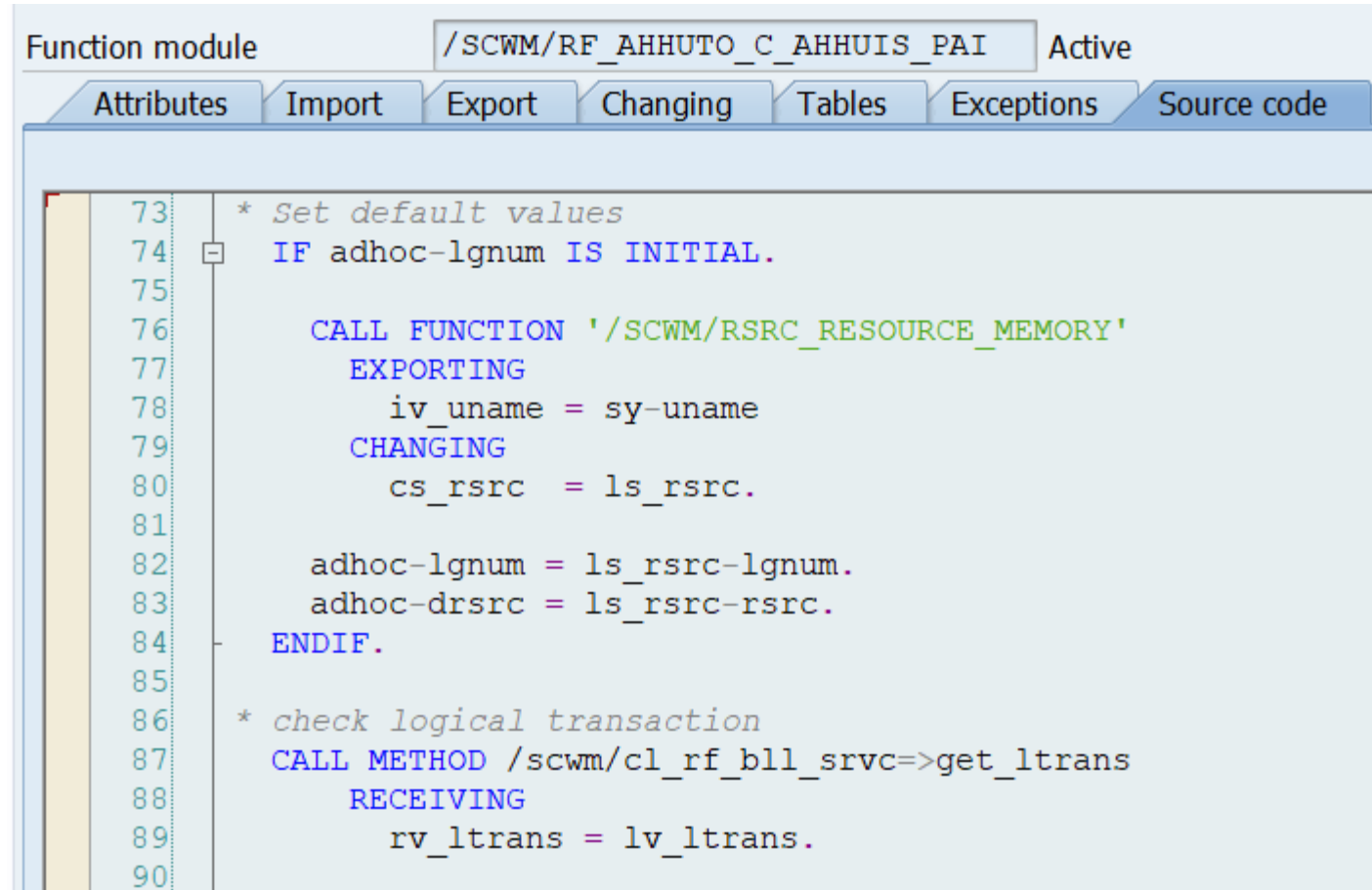


# RF Configuration (fragment)

Dialog Structure	Define Logical Transactions					
<ul style="list-style-type: none"> <li>Define Application Parameters</li> <li>Define Presentation Profiles                             <ul style="list-style-type: none"> <li>Define Personalization Profiles</li> </ul> </li> <li>Define Steps                             <ul style="list-style-type: none"> <li>Define States</li> </ul> </li> <li>Define Function codes                             <ul style="list-style-type: none"> <li>Define Function code text</li> </ul> </li> <li>Define Validation Objects</li> <li>Define Logical Transactions                             <ul style="list-style-type: none"> <li>Define Presentation texts</li> <li>Define Logical Transaction step flow</li> <li>Define Inter-Transaction flow</li> <li>Define Validation Profile</li> <li>Define Function code Profile</li> <li>Map Logical Transaction Step to Sub-Screen</li> </ul> </li> </ul>	Log Trans.	Transaction Code	Description	Init.Step	Recov.Step	Visibility
	PIBHU		Picking by HU	PIBUSR	PIRCVR	Always Visible ▼
	PIBQUE		System-guided pick by Queue	PIBUSR	PIRCVR	Always Visible ▼
	PIBWHO		Picking by WO	PIBUSR	PIRCVR	Always Visible ▼
	PIBWHR		Picking by WR	PIBUSR	PIRCVR	Always Visible ▼
	PISYSG		System-guided pick	PIBSYS	PIRCVR	Always Visible ▼
	PPHUCS		Creation of single HU at pick point	PPCRHU		C For SAP EWM and EWM in SA... ▼
	PPHUMN		HU maintenance at pick point	PPHUSL		C For SAP EWM and EWM in SA... ▼
	PPLOWC		Logon to pick point work center	PPWCIN		C For SAP EWM and EWM in SA... ▼
	PPPPHU		Pick point transaction	PPHUSL		C For SAP EWM and EWM in SA... ▼
	PT****		Putaway not usable TX			Always Visible ▼
	PTCRLP		Conf. Correction WT or StockID	PTCRLP		C For SAP EWM and EWM in SA... ▼

Map Logical Transaction Step to Sub-Screen										
	Applic.	Pres. Prof	Prsn. P...	Displ.Prof	Log Trans.	Step	State	Sequence	Screen Program	Screen No.
	01	****	**	**	PIBHU	PIBUSR	*****	01	/SCWM/SAPLRF_PICKING	0101
	01	****	**	*2	PIBHU	PIBUSR	*****	01	/SCWM/SAPLRF_PICKING_PM	0101

# RF Development (random example)



The screenshot shows the SAP ABAP Source code editor for the function module `/SCWM/RF_AHHUTO_C_AHHUIS_PAI`. The editor has tabs for Attributes, Import, Export, Changing, Tables, Exceptions, and Source code. The Source code tab is active, displaying the following code:

```
73      * Set default values
74      IF adhoc-lgnum IS INITIAL.
75
76          CALL FUNCTION '/SCWM/RSRC_RESOURCE_MEMORY'
77              EXPORTING
78                  iv_uname = sy-uname
79              CHANGING
80                  cs_rsrc  = ls_rsrc.
81
82          adhoc-lgnum = ls_rsrc-lgnum.
83          adhoc-dsrc  = ls_rsrc-rsrc.
84      ENDIF.
85
86      * check logical transaction
87      CALL METHOD /scwm/cl_rf_bll_srvc=>get_ltrans
88          RECEIVING
89              rv_ltrans = lv_ltrans.
90
```



# Warehouse Management Monitor

**Warehouse Management Monitor SAP - Whse. 1710 (Time Zone PST)**

Icons: [Tree View] [List View] [Refresh] [Show Hidden Nodes]

Navigation Tree:

- Outbound
  - Documents
    - Planned Shipping Handling Unit
    - Wave
    - Outbound Delivery Order**
      - Outbound Delivery Order Item
        - Wave
        - Warehouse Order
        - Warehouse Task
        - Handling Unit
        - Planned Shipping Handling Unit
        - Attachments
      - Proof of Delivery
      - VAS Order
      - Route
      - Shipping Overview
      - Production Material Request
      - Stock Transfer for JIT Call

Path: /SCWM/SAPLWIP\_DELIVERY\_OUT

Header Data

Outb. Delivery Order	<input type="text"/>	to	<input type="text"/>	
Document Type	<input type="text"/>	to	<input type="text"/>	
TCD Process Number	<input type="text"/>	to	<input type="text"/>	
Ext. Consignment Order	<input type="text"/>	to	<input type="text"/>	
Bill of Lading	<input type="text"/>	to	<input type="text"/>	
Freight Document	<input type="text"/>	to	<input type="text"/>	
Generated Manually	<input type="checkbox"/>	to	<input type="checkbox"/>	
Handling Unit	<input type="text"/>	to	<input type="text"/>	
Wave	<input type="text"/>	to	<input type="text"/>	
Route	<input type="text"/>	to	<input type="text"/>	
Dep. Cal. / Schedule	<input type="text"/>	to	<input type="text"/>	
Origin of Route Master Data	<input type="text"/>	to	<input type="text"/>	

# Monitor: Full ALV Glory

**Warehouse Management Monitor SAP - Whse. 1710 (Time Zone PST)**

Show Hidden Nodes

- Outbound
  - Documents
    - Planned Shipping Handling Unit
    - Wave
  - Outbound Delivery Order
    - Outbound Delivery Order Item
      - Wave
  - Warehouse Order
    - Warehouse Task
    - Warehouse Task
    - Handling Unit
    - Planned Shipping Handling Unit
    - Attachments
  - Proof of Delivery
  - VAS Order
  - Route
  - Shipping Overview
  - Production Material Request
  - Stock Transfer for JIT Call

Warehouse Task

Whse Order	WO Cr. Rle
2000401	YO01
2000402	YO01
2000403	YO02
2000404	YO02
2000630	YO02
2000631	YO06
2000632	YO06
2000633	UNDE
2000634	YO06
2000635	UNDE
2000636	YO01
2000637	YO01
2000701	YO02

Display WO Log

- Merge Warehouse Orders
- Print Warehouse Order
- Reprint Warehouse Order
- Lock Warehouse Order
- Unlock Warehouse Order
- Assign to Resource
- Unassign from Resource
- Change Queue
- Change LSD
- Add WO to Load/Unload Super WO
- Confirm WO in Foreground
- Confirm WO in Background
- Cancel WO

ve	Status	Activity Area	Created By
01	C	YN02	S4H_EWM
01	C	YN02	S4H_EWM
02	C	Y021	S4H_EWM
03	C	Y021	S4H_EWM
0	A	Y021	S4H_EWM
0	A	Y041	S4H_EWM
0	A	Y041	S4H_EWM
0	A	Y041	S4H_EWM
0	A	Y042	S4H_EWM
0	A	Y052	S4H_EWM
0	A	YN02	S4H_EWM
0	A	YN02	S4H_EWM
0	C	Y021	S4H_EWM

# Monitor Tree: Configuration

**Customize Monitor Tree**

**Node Data**

Node	N000000010
Higher-Lvl Node	C000000004
Text	Outbound Delivery Order
Variant	
Layout	
Node Profile	P0000010
Node	
Object Class	WHRO
Category	
List Func.Mod.	/SCWM/WHRHEAD_MON_OUT
List Table Type	/SCWM/TT_WIP_WHRHEAD_OUT
Form Func.Mod.	
Form Structure	/SCWM/S_WIP_WHRHEAD_OUT
Dynpro Program	/SCWM/SAPLWIP_DELIVERY_OUT
Dynpro Number	0110
List Structure	
Visibility	<input type="checkbox"/>
Disable Selection	<input type="checkbox"/>

# Framework (or not?)

- Monitor application is modeled as framework (package /SCWM/MONITOR\_FRAMEWORK). See Resources for a guide link.
- Here is what a custom FM might look like

```
1  FUNCTION ZE
2  *"--
3  *"--Local Interface:
4  *"  IMPORTING
5  *"    REFERENCE(IT_DATA) TYPE STANDARD TABLE
6  *"    REFERENCE(IV_LGNUM) TYPE /SCWM/LGNUM
7  *"--
8
9  FIELD-SYMBOLS <input_table> TYPE z.... .
10 ASSIGN it_data TO <input_table>.
11 CHECK sy-subrc = 0.
```



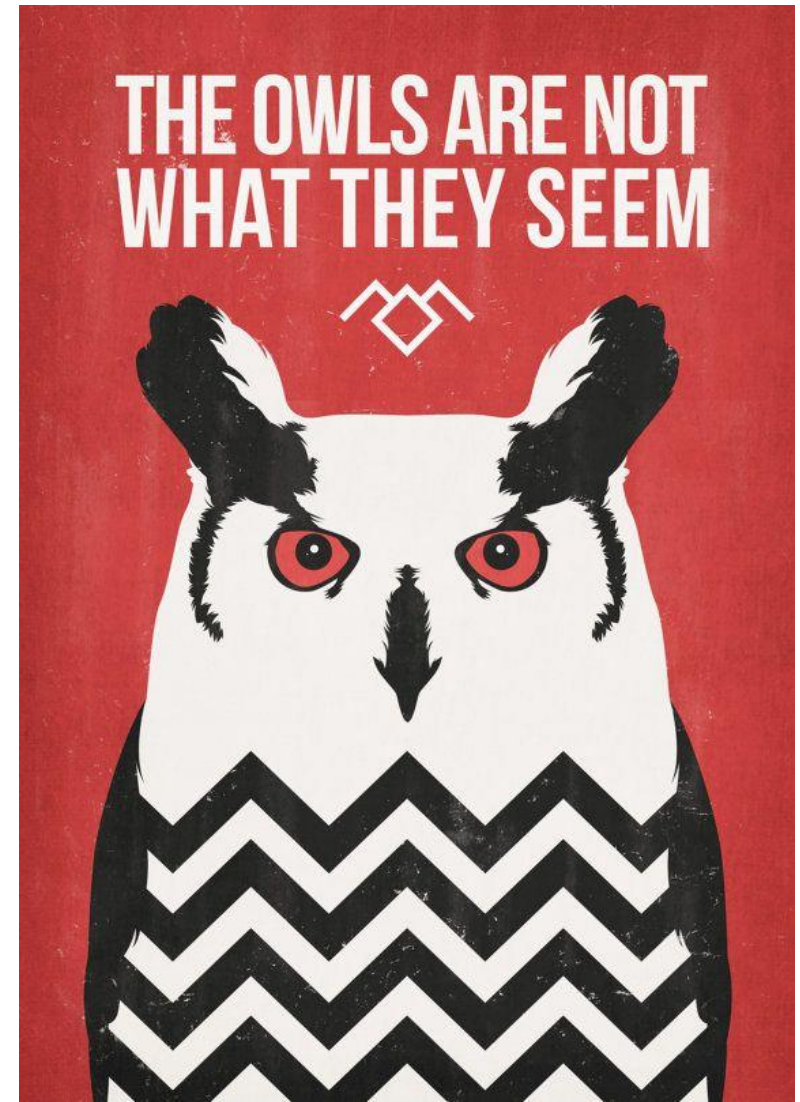
# Post Processing Framework (PPF)

- “Generic execution of functions and processes.”  
Can trigger actions (=ABAP code)
- Successor of Message Control (we could do similar things with NACE in the core ERP)
- Typical use cases:
  - Printing
  - Sending messages to other systems
  - Asynchronous updates

# Custom Development Example

# EWM Oddities

- Data elements: e.g., LGNUM -> /SCWM/LGNUM
- Sometimes it's /SCWM but sometimes it's /SCDL or /SAPAPO
- Outbound Delivery <> Outbound Delivery Order
- Reading data may require use of special classes / FM



# Outbound Delivery Order Creation

- Blog post: <https://community.sap.com/t5/technology-blog-posts-by-members/create-outbound-delivery-in-ewm-2025-edition/bap/14103014>
- Code example: [https://github.com/Jelena-P/SAP-EWM-EXAMPLES/blob/main/src/zewm\\_create\\_odo\\_example.prog.abap](https://github.com/Jelena-P/SAP-EWM-EXAMPLES/blob/main/src/zewm_create_odo_example.prog.abap)

# Tips for Efficiency

# Improving Performance

- Parallel processing (set up in SPRO)
- Less data = better performance (almost always)
- Deactivate logging when not needed
- Stop unneeded PPF



# Tips (non-EWM specific)

- Package structure
- Agree on naming
- Agree on exception handling (simple exception class FTW)
- Utility classes (conversions, message display, etc.)
- KISS

# **Where to Find More Information**

# Resources

- The GOAT: SAP Press Book [EWM with SAP S/4HANA: Architecture and Programming](#)
- [EWM Documents](#) on SAP Help website
- [EWM Wiki](#) (sort of)
- How-to Guides ([direct link to PDF](#))
- Fundamentals of EWM (short course on [Udemy](#))

# Conclusion





**Thank You! Danke!**