Interface & Quistor

New Tunnel project – Orchestration connecting JDE with industrial automation

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Introduction

- Introduction Interface
- New tunnel project

Nienke van Elst

EMEA Application manager

- Previous completion process
- New completion process – fully automated

Lidy Jeschke

Business Application Specialist

- Orchestrations in place
- Challenges

Damiën Kes

Lead I.M.I.

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Interface

- Design, manufacturing and sales of flooring products
- Global company, headquartered in Atlanta, US
- Scherpenzeel: EMEA headquarter and carpet tile plant
- Production volume 10 mio m2 / year

- Carpet tile manufacturing: tufting – precoating – backing

- JD Edwards EMEA: implemented in phases since 2009
- JDE Manufacturing including DSI scanning since 2017

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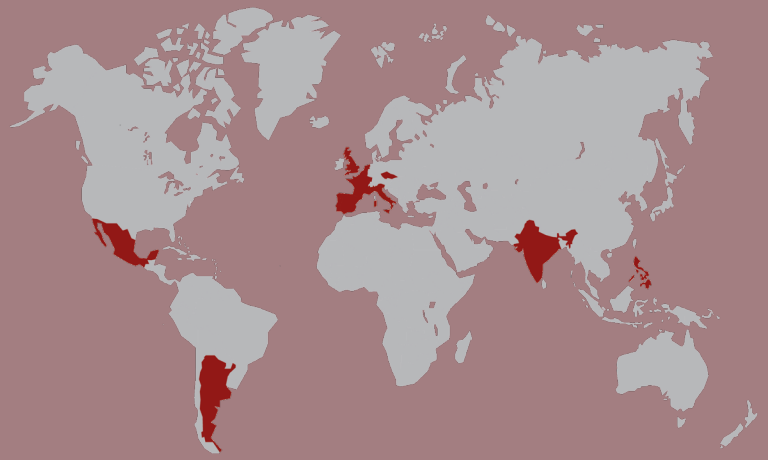
- Oracle JD Edwards Managed Services and Expertise provider
- Global company, headquartered in Bergen op Zoom, NL



18 YEARS
12 OFFICES
260 EMPLOYEES
20 NATIONALITIES
250+ GLOBAL CLIENTS

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New Tunnel project

- Engineering project: replacing the old tunnel
- The tunnel “stores” pallets with finished goods before being transported to the (separate) warehouse - 500 meters down the street
- Replacement was required due to:
  - **Old building** needed to be replaced
  - Shrink wrap installation needed replacement
  - **Safety** – fences around the physical systems/installations, no human interference.
  - Error reduction
- The fenced physical process required manual activity to be replaced by automated processes
- We decided to use JDE Orchestration(s) to enable this

Short movie shows the process

- Printing data matrix on boxes with carpet tiles
- Conveyor transport
- Palletizing
- Camera reading data matrix
- Shrink wrapping
- Printing pallet label
- Moving into tunnel
- Transporting to warehouse

- Movie (not embedded in this presentation)

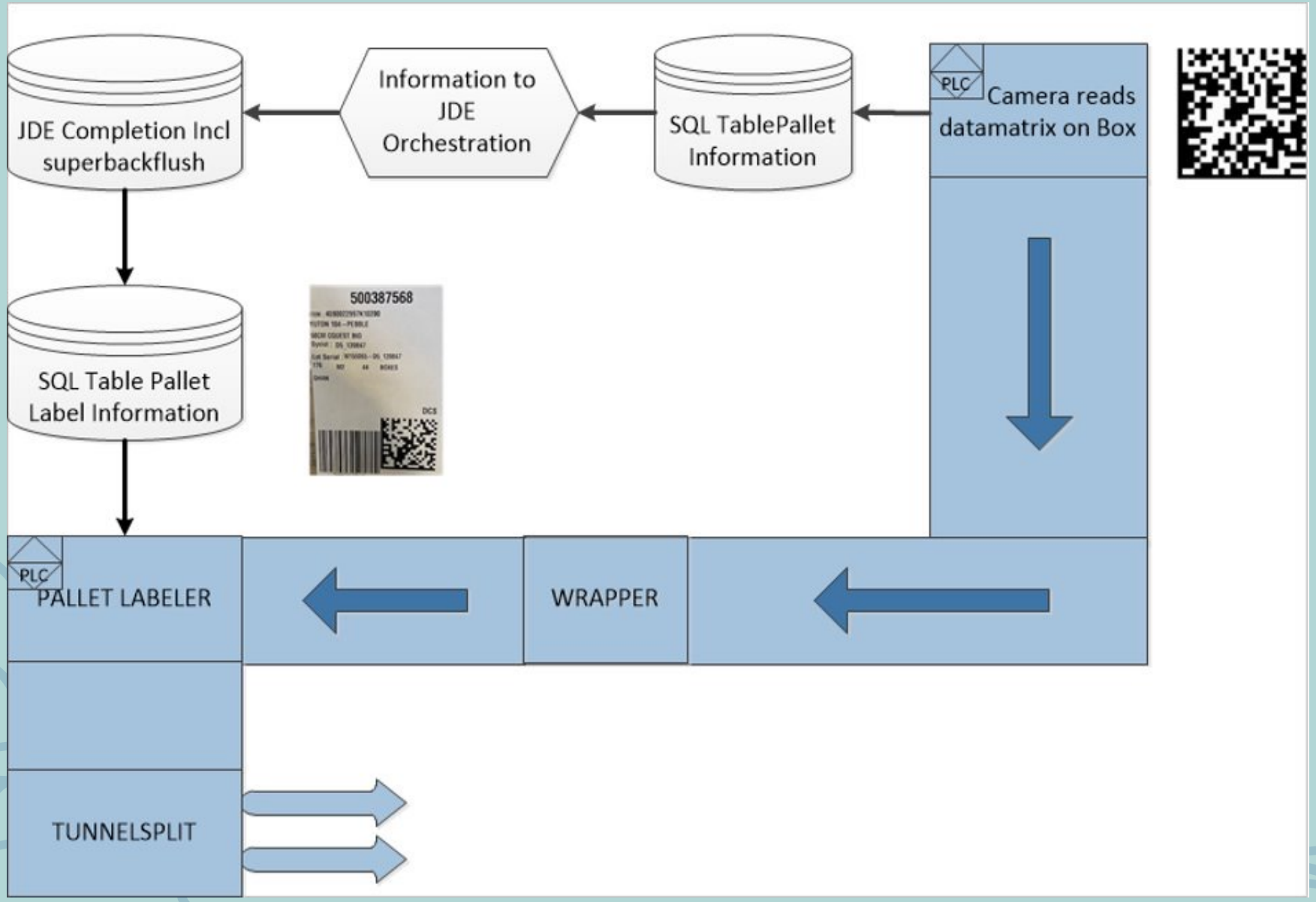
Old situation

- Dangerous – risk of entrapment or falling
- Physically hard work
- Not a good climate (in winter cold and in summer hot)
- Fault sensitive
- Steps (manual):
  - Verify box coding
  - Count boxes
  - Perform DSI transaction
  - Add label
  - Add coloured label for direction
  - Move pallet with crane to tunnel
  - Push pallet to end of tunnel

New situation

- Pallets are transported behind fences, limited chance of injury
- Extra check immediately after box coding step. When box coding is not readable, process stops
- Pallets are moving automatically, no manual power required
- Chance of faults are very limited
- Operators could be deployed more effective

Physical process + IT connected



Carpet tiles in boxes are getting their data matrix

- Boxcoding: Product information and product properties are printed on boxes. All this master data is stored in JDE and interfaced to label software
- A small customization is added to Shopfloor WB application where operators could press 'box coding' button when a new workorder is started. At that moment Information is sent via an interface to Nicelabel
- Label definition in Nicelabel software translates data to correct layout (including pictures)

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Example boxcoding and datamatrix

Datamatrix scanner

174445-3-5

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Camera reads data matrix

- Camera vision system is scanning each datamatrix and sends information to PLC.

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PLC transforms datamatrix into information

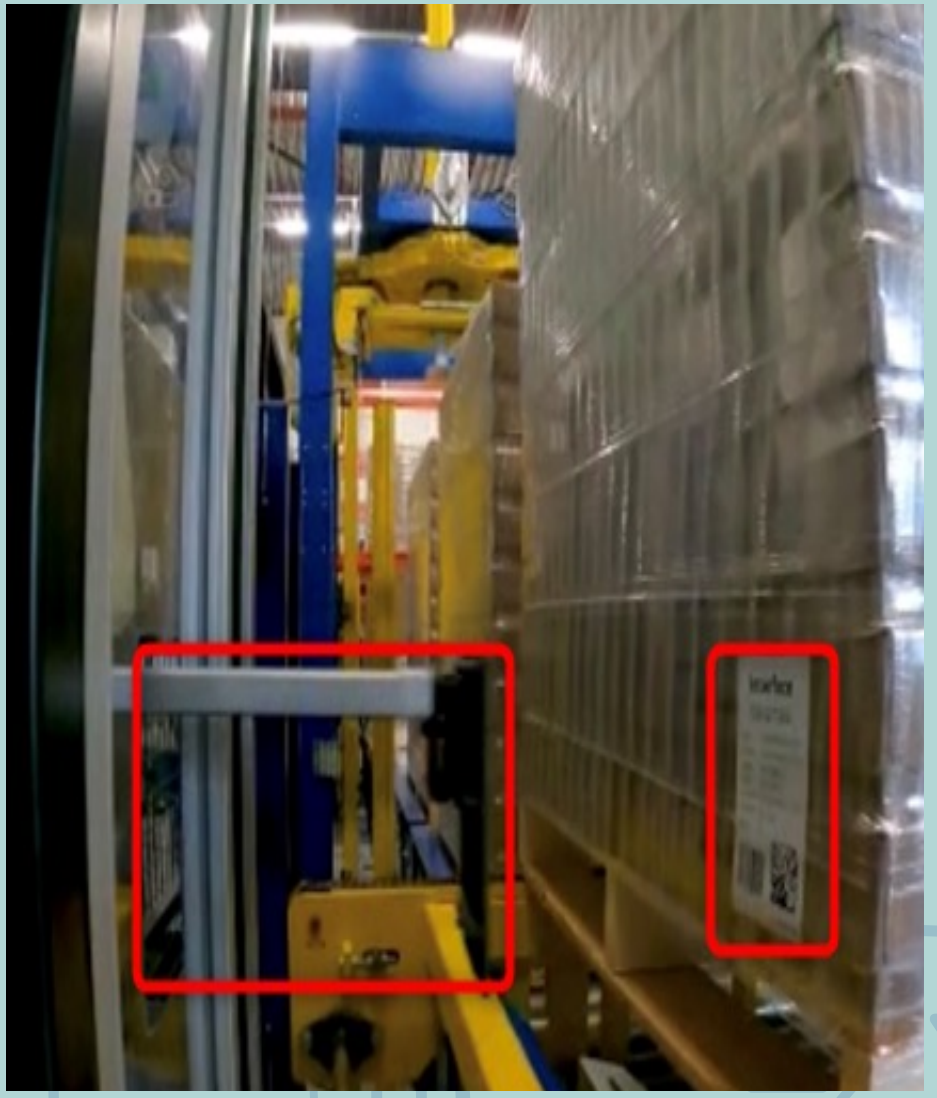
- Data of each box is written to PLC and checks at the background are performed to avoid different type of products on one pallet. If PLC detects an error, pallet gets error status and is moved to rework department
- When data is approved, PLC is consolidating data and sends data to SQL database
- After data is scanned and approved, pallet is moved via conveyer to foil wrapper

JDE Orchestration reads SQL database and triggers SBF completion transaction

- Orchestrator reads 'open' records in *Table Pallet Information* in SQL database (depends on status) and sends data to JDE
- JDE performs Completion transaction (P31123) automatically via JDE Orchestration (including superbackflush)
- When JDE has finished transactions, Orchestrator sends an update to SQL database to table *Pallet Label Information.* This table contains extra information for label printing (WO information, qty, destination, status update)

Printing pallet label

- PLC is checking SQL *Pallet Label Information table*
- When PLC finds information with correct status, data is sent to Labeler
- Labeler prints and puts label on the pallet
- Depending on destination (visible on label) pallets are transported to internal or external warehouse



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Moving pallet into Tunnel + transport to warehouse

- Completed pallets are pushed into the tunnel, awaiting the truck
- As soon as the electric truck arrives, the pallets are pushed automatically into the electric truck
- The truck transports the pallets to the finished goods warehouse 500 meters down the road

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Resulting in a fully automated pallet completion process

- A modern process at the end of our manufacturing process
- Which is robust and safe
- And which is also future proof

- The physical process is already in place for months
- The IT part is about to go live within the next 4 weeks

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The Orchestration Implementation

- Overall overview
- Completion Process
- Retry setup
- Error handling

Overall

- Built for reliability
- Outlier handling
- Manageable and transparent statuses
- Fall back capability

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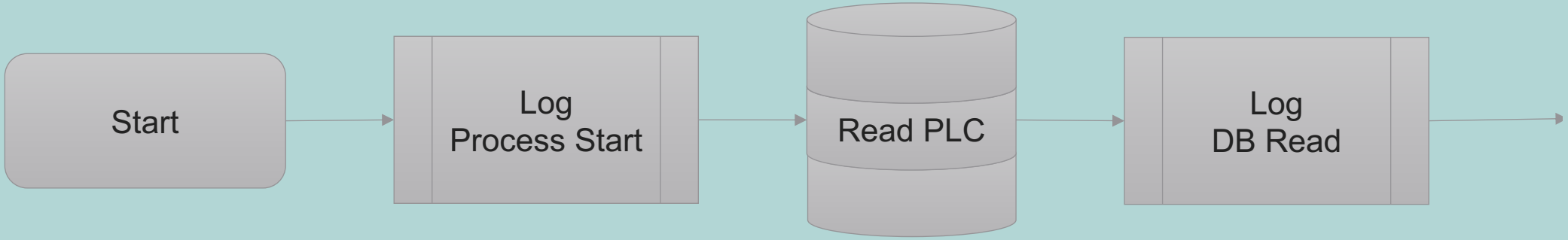
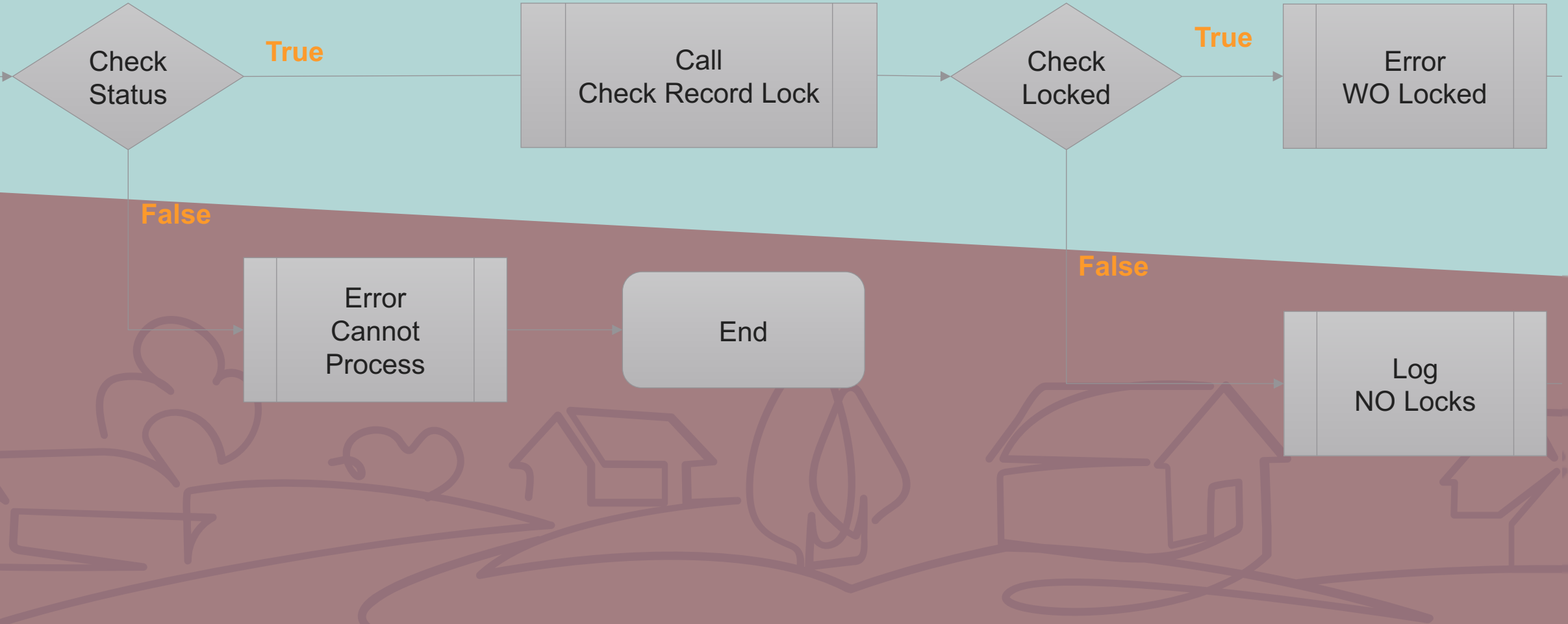
Overall



Overall



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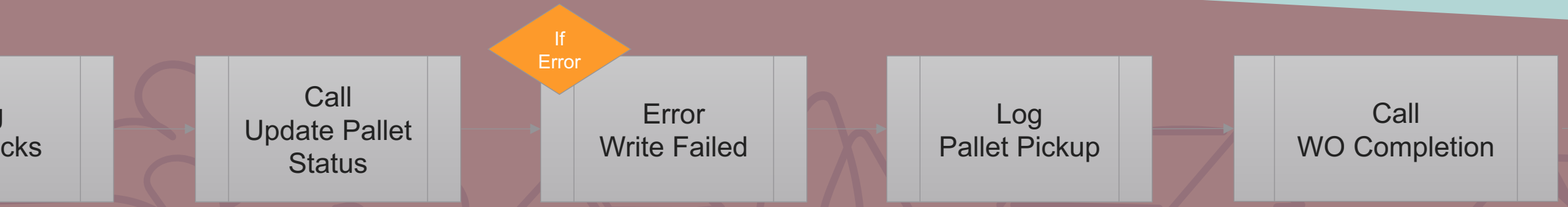

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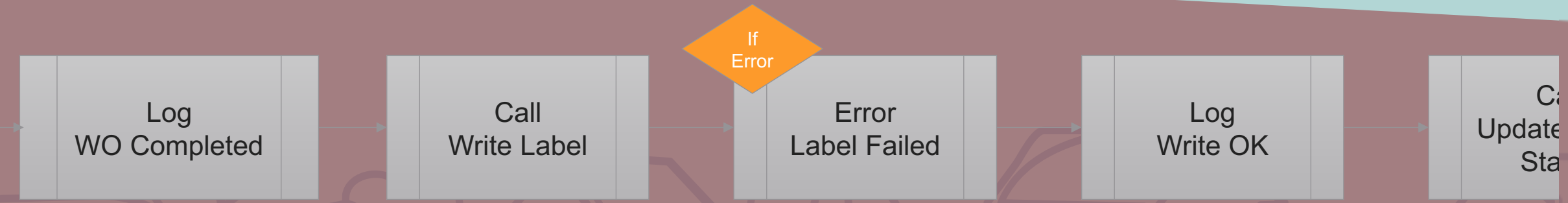

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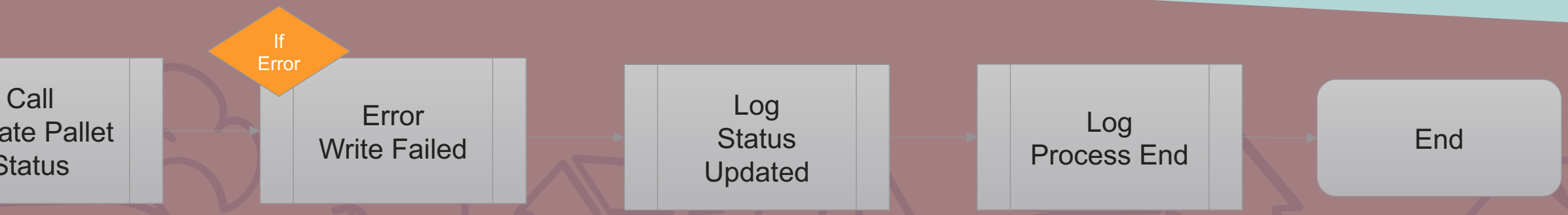
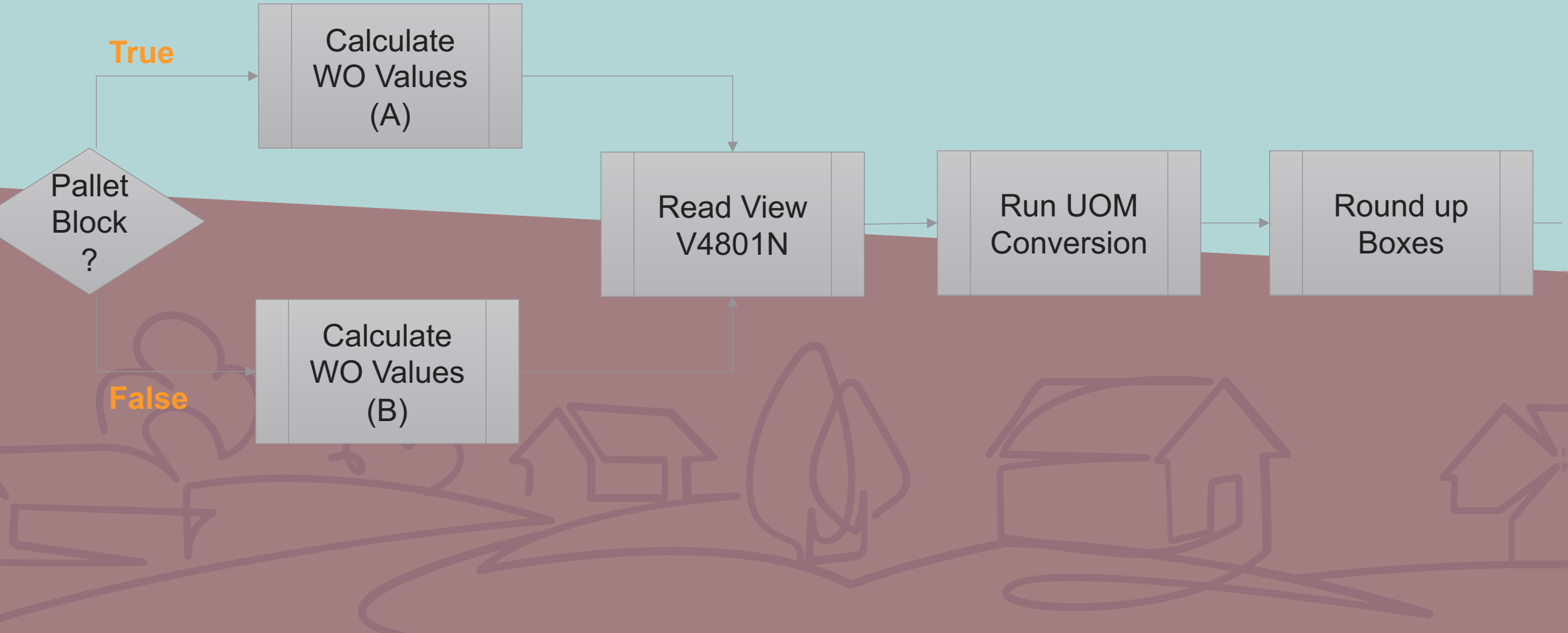


WO Completion

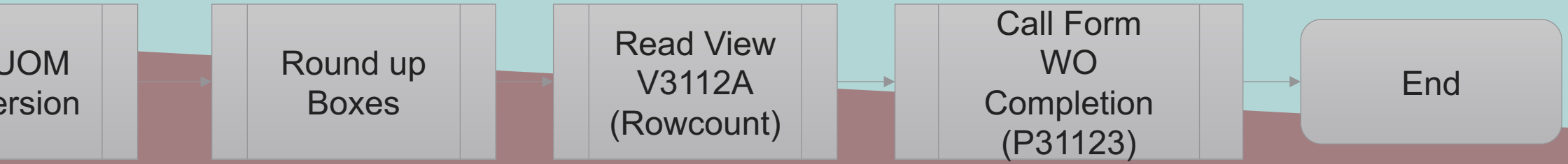
- Not just “partially” completing a WO
- Double checks “statuses”/requirements of pallets
- Serves as the data originator for printing

WO Completion

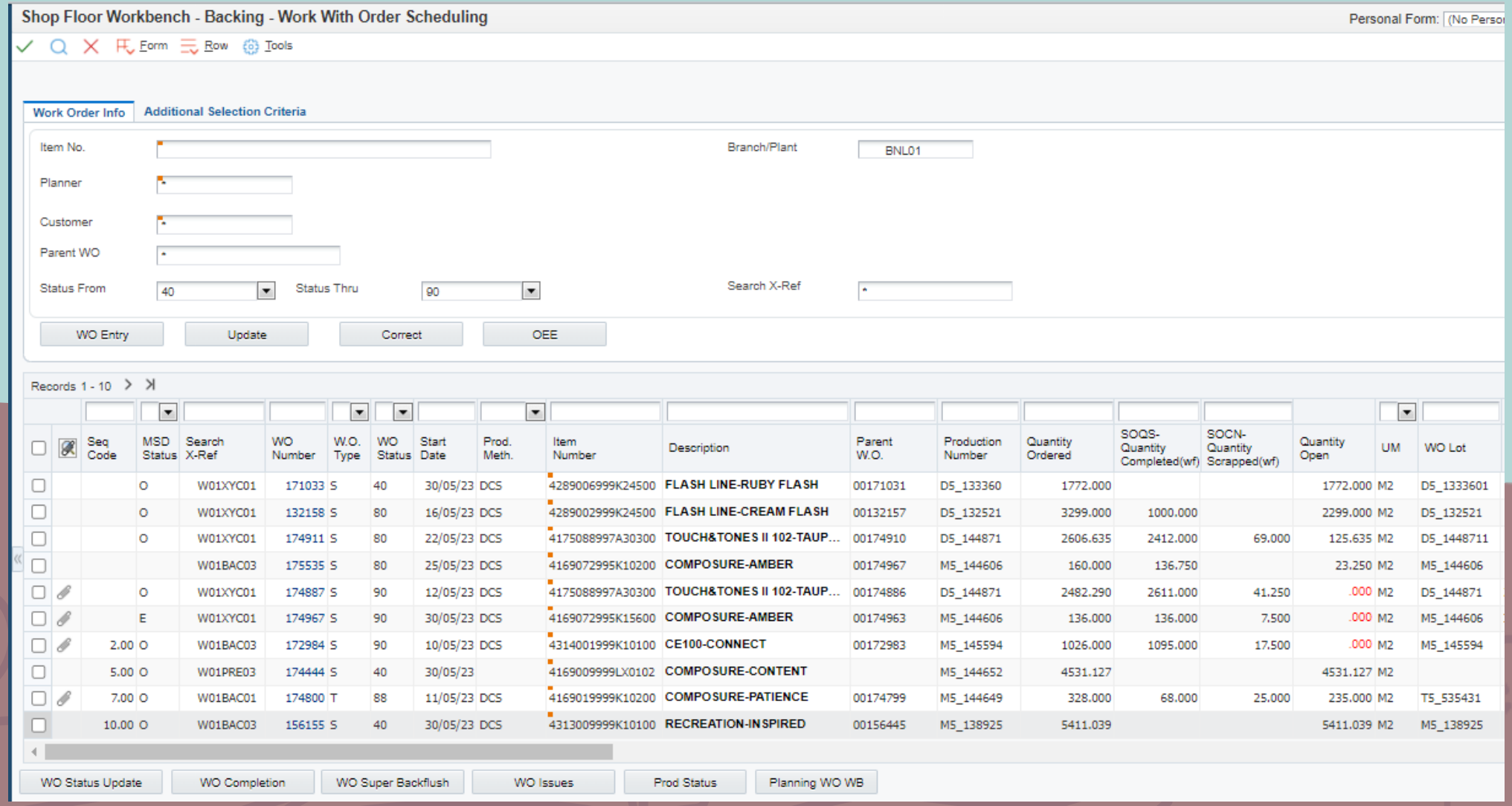
WO Completion



WO Completion



WO Completion



Seq Code	MSD Status	Search X-Ref	WO Number	W.O. Type	WO Status	Start Date	Prod. Meth.	Item Number	Description	Parent W.O.	Production Number	Quantity Ordered	SOQS-Quantity Completed(wf)	SOCN-Quantity Scrapped(wf)	Quantity Open	UM	WO Lot
	O	W01XYC01	171033	S	40	30/05/23	DCS	4289006999K24500	FLASH LINE-RUBY FLASH	00171031	D5_133360	1772.000			1772.000	M2	D5_1333601
	O	W01XYC01	132158	S	80	16/05/23	DCS	4289002999K24500	FLASH LINE-CREAM FLASH	00132157	D5_132521	3299.000	1000.000		2299.000	M2	D5_132521
	O	W01XYC01	174911	S	80	22/05/23	DCS	4175088997A30300	TOUCH&TONES II 102-TAUP...	00174910	D5_144871	2606.635	2412.000	69.000	125.635	M2	D5_1448711
		W01BAC03	175535	S	80	25/05/23	DCS	4169072995K10200	COMPOSURE-AMBER	00174967	M5_144606	160.000	136.750		23.250	M2	M5_144606
	O	W01XYC01	174887	S	90	12/05/23	DCS	4175088997A30300	TOUCH&TONES II 102-TAUP...	00174886	D5_144871	2482.290	2611.000	41.250	.000	M2	D5_144871
	E	W01XYC01	174967	S	90	30/05/23	DCS	4169072995K15600	COMPOSURE-AMBER	00174963	M5_144606	136.000	136.000	7.500	.000	M2	M5_144606
2.00	O	W01BAC03	172984	S	90	10/05/23	DCS	4314001999K10100	CE100-CONNECT	00172983	M5_145594	1026.000	1095.000	17.500	.000	M2	M5_145594
5.00	O	W01PRE03	174444	S	40	30/05/23		4169009999LX0102	COMPOSURE-CONTENT		M5_144652	4531.127			4531.127	M2	
7.00	O	W01BAC01	174800	T	88	11/05/23	DCS	4169019999K10200	COMPOSURE-PATIENCE	00174799	M5_144649	328.000	68.000	25.000	235.000	M2	T5_535431
10.00	O	W01BAC03	156155	S	40	30/05/23	DCS	4313009999K10100	RECREATION-INSPIRED	00156445	M5_138925	5411.039			5411.039	M2	M5_138925

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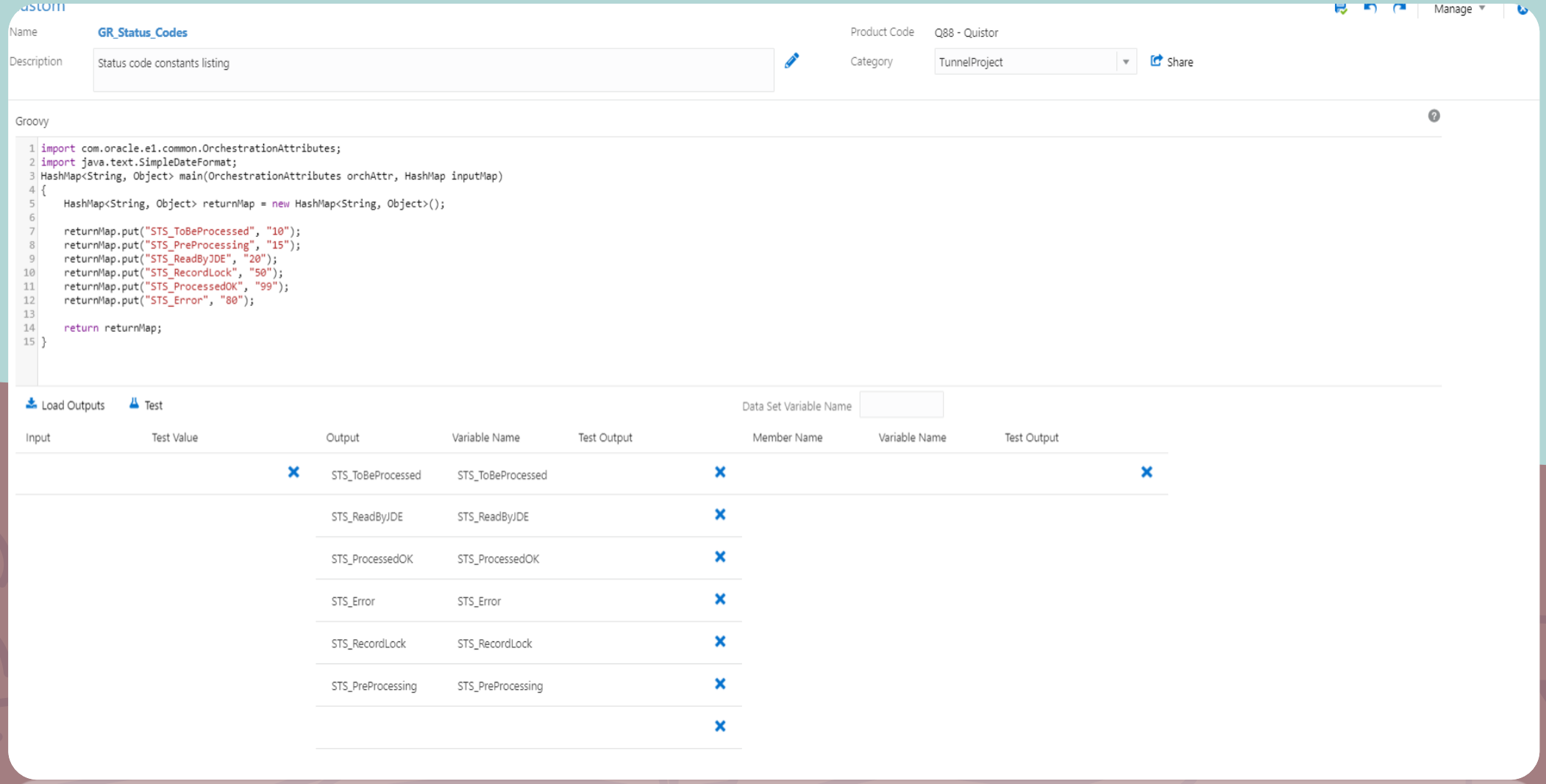
Retries



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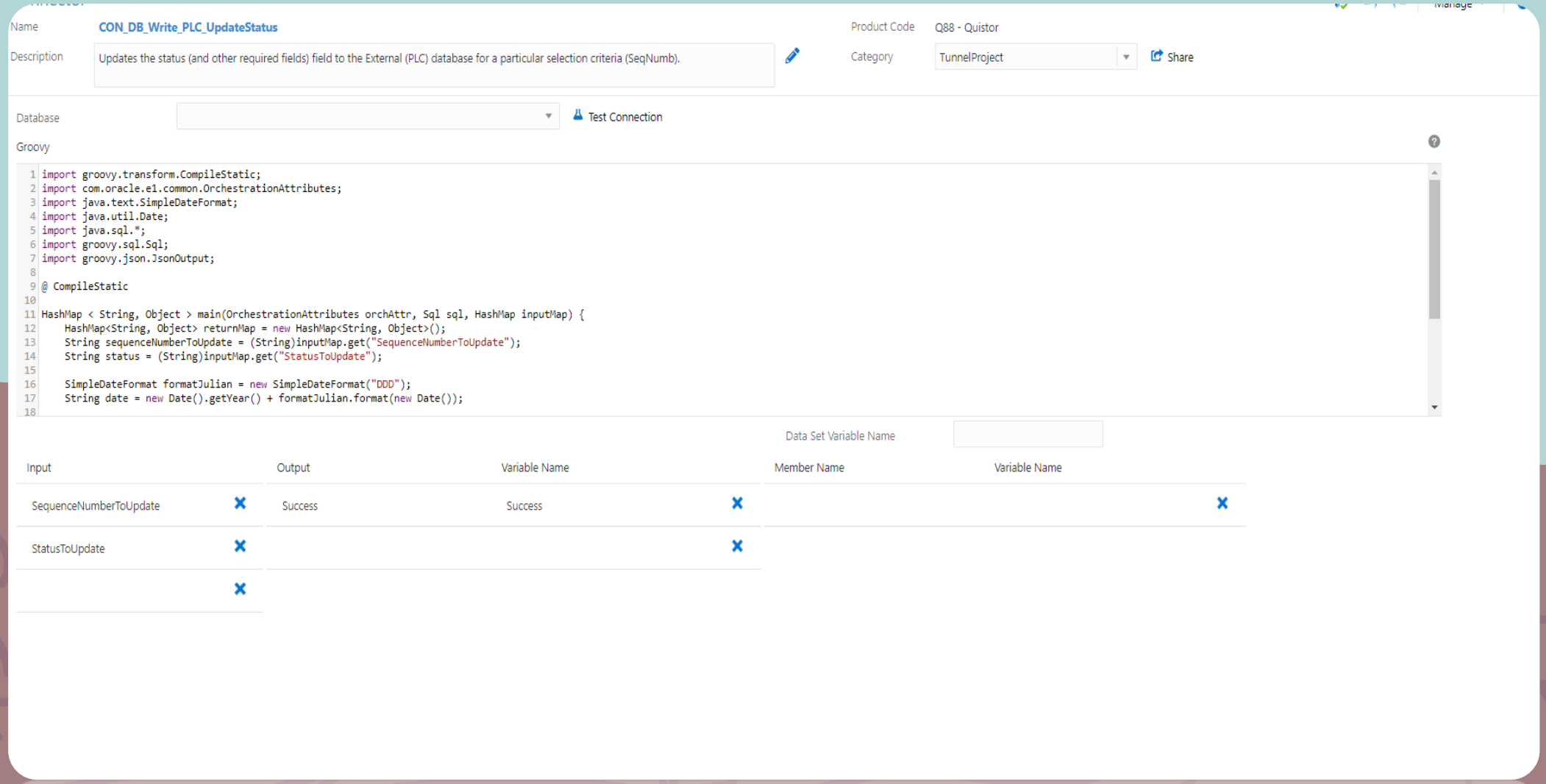
Retries



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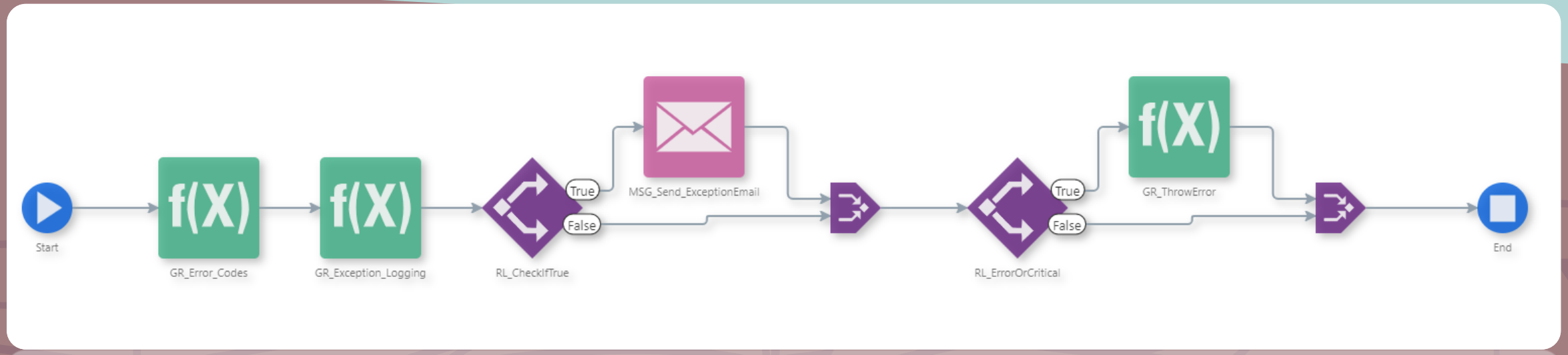
Error Handling



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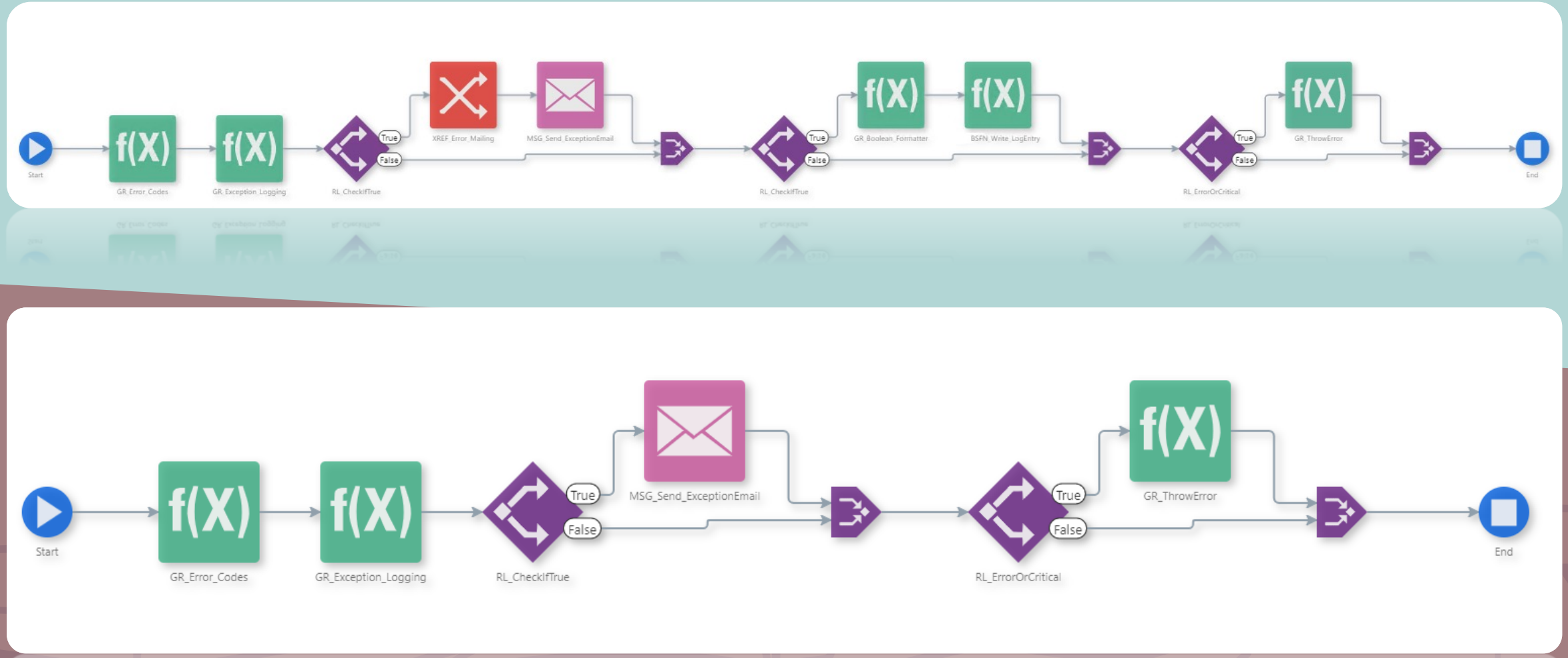

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