



PearlChain

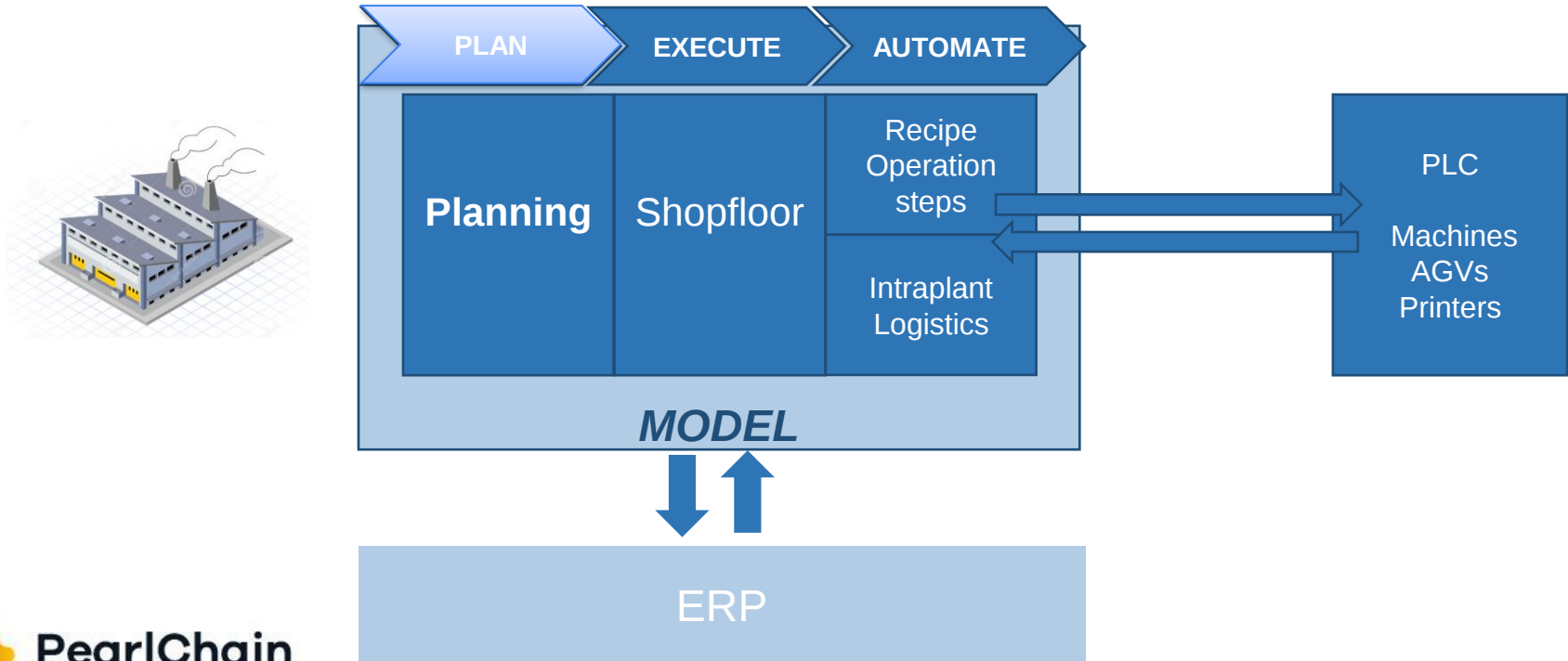
by adaptive

PearlChain Implementation ATLAS

A guide for your company's road map



PearlChain for Manufacturing



PLAN

EXECUTE

AUTOMATE

Purchase planning

Auto order proposal

Production Scheduling

Manual Plan

Simulation - Manual

Automatic order schedule

Automatic order proposal

Supply Chain Planning

Forecasting&ROP

Multiplant Planning

Inventory Control

WHM

Production Execution

Todolist – Track&Trace

RealTime Rescheduling

Document Printing

OEE registration

Carrier/WIP Mgmt

Staging

Quality Control

WH Automation

ASRS Control

Production Automation

Operation Control

PLC integration

Inline Printing

Logistics Automation

Conveyor Control

AGV/AMR Control

Supporting Technology

Shape-IT
Business Rules &
Model

Workflow&BPMN
engine

Embedded BI

Reporting Engine

Job Scheduling

Document Creation&
Distribution Engine

Master data

Products

BOM

Partner

Recipe

Design

ERP data

Sales

Purchase

Production

Stock

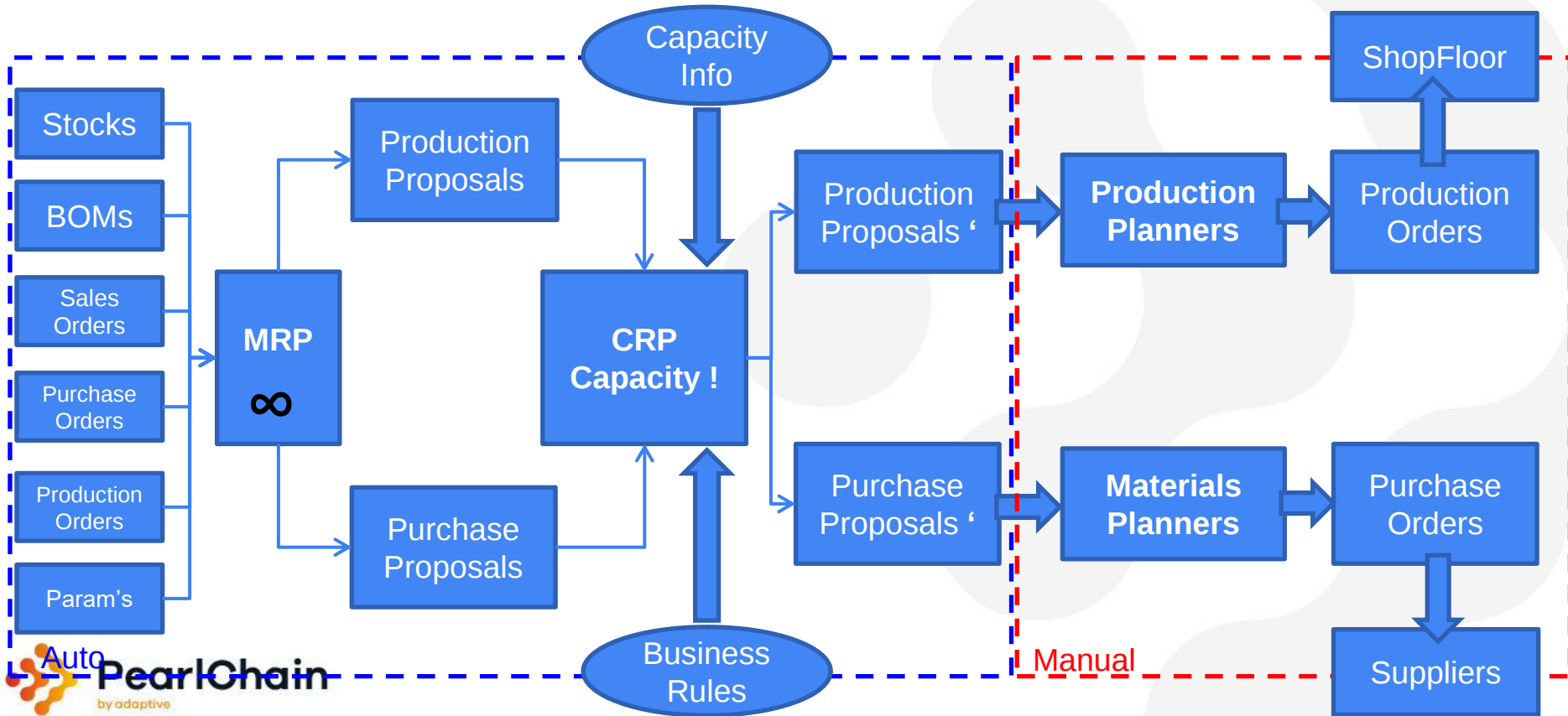
PearlChain Integration Middleware



ERP

Planning Cycle

[Back](#)



Manual plan

[Back](#)

Create production orders directly on 'Live view'

- Per line/machine
- Multiple BOM support
- Component list based on BOM
- Order duration based on order size, fixed and variable time
- Organize in batches
- Sequencing

Traceability X | Todo List Manual filing X | Todolist Continue Mixing X | Todolist Extern department X | Todolist Pumping X

Order no: [] Production order group no: [] Product No: []

Look forward: [8] Status: []

Water production Step: Set on hold | Unfinished | Machine stop | Remark | Reschedule | Set Earliest Start Date | Change batch | Switch carrier | Split batch | Update carrier sequence number | Reprint | Manual PO | Assign order | Assign batch

No	Resource	Batch No	Batch Type	Batch description	Status	Stop code	Resource setup	Setup status	Printed	Product	Description	Parent Product and Suffix	Parent Product Description	Product remark	Product remark2
L03	PB91742612	502081	POL B2 2K TOP MEMBRAAN 2016	Bury						130464	400ML WURTH 2K PURLOGIC FAST 2016				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						110560	400ML Sou 2K Zargen Retail B3				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						105005	400ML Soudeafam 2K (D)				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						154203	400ML PRECIT ZARGENSCHAUM B2				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						128059	400ML PRMA 2K SCHAUM				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						123162	400ML Spot 2K SCHAUM				
L03	PB918152313	502081	POL B2 2K TOP MEMBRAAN 2016	Released						105234	400ML Soudeafam 2K PoDu				

Reschedule production order

Find Clear

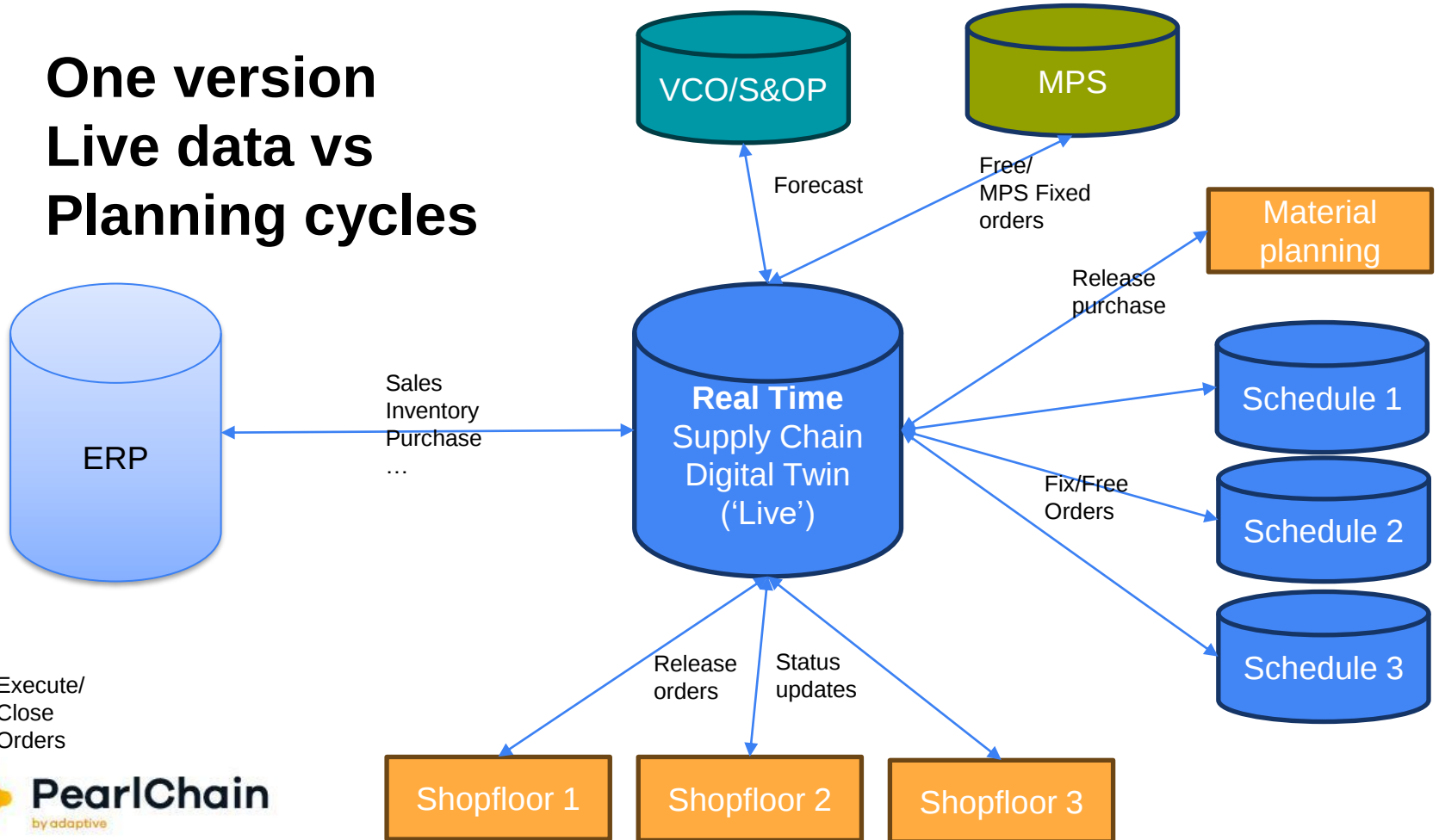
Department: AfulipierP2 Resource: L03

Production order no: 2190037350

Reschedule Move to top Move to front Move to back Insert

Min Earliest Start Date	Selected for move	Order No	Product No	Description	Batch type	Batch product description	Production batch	Status	Quantity planned	Unit of measurement	Start date	Latest end date	Manually rescheduled
		2190037350	130464	400ML WURTH 2K PURLOGIC FAST 2016	502081	POL B2 2K TOP MEMBRAAN 2016 PB91742612	Bury	Released	38.400	piece	2023/05/26 12:13 PM	2023/06/08	
		219184300	110560	400ML Sou 2K Zargen Retail B3	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	9.672	piece	2023/05/31 11:24 AM	2023/06/13		
		219119740	105005	400ML Soudeafam 2K (D)	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	27.456	piece	2023/05/31 07:05 PM	2023/06/28		
		219120440	154203	400ML PRECIT ZARGENSCHAUM B2	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	10.608	piece	2023/06/02 08:52 AM	2023/06/17		
		219120650	128059	400ML PRMA 2K SCHAUM	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	4.368	piece	2023/06/02 05:17 PM	2023/06/19		
		219120640	123162	400ML Spot 2K SCHAUM	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	2.496	piece	2023/06/05 08:45 AM	2023/06/19		
		219119460	105234	400ML Soudeafam 2K PoDu	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	3.120	piece	2023/06/05 10:44 AM	2023/06/28		
		219118230	128059	400ML FORMAT PLUS 2K SCHAUM B2	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	2.496	piece	2023/06/05 01:13 PM	2023/06/19		
		219119600	104802	400ML Soudeafam 2K Green 400ml	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	3.744	piece	2023/06/05 03:13 PM	2023/06/28		
		219120750	137477	400ML HQ 2K-ZARGENSch. 120228000	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	3.120	piece	2023/06/05 06:11 PM	2023/06/28		
		219120200	104902	400ML 2K PU-Schaum DIY 16fr	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	2.496	piece	2023/06/05 08:39 PM	2023/06/28		
		219120110	154482	400ML PRECIT ZARGENSCHAUM ATYRO	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.872	piece	2023/06/06 06:38 AM	2023/06/21		
		219120570	134193	400ML FORMEL PRO 2K MONTAGESCHAUM	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.872	piece	2023/06/06 08:07 AM	2023/06/21		
		219119710	122714	400ML Fundamo Zargenschaum 2K	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.248	piece	2023/06/06 09:37 AM	2023/06/21		
		219120680	153193	400ML RENOVO 2K ZARGENSCHAUM	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.872	piece	2023/06/06 10:36 AM	2023/06/21		
		219119730	110106	400ML Soudeaf 2K Zargenschaum Aut	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	4.368	piece	2023/06/06 12:05 PM	2023/06/25		
		219120500	146056	400ML Soudeafam 2K PUROBIO	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.248	piece	2023/06/06 03:34 PM	2023/06/20		
		219119660	194081	400ML Soudeafam 2K ENDE	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	1.248	piece	2023/06/06 04:34 PM	2023/06/28		
		219119410	110206	400ML Soudeafam 2K X-TRA Green 400ml	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	624	piece	2023/06/06 05:33 PM	2023/06/08		
		219119910	106125	400ML Finon 2K-Schaum	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	624	piece	2023/06/06 06:03 PM	2023/06/07		
		219120290	128025	400ML WURTH FR PURLOGIC FAST 089214	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	528	piece	2023/06/06 06:32 PM	2023/06/02		
		219119750	127026	400ML BTN 2K SCHAUM	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	2.376	piece	2023/06/06 06:58 PM	2023/06/15		
		219120810	134035	400ML 2K-MONTAGESCHAUM PROMAT CHEM.	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	872	piece	2023/06/06 05:51 PM	2023/06/19		
		219119510	148148	400ML W-OK BYGGEKUIJ FAST	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	528	piece	2023/06/06 09:23 PM	2023/06/13		
		219120590	148975	400ML BERNER 372515 2K SCHAUM B2 DE	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	2.340	piece	2023/06/06 09:48 PM	2023/06/15		
		219120110	195679	400ML Sou 2K TurbB2	502081	POL B2 2K TOP MEMBRAAN 2016 PB918152313	Released	45.860	piece	2023/06/07 07:39 AM	2023/06/09		
		219155490	147101	500ML BERNER 404813 LOW MDI BLV FRESIP	502342	POL-PU B3 Low MDI foam 2011 PB97937561	Released	624	piece	2023/06/09 07:53 AM	2023/06/01		
		219155480	122002	500ML Soudeaf Mousse Expansive PU	502342	POL-PU B3 Low MDI foam 2011 PB97937561	Released	2.520	piece	2023/06/09 08:22 AM	2023/06/01		
		219155480	155313	500ML MR.BRCOL MOUSSE EXPANSIVE	502342	POL-PU B3 Low MDI foam 2011 PB97937561	Released	3.900	piece	2023/06/09 10:22 AM	2023/06/02		

One version Live data vs Planning cycles



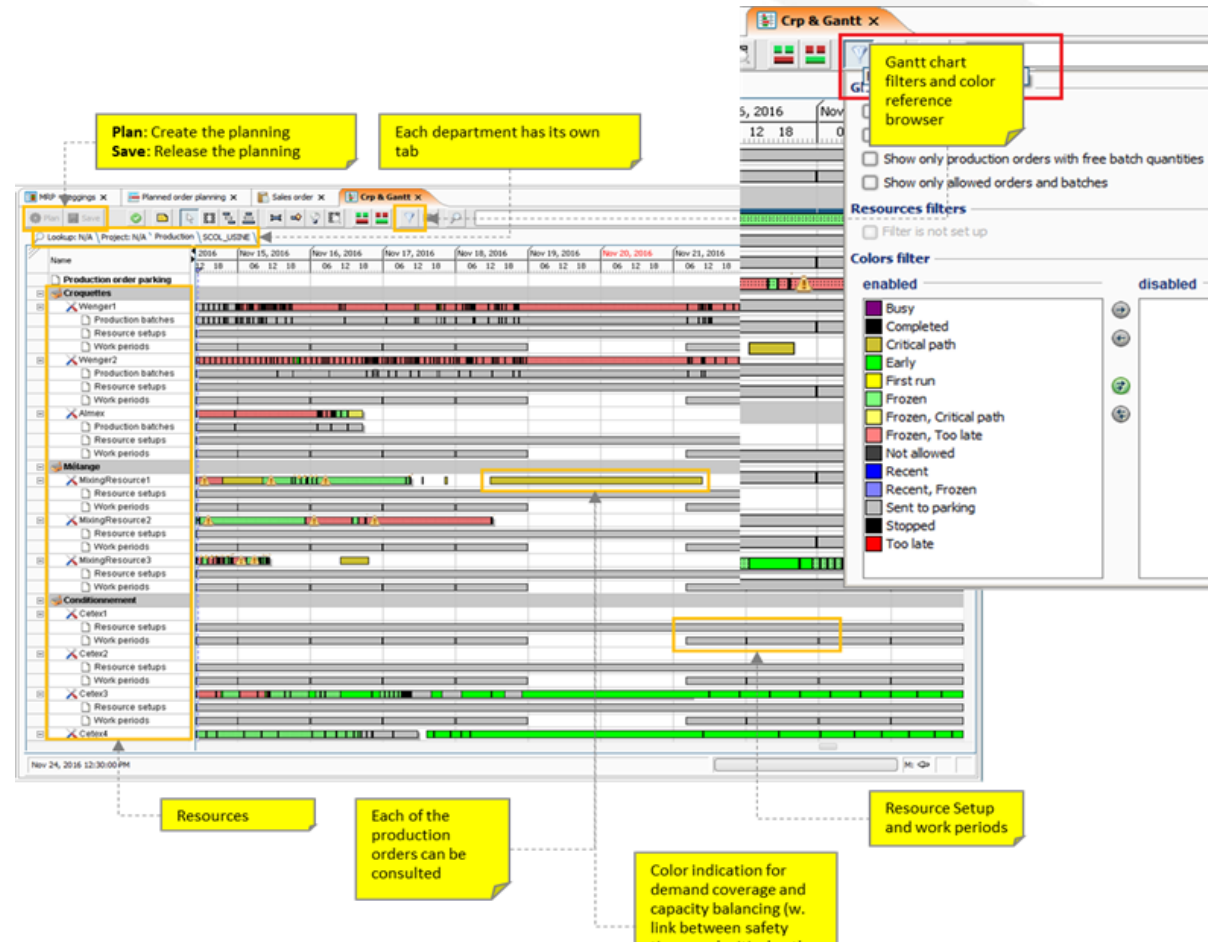
Simulation – manual planning

Handy GANTT chart, but also additional UIs such as planning overview.

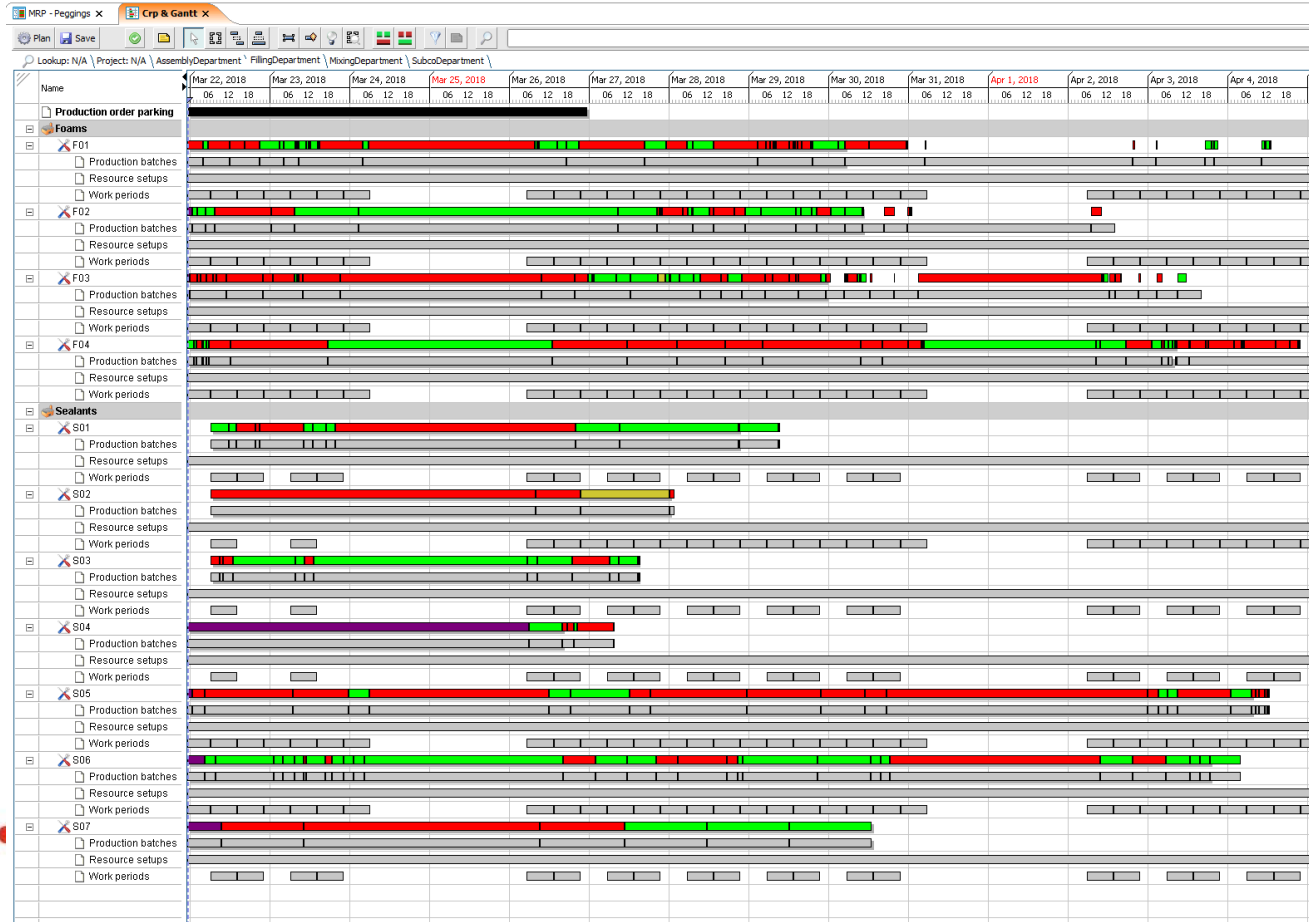
Create production proposals in simulation:
Validate planning scenario's in a safe, yet connected environment

Multilevel BOM explosion :
automatic creation of dependent production/purchase proposals

Multiple BOM support :
support for alternative production routings



Simulation – manual planning



Redistribute orders on available resources

Manual batch configuration

- Order size
- Batch composition

Manual order creation

Resequencing

Order freeze/fixing vs automatic recalculation (frozen/slushy/free horizon)

Scheduling – Stock projection

Make decisions using the inventory plan in simulation

For example:

- prevent shelflife expiration
- reduce stock levels when forecast show delays in demand
- avoid stock break in case of increased/unexpected sales volumes

Always end-to-end visibility

Scenario's to evaluate planning solutions

Stock with planned consumption after THT									
Stock projection x Stock history for a product x Inventory x Multiple stock Projection x Find Clear Company CoffeeRoots Product no AK00011151 UOM Valve Pack Available Stock 6,500 Blocked Stock 0									
Product	Description	THT	First Planned Consumption						
CM25190002	Capsule Boni Latte Machiato Mix 16.5g	31/03/2023	25/05/2023						
FA00010203	Chocolate hazelnut Cacao powder flavour (ref 0058...	01/04/2023	22/05/2023						
FA00010209	Raspberry powder flavour (1806190)	01/08/2022	22/05/2023						
FA00010210	Cream powder flavour (0058651)	01/02/2023	22/05/2023						
FT00010101	Lemon flavour on fibers (P0608340)	27/04/2023	22/05/2023						
FT00010103	Forest fruit flavour on fibers (P0615581)	27/01/2023	22/05/2023						
FT00010108	Rose granules (P0613809)	20/10/2022	22/05/2023						
FT00010109	Jasmin granules (P0615307)	27/04/2023	22/05/2023						
FT00011100	bergamot flavour liquid	06/04/2023	22/05/2023						
FT00011101	Lemon flavour liquid	30/04/2023	22/05/2023						
FT00011108	Rose flavour liquid #2702	30/04/2023	22/05/2023						
FT00011109	Jasmine flavour liquid #2703	30/04/2023	22/05/2023						
MI23970022	Mocha RFA Mix	31/08/2022	23/05/2023						
NC25020023	Nespresso ECO Bio Ethiopia 350 pcs "BE-BIO-02" ZI	30/09/2022	24/05/2023						
ZT00010105	gezeefde geflavourde thee peach	28/02/2023	31/05/2023						
ZT00010106	gezeefde geflavourde thee forest fruit	31/01/2023	22/05/2023						
ZT00010106	gezeefde geflavourde thee forest fruit	28/02/2023	22/05/2023						
ZT00010400	gezeefde geflavourde thee CTC Groen Lemon	28/02/2023	27/05/2023						
ZT00011105	gezeefde geflavourde thee lemon (zwarte thee)	28/02/2023	23/05/2023						
16-06-23 02:00	Afgewerkte koffie	AK00011151	Turk Ka...	Turk Kahvesi250g(rode barkode)	Sales order line	SO-2020006308	Default	Tadal SA	-10,000
30-06-23 02:00	Afgewerkte koffie	AK00011151	Turk Ka...	Turk Kahvesi250g(rode barkode)	Sales order line	SO-2020006309	Default	Tadal SA	-10,000

Visibility in supply chain

End-to-end visibility for external supply to shipment

Infinite amount of levels

Forward/Backward view

Supported in

- Live view (execution status)
- Simulation (incl planning scenario's)

Supports:

- Purchases/receipts
- Production consumption/Delivery
- Shipment
- Safety/Reorderpoint
- Forecast

Production order info

Production order details Movement details Peggings

Backward Forward

POM6899742 2 (24.00 of RK00012801 - Rwanda Arabica (Vervanging Burundi) in CoffeeRoots)

SE-0351222 (24.00 of RK00012801 - Rwanda Arabica (Vervanging Burundi) in CoffeeRoots)

POM6899742 5 (48.00 of RK00011404 - Indian robusta cherry AB in CoffeeRoots)

SE-0351357 (48.00 of RK00011404 - Indian robusta cherry AB in CoffeeRoots)

POM6899742 4 (60.00 of RK00010500 - Costa Rica Tarrazu in CoffeeRoots)

SE-0351206 (60.00 of RK00010500 - Costa Rica Tarrazu in CoffeeRoots)

POM6899742 3 (24.00 of RK00011515 - Bali Arabica in CoffeeRoots)

SE-0350271 (24.00 of RK00011515 - Bali Arabica in CoffeeRoots)

POM6899742 1 (84.00 of RK00010205 - Santos Goodcup sc17/18 (KW2) in CoffeeRoots)

Stock projection

Product GB-000211 Subtype

Description GB of Ruwe IL Presto Vascobelo met Robusta Plant CoffeeRo

UOM Kilogram Total demand Prod/purch. 1,200

Current theor. stock 0 Current stock 0 Result quantity 0

Partner no	Status	Source	Date	Quantity	Acc quantity
	Released	POM6899747 1	2023/05/26 11:39 AM ...	200	200
	Released	POM6899744 4	2023/05/26 11:54 AM ...	200	400
	Released	POM6899742 6	2023/05/26 12:09 PM ...	200	600
	Released	POM6899746 2	2023/05/26 12:24 PM ...	200	800
	Released	POM6899745 3	2023/05/26 12:39 PM ...	200	1,000
	Released	POM6899743 1	2023/05/26 12:54 PM ...	200	1,200
	Released	POM6898328 6	2023/05/31 01:06 PM ...	-600	600
	Released	POM6898328 4	2023/05/31 02:13 PM ...	-600	0

Production order info

Production order details Movement details Peggings

Backward Forward

POM6899742 6 (200.00 of GB-000211 - GB of Ruwe IL Presto Vascobelo met Robusta in CoffeeRoots)

POM6898328 6 (200.00 of GB-000211 - GB of Ruwe IL Presto Vascobelo met Robusta in CoffeeRoots)

SO-2020006059-001 (1200.00 of AK00893006 - Vascobelo Le COMTE 1000g BN (barco

Stock projection

Product GB-000211 Subtype

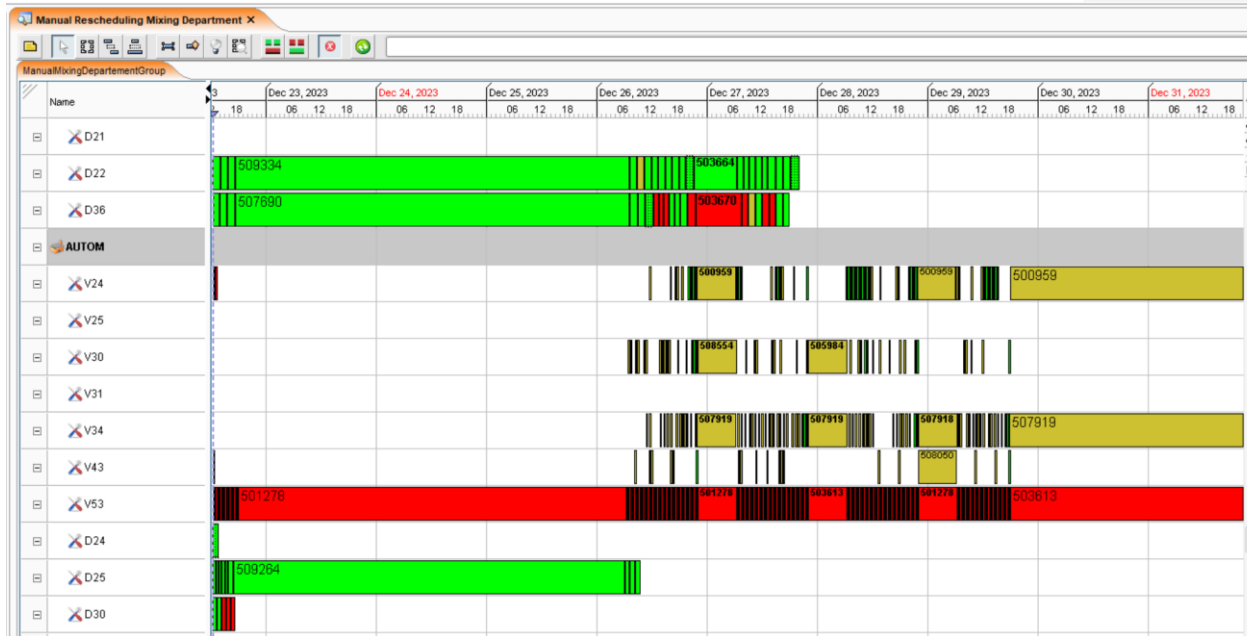
Description GB of Ruwe IL Presto Vascobelo met Robusta Plant Coffee

UOM Kilogram Total demand Prod/purch. 1,200

Current theor. stock 0 Current stock 0 Result quantity 0

Partner no	Status	Source	Date	Quantity	Acc quantity
	Released	POM6899747 1	2023/05/26 11:39 AM ...	200	200
	Released	POM6899744 4	2023/05/26 11:54 AM ...	200	400
	Released	POM6899742 6	2023/05/26 12:09 PM ...	200	600
	Released	POM6899746 2	2023/05/26 12:24 PM ...	200	800
	Released	POM6899745 3	2023/05/26 12:39 PM ...	200	1,000
	Released	POM6899743 1	2023/05/26 12:54 PM ...	200	1,200
	Released	POM6898328 6	2023/05/31 01:06 PM ...	-600	600
	Released	POM6898328 4	2023/05/31 02:13 PM ...	-600	0

Short term conversion from theoretical to practical plan



Planning on virtual resources in simulation

- Maintains the end-to-end supply chain

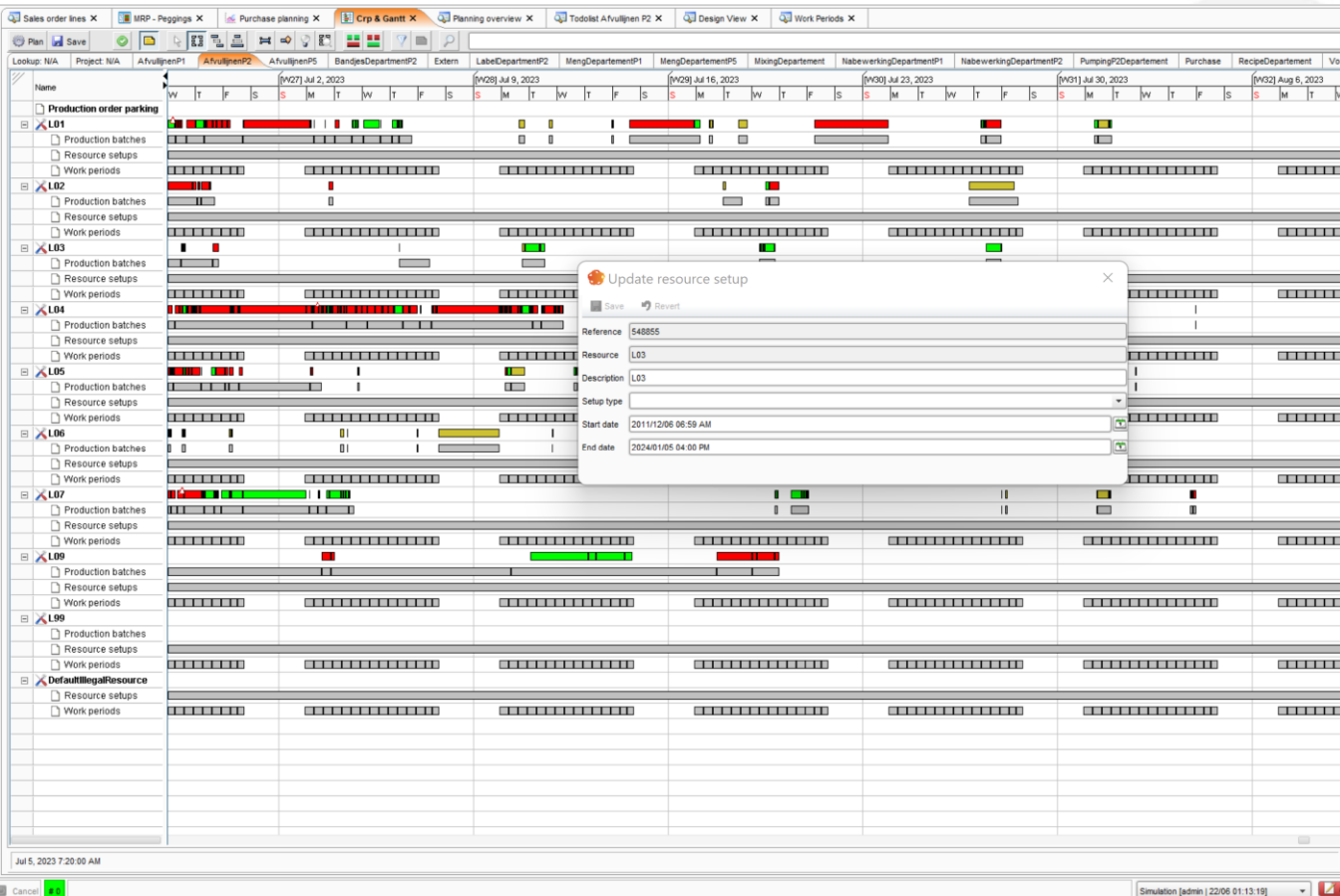
Drag&Drop to real resource on the floor, allowing to take last-minute context changes into account

Eg

- Silo availability
- Maintenance/cleaning activities
- Operator availability

Directly integrated with operator dashboard and scheduling GANTT.

Automatic Order Schedule



Plan with

Capability matching:
Take physical/setup constraints of machines into account when assigning machines

Sequence orders based on latest end, taking priorities into account:

- customer
- product
- service level

Work periods and resource setups (impacting capabilities)

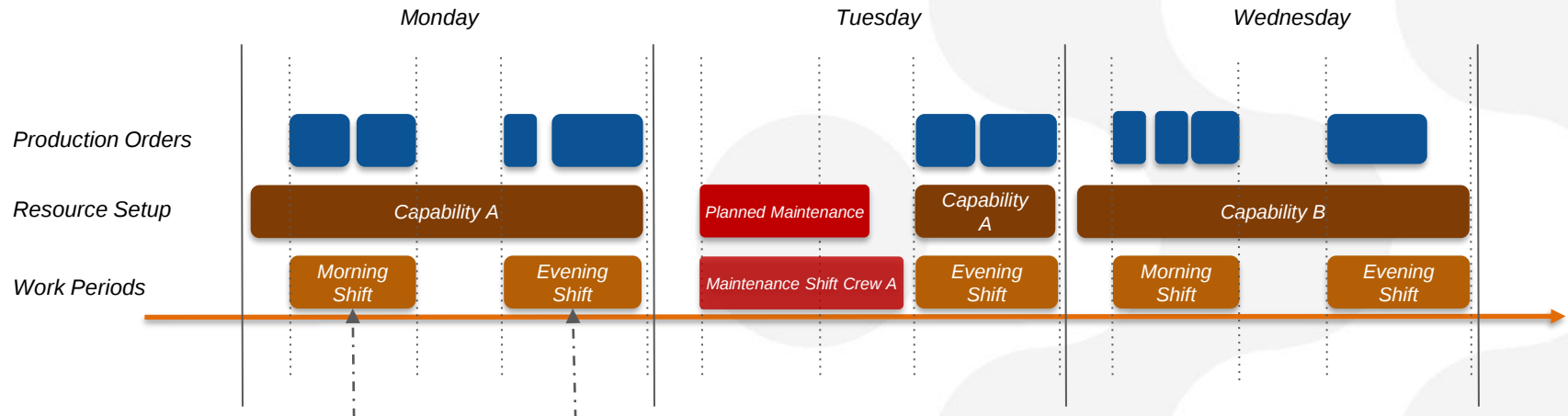
Material availability

Time constraints for quality control, logistical activities, etc

Scheduling: capability matching

Product BOMs require Capabilities ↔ Resources, given their setup provide capabilities
Capability matching balances the load of the orders accross resources with matching capabilities

Resource A



Calendar Elements screen

Save Revert

Entry type: Single Group type: [dropdown]

From: 2019/09/01 To: 2020/09/30

Start hour: 6 minutes End hour: 14 minutes

Type of day/shift: Morning shift

Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☒ Saturday ☐ Sunday ☐

Calendar Elements screen

Save Revert

Entry type: Single Group type: [dropdown]

From: 2019/09/01 To: 2020/09/30

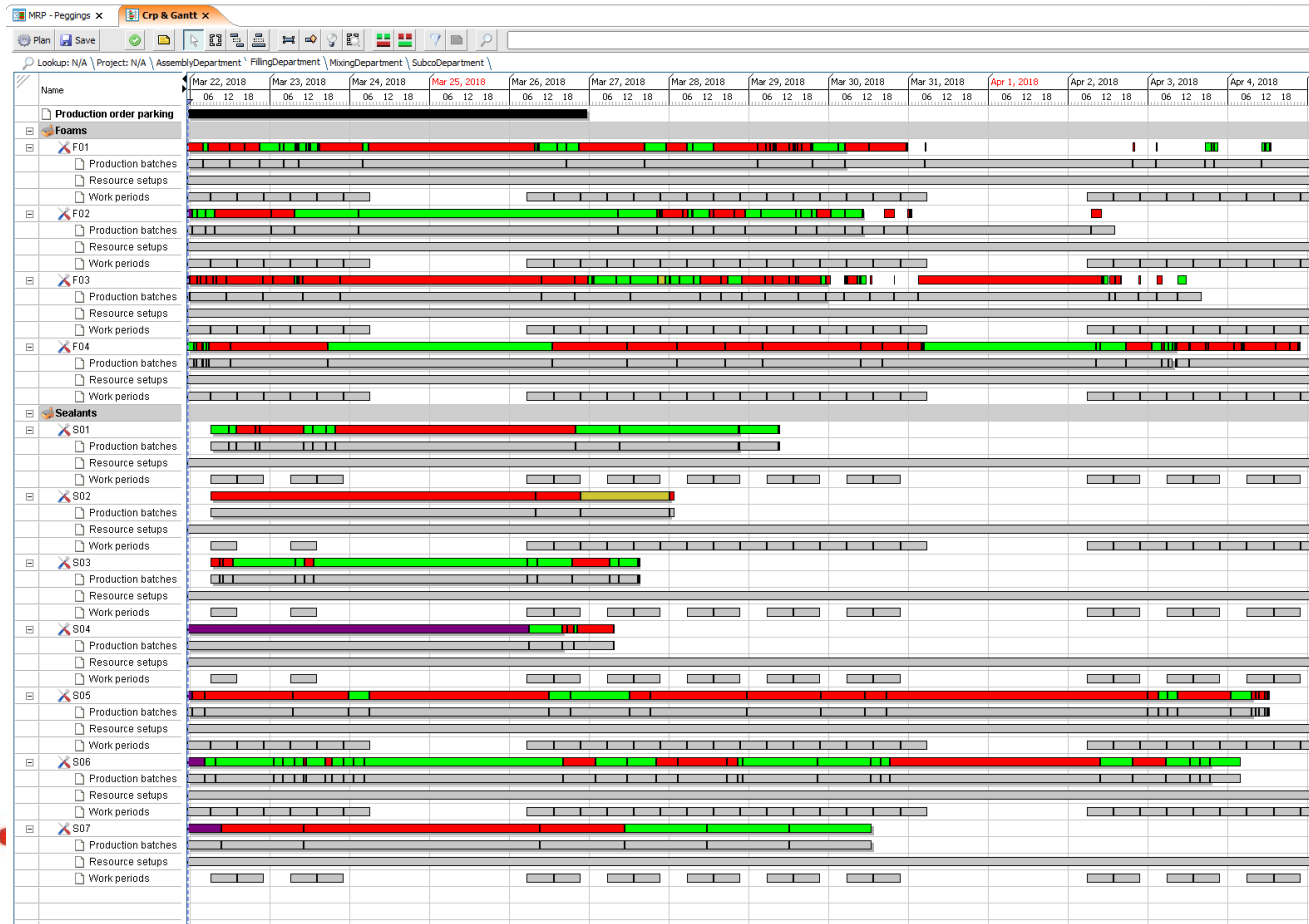
Start hour: 15 minutes End hour: 23 minutes

Type of day/shift: Evening shift

Monday ☒ Tuesday ☒ Wednesday ☒ Thursday ☒ Friday ☒ Saturday ☐ Sunday ☐

Work periods and resource setups are created by applying calendars

Order duration



Realistic order time prediction using

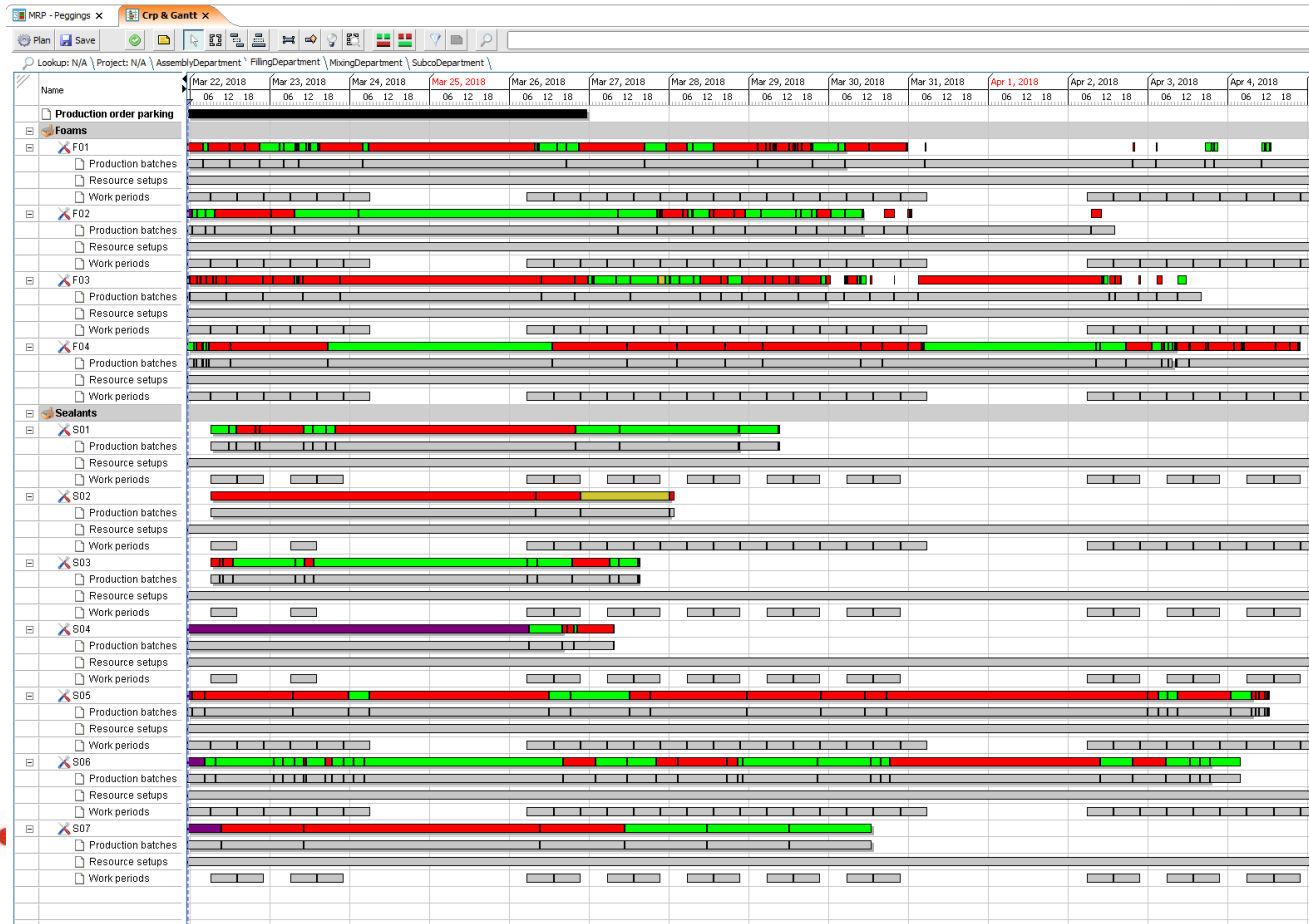
- Fixed time per order
- Variable time per piece

Variable per resource or even resource setup (time based)

Automatically recalculated when quantities are updated

Fixed/variable time can be derived from product/family attributes.

Sequencing/Sorting



Lean planning principle:
Plan late with
safety/handling times taken
into account

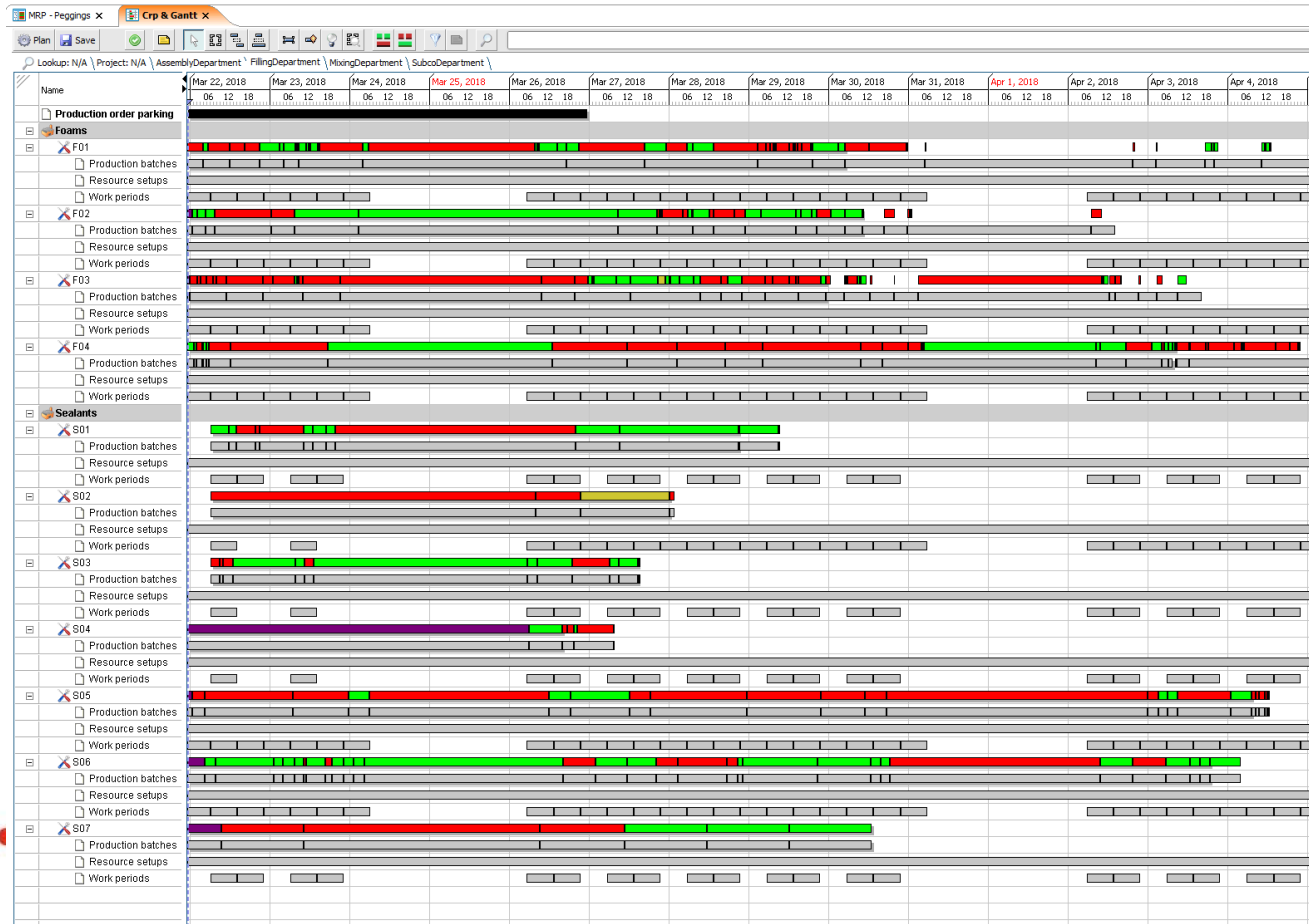
Sequence to optimize line
efficiency

Changeovers from/to next
order automatically
calculated

Sequencing

- of individual orders
- of batches/groups of
orders
- within batches

Grouping/Batching



2 batching types to group orders

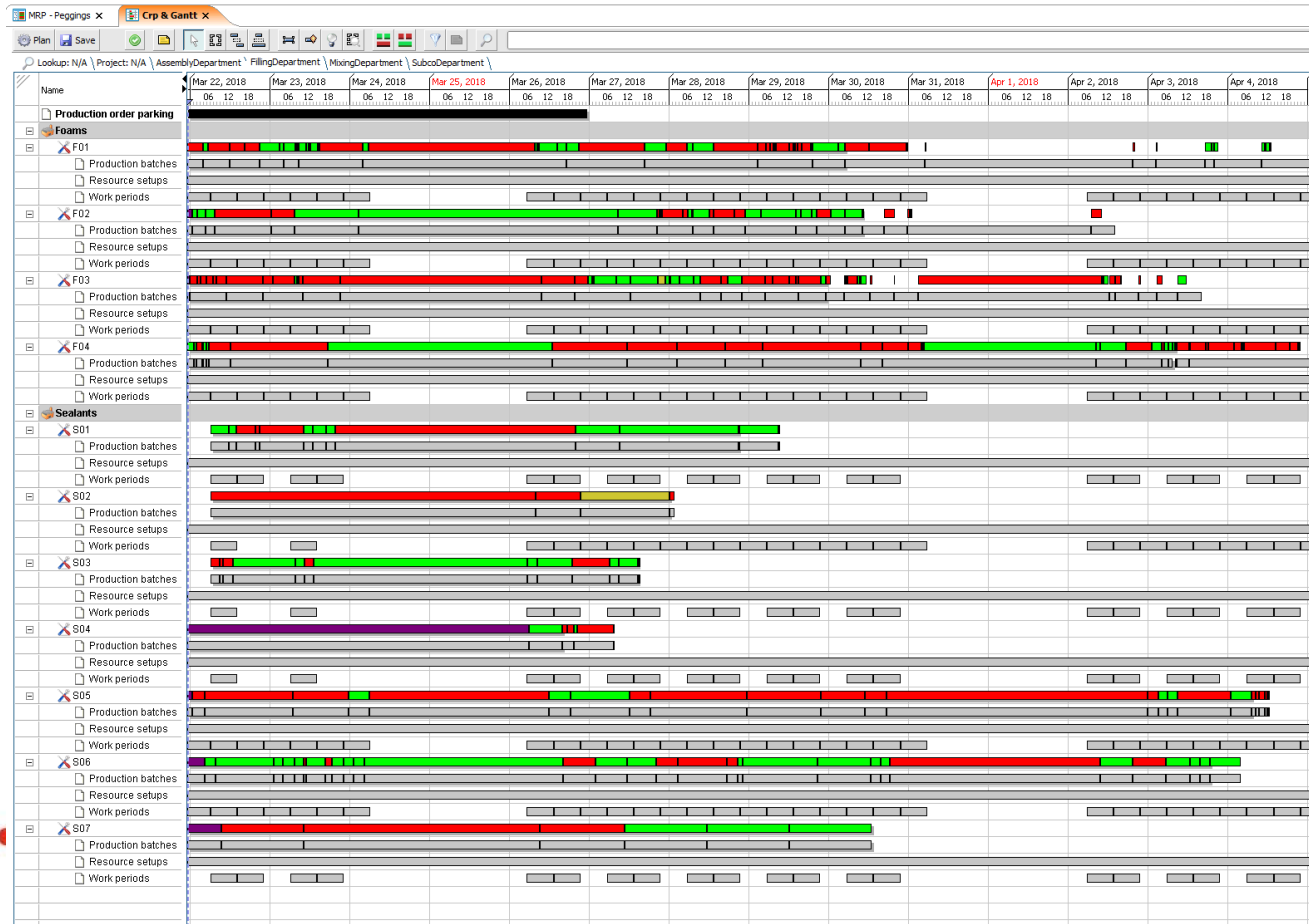
- Property batch : grouping products with same value for property (eg color)
- Product batch: grouping by consumed product in BOM (semifinished formula or raw material)

Automatic batch optimization

- Configurable Horizon
- Friend finder
- Sales order netting config

Manual review/updates possible

Automatic Order Proposal



MRP Taking realtime updated situation into account:

- inventory
- pending receipts
- customer orders
- progress of release production plan (finished/semifinished)
- work of subcontractors

Makes a realistic set of proposals for productions, taking into account:

- Batching of orders
- Optimal order sizes (avoid waste)
- Produce late (lean), with buffer times/safety taken into account

Purchase planning

Purchase planning X

Find Clear

Status: Purchase Order No: Order Line No: Planner:

Supplier: Product: Action: Action Due date:

Description: Processed: Product group: Product Status:

Purchaser: Remark: Plants:

Update purchaser actions Release (planner) Release (selected) Free Fix Freeze New Update Toggle Processed Cancel Remark View Material Projection

Plant	Remark	Order line number	Status	Action	Stock Break	Action due date	Action first need	Days too early/late	Processed	Product	Description	Product remark	Product status
1000		45007293400000800001	Released	Too Early	Yes		01/01/9999	99,999	☐	155598	400ML COLOR SPRAY PROTECTIVE PRIMER GREY		13
1000		45007700360000900001	Released	Too Early	No		01/01/9999	99,999	☐	155907	Soudabond PRO MF1 Black 736-15 (m)		13
1000		45007293400000900001	Released	Too Early	Yes		01/01/9999	99,999	☐	155991	500ML COLOR SPRAY MP FLUO YELLOW		13
1000		45007521680000010001	Released	OK	No			0	☐	156280	400ML SOUDAL RIM CLEANER SCAN-EN	IP melden (rotatie checken)	00
1000		450075216800000110001	Released	OK	No			0	☐	156284	400ML SOUDAL COMPRESSED AIR SPR SCAN-EN		00
1000		45007562930000010001	Released	Too Early	No		01/01/9999	99,999	☐	157129	Soudabond PRO SFD Black 30/04-10 (m)		13
1000		45007667320000200001	Released	Too Early	No		01/01/9999	99,999	☐	157725	SWIS Vario Extra White 250mm x 30m		13
1000		45007627440000010001	Released	Too Early	No		01/01/9999	99,999	☐	158015	400ML XHANDER SIL ALCOXY TRANS		00
1000		45007304740000010001	Released	Too Early	Yes		01/01/9999	99,999	☐	158298	MIXER SOUDABOND 632 WB DUO		13
1000		45007447510000010001	Released	Too Early	No		01/01/9999	99,999	☐	158298	MIXER SOUDABOND 632 WB DUO		13
1000		45007571720000050001	Released	Too Early	No		01/01/9999	99,999	☐	159385	SOUDAL FREEZE SPRAY400 ml E-EU		00
1000		45007716180000200001	Released	Too Early	No		01/01/9999	99,999	☐	159912	1L NMC Fix	IP melden (combineren tot 2400 of 3600kg)	00
1000		45007716180000300001	Released	Too Early	No		01/01/9999	99,999	☐	159914	500ml NMC Fix	IP melden (combineren tot 2400 of 3600kg)	00
1000		45007476020000010001	Released	Too Early	Yes		01/01/9999	99,999	☐	160847	OTH PEGBOARD BLACK METAL DISPLAY		13
1000		45007575620000010001	Released	Too Early	No		01/01/9999	99,999	☐	200025	ADDI139 DMDEE L-9 / JEFFCAT DMDEE / LUPRAGEN N 106	"CORONA" verdeling zie Core // staat op 3 plaatsen in prod...	00
1000		45007575630000010001	Released	Too Early	No		01/01/9999	99,999	☐	200025	ADDI139 DMDEE L-9 / JEFFCAT DMDEE / LUPRAGEN N 106	"CORONA" verdeling zie Core // staat op 3 plaatsen in prod...	00
1000		45007667970000010001	Released	Too Early	No		01/01/9999	99,999	☐	200059	ADDI21 CRAYVALLAC SLX /DISPARLON 6200	(kan in geval van nood vervangen worden door 200069...)	00
1000		45007137890000010001	Released	Too Early	No		01/01/9999	99,999	☐	200184	CHEM37 KALUIMWATERSTOFSULFAAT		00
1000		45007233680000010001	Released	Too Early	No		01/01/9999	99,999	☐	200356	DOU YR RIJESSE F104RUB0000 (RIJ) K1 / OH DOU YRFB / R00000PS1 / P	D1-58 0 2 x 737 + huffertank // S16 76 12 22 - uurtijd man...	00

Order purchase Order line Product details Supplier details Remarks Delivery date history Product details

Order line number: 45007691470000100001 Status: PurchaseOrderLineStatus Released Supplier: SK Networks

Product: 200823 Description: COSMONATE M-200 (BC) / DESMODUR 44V20L / LUPRANAT M20 R Plant: 1000

Quantity: 22,500 Original quantity: 22,500 UOM: kg

Needed delivery date: +++ Req. del. date: 2023/09/07 Confirmed delivery date: 2023/09/07 12:00 AM

Automatically generated proposals for purchase orders

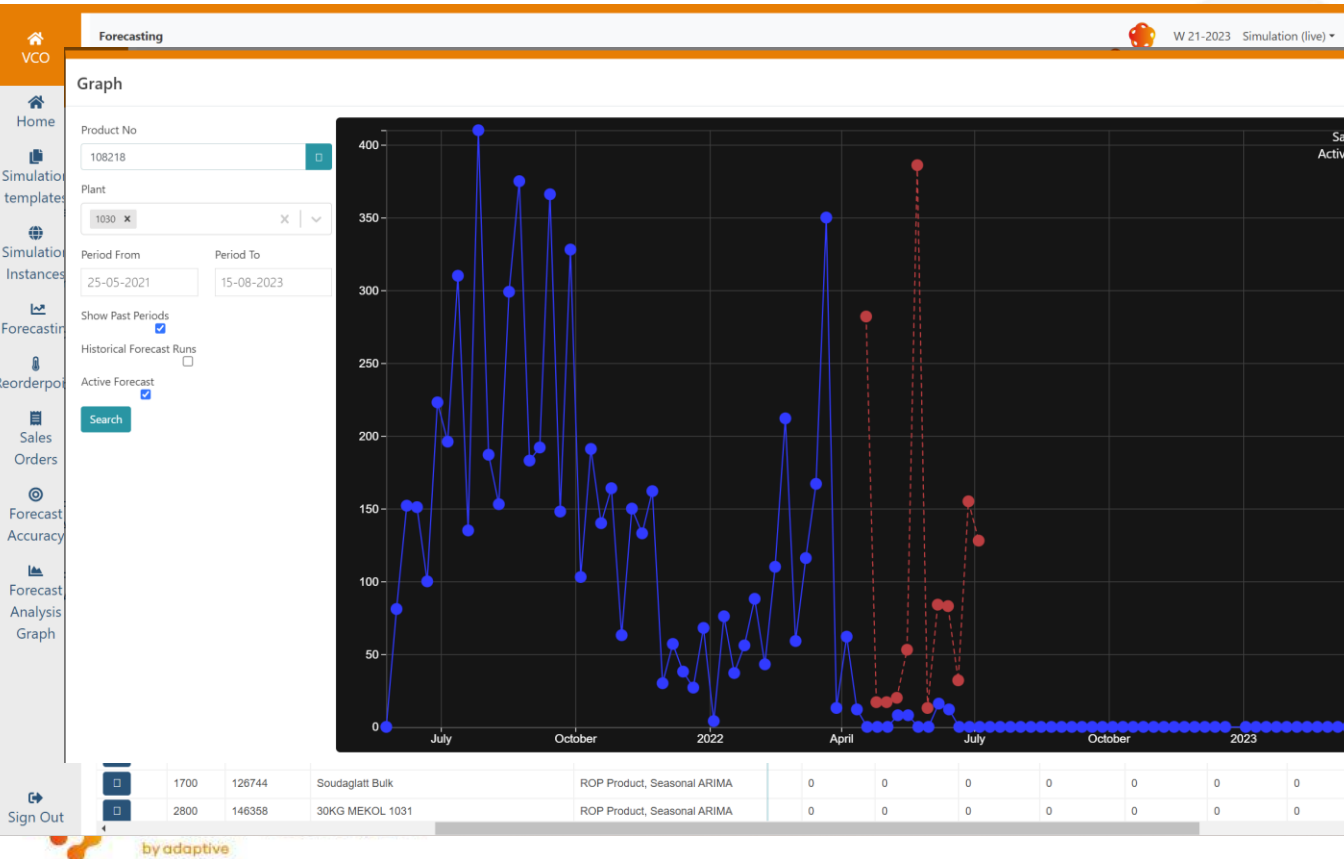
But also replanning alerts in case released orders will arrive too early/too late

Optimize inventory levels & avoid stock outage

Directly integrated with production progress and sales orders, for realtime decision making

Multiplant/multi-user

Forecasting & ROP

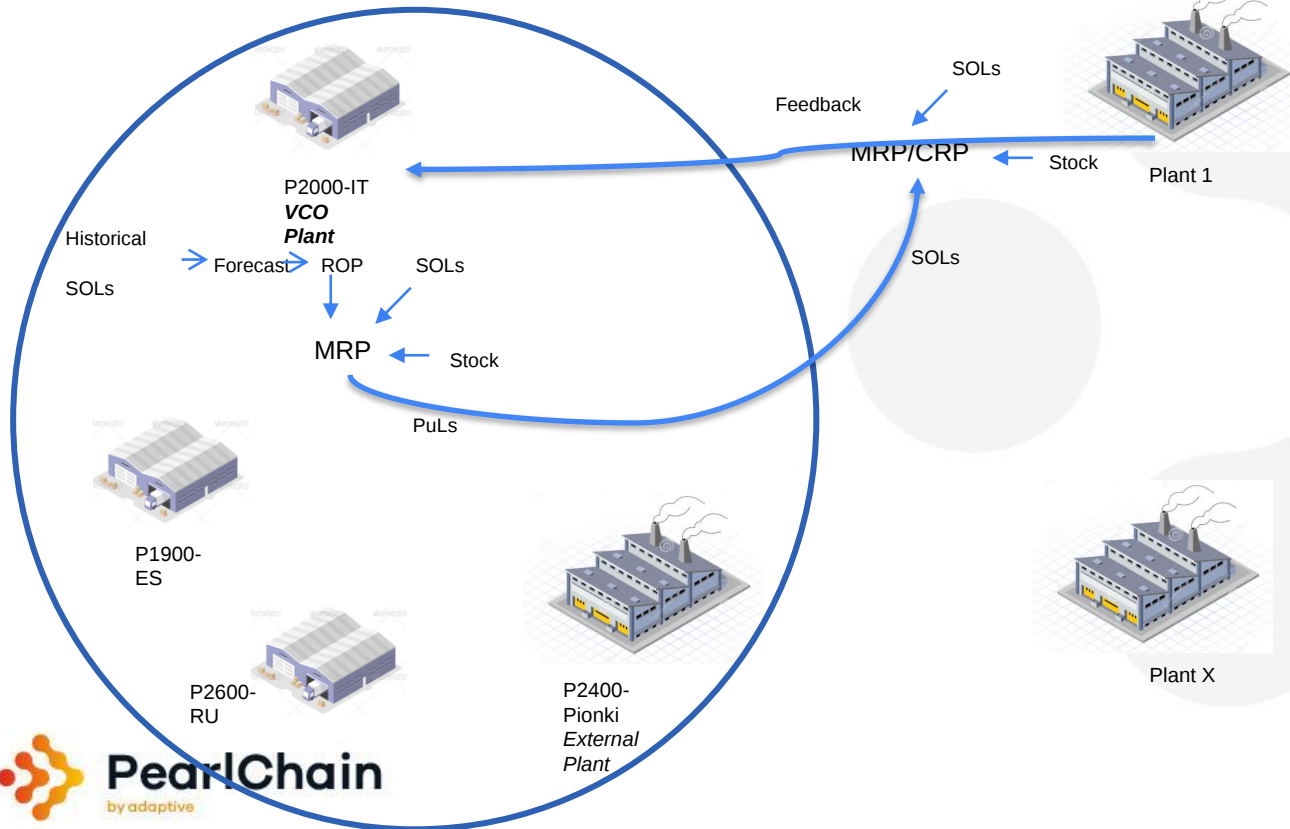


Complements known order book with forecast, resulting in an holistic simulation of demand & coverage for pulled supply over the entire supply chain”

1. Generate forecast from historical data using configurable, statistical algorithms
2. Import Forecast Data from External Sources
3. Provide Manual Input of forecast
4. Calculate detailed schedule, forecast consumption
5. Aggregate to week/family level

Multiplant Planning

VCO



Multi-plant Value Chain Optimization

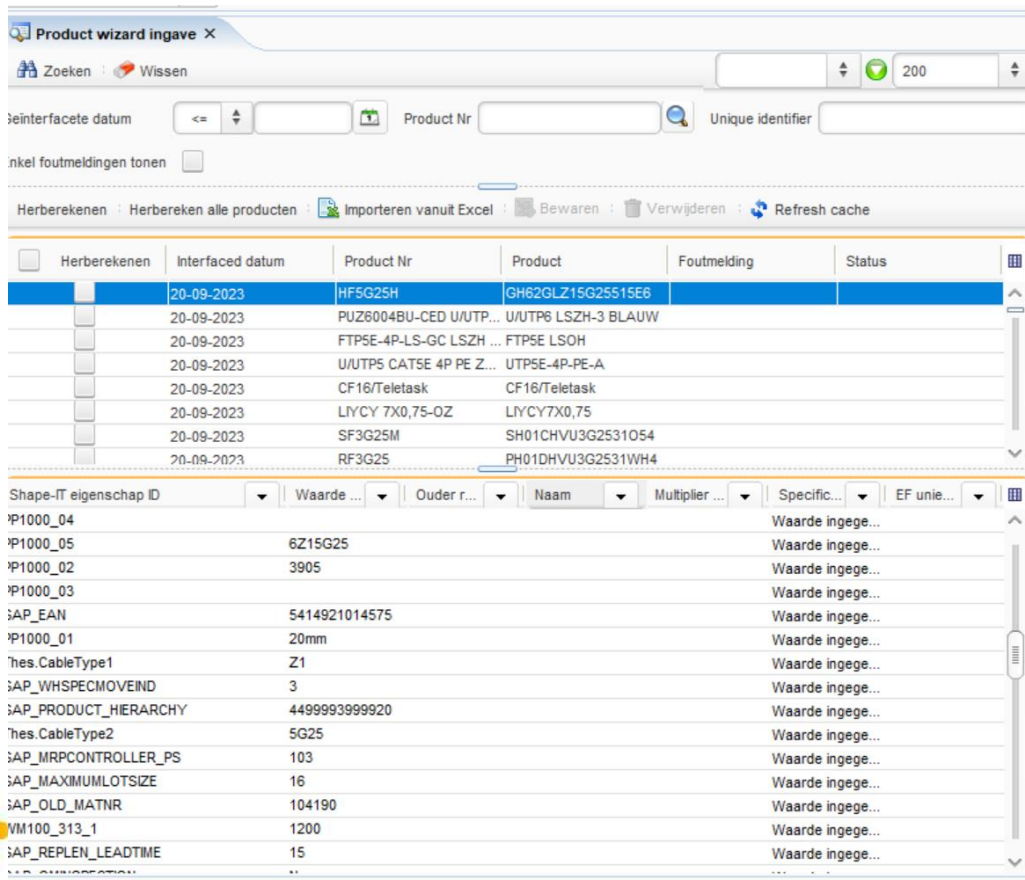
- Balancing resource capacity & material across E2E supply chain
- Optimizing interplant material movements

Recalculate due dates when forecast changes

- No fixed plan

Avoid bullwhip effect by making sure supply works with the external customer demand, not internal demand.

Master Data – Products



Interfaced datum	Product Nr	Product	Foutmelding	Status
20-09-2023	HF5G25H	GH62GLZ15G25S15E6		
20-09-2023	PUZ6004BU-CED U/UTP...	U/UTP6 LSZH-3 BLAUW		
20-09-2023	FTP5E-4P-LS-GC LSZH ...	FTP5E LSOH		
20-09-2023	U/UTP5 CAT5E 4P PE Z...	UTP5E-4P-PE-A		
20-09-2023	CF16/Teletask	CF16/Teletask		
20-09-2023	LIYCY 7X0,75-OZ	LIYCY7X0,75		
20-09-2023	SF3G25M	SH01CHVU3G2531O54		
20-09-2023	RF3G25	PH01DHVU3G2531WH4		

Shape-IT eigenschap ID	Waarde ...	Ouder r...	Naam	Multiplier ...	Specific...	EF unie...
IP1000_04					Waarde ingege...	
IP1000_05	6Z15G25				Waarde ingege...	
IP1000_02	3905				Waarde ingege...	
IP1000_03					Waarde ingege...	
iAP_EAN	5414921014575				Waarde ingege...	
IP1000_01	20mm				Waarde ingege...	
thes.CableType1	Z1				Waarde ingege...	
iAP_WHSPECMOVEIND	3				Waarde ingege...	
iAP_PRODUCT_HIERARCHY	4499993999920				Waarde ingege...	
thes.CableType2	5G25				Waarde ingege...	
iAP_MRPCONTROLLER_PS	103				Waarde ingege...	
iAP_MAXIMUMLOTSIZE	16				Waarde ingege...	
iAP_OLD_MATNR	104190				Waarde ingege...	
VM100_313_1	1200				Waarde ingege...	
iAP_REPLEN_LEADTIME	15				Waarde ingege...	

Import products from

- ERP/Master data systems
- Excel

Enrich or create data using

- Rule engine : master data generation robot
- Manual extension in PearlChain via product wizard
- Configurable logical data model and UI representation : grids/detail screen/wizard

Capable of representing any product and service, for any industry



Master Data – BOM

The screenshot displays the PearlChain BOM interface. On the left, a hierarchical tree shows the structure of the BOM for 'WH001, Pump WH'. The tree includes 'PumpRouting', 'PumpRoutingStep', and various components like '1 Piece WH001 Pump WH', '1 Piece WL002 Cylinder', '1 Piece SFF03 Cylinder', '1 Piece ST004 Cylinder', '1 Piece WL003 Piston', '1 Piece KIT04 Kit 1', and '1 Piece KIT07 Kit 2'. The right side of the interface contains a form for editing the BOM data. The form includes fields for 'Product id' (WH001), 'Description' (Pump WH), 'EF description' (PumpRouting), 'EF status' (Approved), 'Valid from' (2023/11/20), 'Valid until' (empty), 'Creation date' (2023/11/20), and 'Modified on' (2023/11/20). Below these fields is a 'Remark' section. The bottom part of the form shows a table with columns for 'Description', 'Usage for top level', and 'CRP algorithm'. The table contains two rows: 'PumpRoutingStep' and 'PumpRouting'. The 'Usage for top level' section is currently empty.

Routing step	Type	Source	Product No	Description	Quantity	UOM	Phantom	Numerator	Den
PumpRouting...	Production	PumpProduct	WH001	Pump WH	1	Piece	☒	1	
PumpRouting...	Consumption	PumpProduct	WL002	Cylinder	-1	Piece	☐	-1	
PumpRouting...	Consumption	PurchasePro...	WL003	Piston	-1	Piece	☐	-1	
PumpRouting...	Consumption	PumpProduct	KIT04	Kit 1	-1	Piece	☐	-1	
PumpRouting...	Consumption	PumpProduct	KIT07	Kit 2	-1	Piece	☐	-1	

Multi-level Engineering formula with

- component list
- planning parameters for production/purchase
- configuration of execution processes (production, staging, etc)
- texts for process execution

Multiple BOM support

- default and alternative supply variants
- integrated with planning and execution processes

Integrated with master data robot: BOM can be enriched by business rules

Master Data – Partner

Partner X

Find Clear

Company: 1000 No: Name: VAT no: Address: Postal code: City: Country: Invoice customer no: Customer: ☐ Customer status: Sales representative: ☐ Supplier: ☐ Supplier status: Transporter: ☐ Department: Include Assigned: ☐

Update order priority

No	Name	Vat no	Address	Line 2	Postal code	City	Country	Telephone	Language	Customer	Sales rep...	Transport...	Supplier	Department	Order pri...
0-001	TEMPLATE CUSTOMER 1	X			9999	X	FR		tr	☒	☐	☐	☒		
0-002	TEMPLATE CUSTOMER 2	X			9999	X	FR		tr	☒	☐	☐	☒		
0-003	TEMPLATE CUSTOMER 3	X			9999	X	FR		tr	☒	☐	☐	☒		
0-004	TEMPLATE CUSTOMER 4	X			9999	X	FR		tr	☒	☐	☐	☒		
0-005	TEMPLATE CUSTOMER 5	X			9999	X	FR		tr	☒	☐	☐	☒		

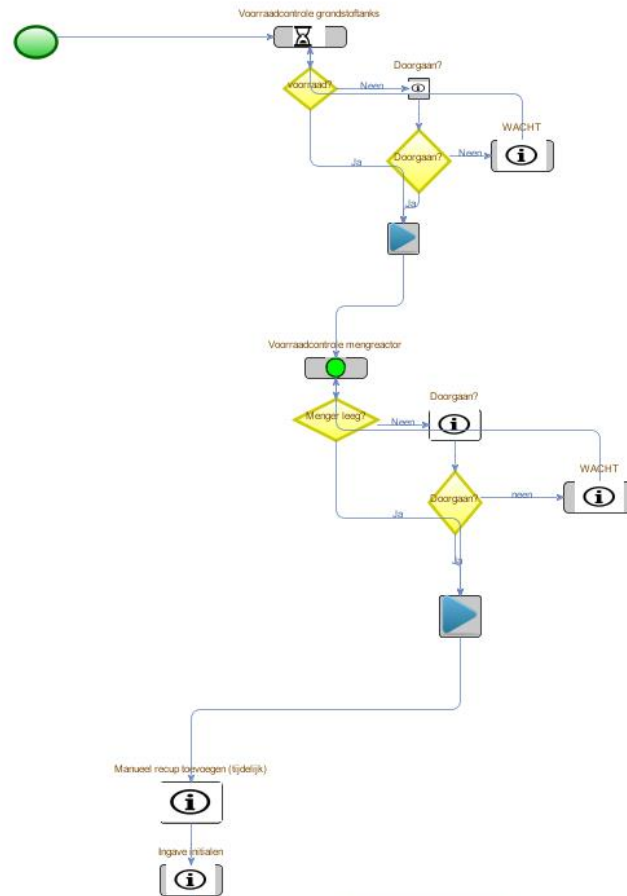
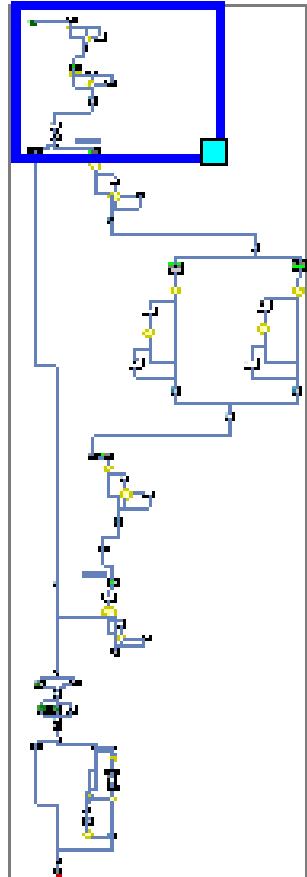
Customer, Supplier, Transporter management

Out-of-the-box integration point, integration with external source via integration framework

Logical data model for custom attributes

Manage addresses/Contacts

Master Data – Production Recipe & Templates



Workflow designs to detail production order steps

Manual and automated process steps

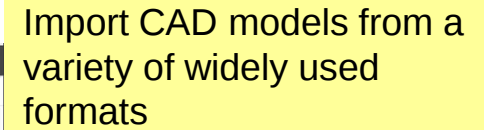
Template/parameter approach for products with similar process

Serial/Parallel process steps

Integration with PLC/ALC/AGV

Configuration of preprocessing and postprocessing steps in separate todo lists.





Extraction of components from CAD Models and creation of Master Data

Automatic creation of manufacturing master data based on CAD models of products

- No need to start populating master data from scratch

Can be extended by enriching model that complements the data in the design

ERP Data – Sales

Sales order lines X

Find Clear

Sales order no. Trailer no.

Plants 0 Product No.

Product desc. Customer no.

Customer name Req. del. date from

Until

View stock projection Close line Update internally promised delivery date Assign to trailer Delete from trailer Remark

Plant	Order no	Order li...	Status	Produc...	Remark	Cust no	Cust n...	Quantity	Pegged...	Pallets	UOM	Produc...	Days b...	Order d...	Req. del. date	Promised date	Planned ...	Trailer no	Trailer re...
1000	1000000...	1000000...	Open	Busy		0-001	TEMPLAT...	-10		5	Piece	WH001	14		2023/11/28	2024/11/28	2023/12/12		

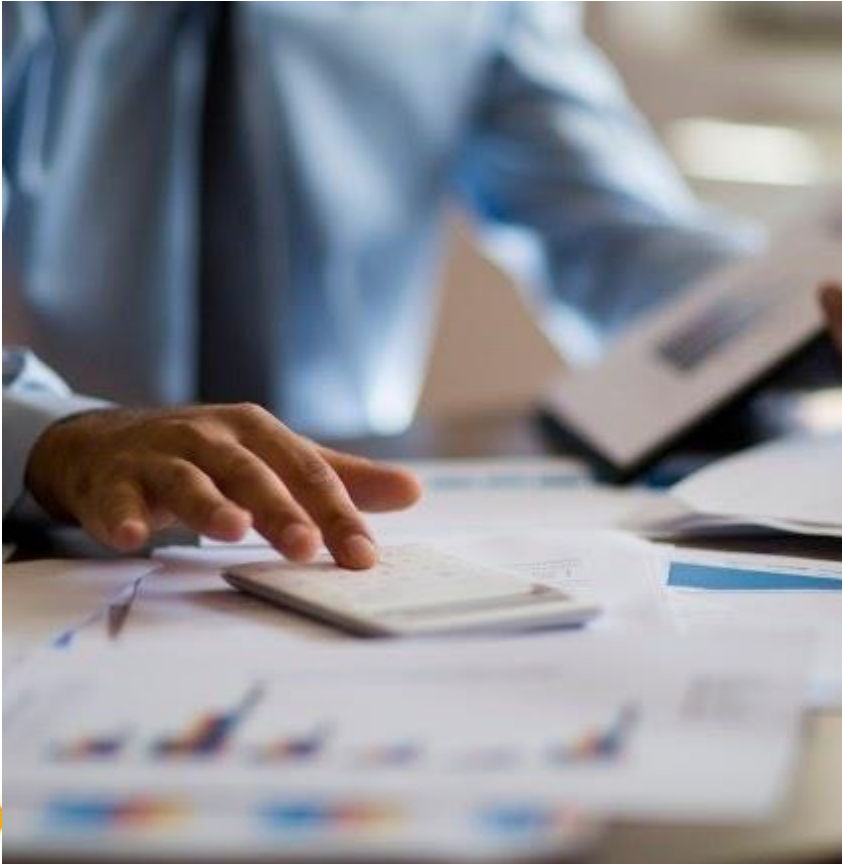
Sales order Lines from External ERP

Requested delivery date / promised date / internally promised date

- Transport planning integration

Out-of-the-box integration point, integration with external source via integration framework

ERP Data – Purchase



Out-of-the-box integration point, integration with external source via integration framework

Supported flows:

- Purchase order from ERP
- Purchase proposal from PearlChain to ERP
- Updates of delivery dates
- (Partial) receipts



ERP Data – Production



Out-of-the-box integration point, integration with external source via integration framework

Supported flows:

- Production order from ERP/MES
- Production proposal from PearlChain to ERP
- Execution updates from/to ERP/MES

ERP Data – Stock



Supported flows:

- Stock updates from ERP/MES (ERP is master)
- Stock corrections/updates to ERP (PearlChain is master)

Todolist – production track&trace

Production overview X

Find One

Department: Sections: Resources: Order no: Product:

Batch product no: Lock forward: Lock backward: Only Busy: Only Unfinished:

Set interval: Refresh: Refresh: Change batch: Print: Assign batch: View stock projection: Recalculate processing times: Manual PO: Close comments: Sales coding check:

Material ex.	Latest rev.	Order no.	Order Gr.	Resource	Batch no.	Batch type	Batch product	Status	Stop code	Product	Description	Quantity pl.	Quantity st.	Quantity in.	UOM	Start date	End date
		211820230		M09				Busy		80093	PREMX 0.5	800	793	7	kg	20200205 0	20200205
		212015060		D 1				Released		80078	MENDELING	800	0	800	kg	20200207 0	20200207
	Twistba	212937020		A99	P663708000	505100	TESTBAK	Released		12469	TEST HYPER	816	0	816	piece	20200207 0	20200207
		4500445240		EX38				Released		117774	BLU 00HL FL	1,800	0	1,800	piece	20200207 0	20200208
		4500430196		EX37				Released		122955	125mL Cotel	1,070	0	1,070	piece	20200207 0	20200208
	Alvaco op	212094400		A04				Stopped		137487	OSHT 06 310L	1,000	1,000	0	piece	20200208 0	20200207
		212930950		A04				Busy		137497	PEROX HT 0	300	0	300	piece	20200207 0	20200207
		212130840		A04				Busy		137277	OSHT 14 31	540	0	540	piece	20200207 0	20200208
		213060040		M14 label				Released		605810	BAM COMPO	2,013	0	2,013	kg	20200207 0	20200208
		213060730		M13 label				Released		605909	MX COMPO	2,126	0	2,126	kg	20200207 0	20200208
		213109070		A70 label	P663622002	500027	PU 45 S-MF	Busy		108793	310mL Soco	6,326	1,440	4,796	piece	20200207 1	20200208
	STG is ran	213043150		A21	P663350117	502671	AFT VL-OR	Busy		122091	8kg Cotel C	480	144	336	piece	20200207 0	20200207
		213052400		A17	P663300099	507880	#VANCULUM	Stopped		122098	15kg Cotel C	333	333	0	piece	20200206 0	20200207
		213144090		A17	P663040086	502041	#Voorlin 2	Busy		114373	15kg RVA C	44	0	44	piece	20200207 0	20200207
		213144570		A17	P663040164	507886	#VANCULUM	Released		108991	10 kg Hubs g	500	0	500	piece	20200207 0	20200208
		213074670		A40	P663512373	500415	ACRYL VOR	Busy		120426	310mL Jorls	6,000	4,320	1,680	piece	20200207 0	20200207

Production order details

Required materials: Production results: Staging: Setup(s): Machine stops: Consumers: Producers: Center details: Assignments:

Order no: 212944000 Department: ArrAgenP1 Resource: A04 Resource setup:

Production Order Group No: Quantity planned: 1,000 Quantity already produced: 1,000 Quantity left todo: 0

Product: 137487 Description: OSHT 06 310L ORANGEBRUN Production batch: Batch type:

Released start time: 20200113 07:54 AM Actual start time: 20200207 03:23 PM Start time: 20200208 07:33 PM Setup start time:

Released end time: 20200113 08:15 AM Actual end time: 20200207 03:16 PM End time: 20200207 03:16 PM Latest end time: 20200201

Communication

- Instruct/Guide Operators
- All Needed Information in 1 place

Visibility of related processes

Follow-up

- Feedback from Operators
- Directly reflected in inventory
- Realtime feed to ERP

Supervisor todolist

- Managers overview of execution progress across multiple lines

Todolist – production track&trace

Todolist Kokers Hybride x

Find Clear

Resource: A32 Order no: Production order group no: Product no: Look backward: 2 Look forward: 8 Status: 0

Start setup Stop setup Start Print Primary Secondary Register production Stop Set on hold Unfinished Machine stop Remark Reschedule Change batch Switch carrier Split batch Reprint Man

Materi...	Latest re...	Order no	Productio...	Resource	Batch No	Batch Type	KokersHybrideP1S...	Status	Stop code	Resource ...	Setup status	Printed	Product	Description	Product r
		20611502/0		A32	PB24042126	504553	HYB ATLAS REX 201...	Busy	✖			✓	121970	290mL T-Re...	
		20611704/0		A32	PB24042126	504553	HYB ATLAS REX 201...	Released				✓	113891	290mL Soud...	
	kokers + kar...	20611687/0		A32	PB24042167	503422	HYBRIDE 218 ST MIX...	Released				✓	118757	290mL Optif...	
		20611561/0		A32	PB24042167	503422	HYBRIDE 218 ST MIX...	Released				✓	105023	290mL Soud...	

Production order details Required materials Properties Production results Staging Setup(s) Machine stops Consumers Producers Carrier details

Order no: 20611502/0 Department: AfvullingenP1 Resource: A32 Resource setup: Quantity planned: 3,456 Quantity already produced: 1 152 Quantity left todo: 2 304

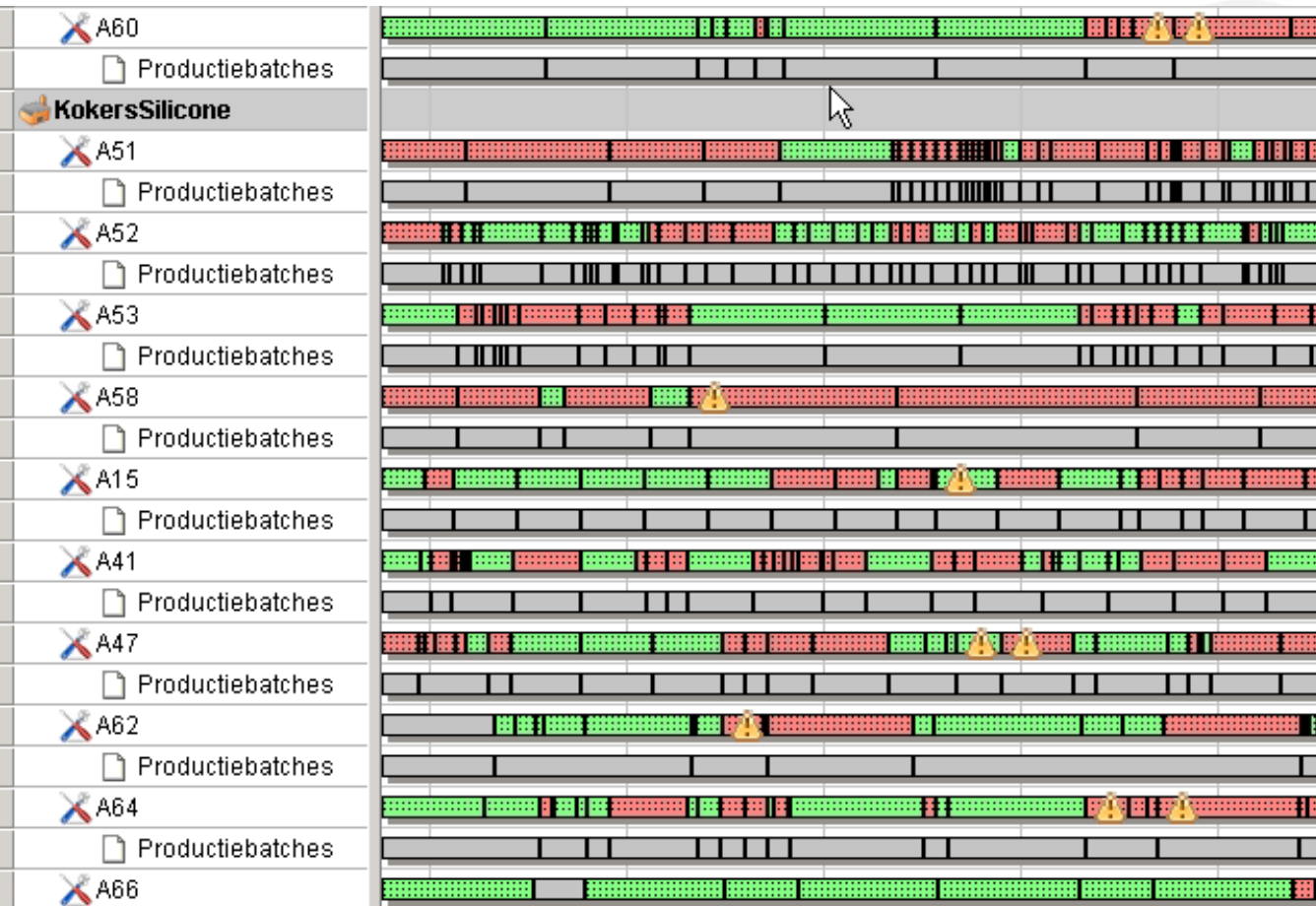
Product: 121970 Product description: 290mL T-Rex Power Grey Production batch: PB24042126 Batch type: 504553

Released start time: 5/27/16 3:08 AM Actual start time: 6/7/16 6:01 AM Start time: 6/7/16 6:00 AM Setup start time: Released end time: 5/27/16 9:56 AM Actual end time: End time: 6/7/16 12:52 PM Latest end time: 2016-05- Actual duration: Planned duration: 6 hours 52 minutes UOM: piece Status:

Start a production order & register a series of actions to reflect the real-time status

- Production orders are listed in sequence in so-called ToDo list
- Start changeover – Stop changeover
- Print production order – Enter remarks
- Start order – Register production – Set unfinished – Stop order
- Register a series of intermediate produced quantities or one single total produced quantity
- Cancel order
- Register machine stops (cause / start)
- Reschedule orders on same machine or other machine
- Create manual production order
- Assign materials
- Register remarks
- Customizable list of commands
- Production orders that cannot be started in near future can be transferred back to the planning
- Production orders can be split

Shopfloor Realtime Rescheduling



Updates in real-time, reflecting changes in the plan as operations are ongoing

- Derived from start/stop/registration events

Operator can be given freedom to reschedule work (as needed)

Consequences of these actions will be calculated for other orders & material provisioning (cfr. Staging & Picking)

Shopfloor Document Printing

[Back](#)

OEE Registration : machine stops

Todolist Weighing X

Todolist Meng Departement P1 X

Cockpit quantities X

Production overview X

Find

Clear

Department

Sections

0

Resources

0

Order no

Product No

Batch product no

Look forward

8

Look backward

2

Only 'Busy'

Only 'Unfinished'

Get on hold

Remark

Reschedule

Set Earliest Start Date

Change batch

Print

Assign batch

View stock projection

Recalculate processing times

Manual PO

Close movements

Sales coding check

Product	Material av...	Latest rem...	Order no	Order Gro...	Resource	Batch no	Batch type	Batch product	Status	Stop code	Resource ...	Setup status	Printed	Description	Quantity pl...	Quantity al...	Quantity le...	UOM	M					
101010			21996847/0		AIW504 label	PB102587680	510373	HYB218ST ...	Busy	✗			✓	Soudaseal 2...	5,001	3,216	1,785	piece						
127116			22002193/0		AK502 label	PB103003642	510403	HYB 240 M1 ...	Busy	✗			✓	470GR SOU...	1,390	0	1,390	piece						
147563			21985299/0		NA3				Busy				✓	DEXTER SET...	5,400	0	5,400	piece						
155270			21980573/0		NA3				Busy				✓	2X 280ML A...	5,760	1,440	4,320	piece						
/oorafwegi...			22002214-IV...		WeighingAd...				Busy				✓	Voorafwegi...	1	0	1	kg						
152936			21953054/0		NB2				Busy				✓	SOUAFOA...	80	65	15	piece						
123162			22001548/0		L03	PB102996293	502881	POL B2 2K T...	Busy				✓	400mL Spot...	4,368	0	4,368	piece						
109219			22006858/0		MixerBCP3				Busy				✓	SUB SOUDA...	1,053	1,053	0	kg						
146558		Dringend	21988352/0		L09	PB102030376	505953	SUB2 SOUD...	Busy	✗			✓	SOUAFOA...	48	24	24	piece						
128189			22001633/0		A42	PB102991355	502527	HYBR OCTA...	Busy	✗			✓	600ML XTRA...	4,056	2,376	1,680	piece						
128138		Dringend	22003798/0		A10	PB103196470	510098	606196 TEK...	Busy	✗			✓	Soudal Alu...	2,577	0	2,577	piece						
105159			21986388/0		A306	PB101930331	602280		Busy	✗			✓	250gr Monta...	6,240	348	5,892	piece						
123552			21989473/0		A56	PB102054168	500959	ACRYL F4...	Busy	✗			✓	280ML PROC...	6,998	4,320	2,678	piece						
101917			21997299/0		D 23				Busy	✗			✓	MONTAGELL...	1,264	0	1,264	kg						
100039			22003821/0		NA6				Busy				✓	Capa24/300...	149,760	0	149,760	piece						
126529			21981428/0		A308	PB101522412	503573	SOUAACLE...	Busy	✗			✓	Soudaclear...	180	152	28	piece						
135613			21986330/0		A305	PB101930418	602275		Busy	✗			✓	200ML BERN...	1,600	1,620	0	piece						
120137			21991578/0		A82 label	PB102230545	510264	HYBRIDE F&...	Busy	✗			✓	Fix ALL Flo...	383	172	211	piece						
152630			22001788/0		A49	PB102991236	509424	HYB PARKE...	Busy	✗			✓	Soudal MS-2...	132	99	33	piece						
Production order details					Required materials					Production results					Staging									
					Setup(s)					Machine stops					Consumers									
										Producers					Carrier details									
										Assignments														
Notification																								
Start date					End date					Duration					Resource stop reason					Resource stop category				
2023/11/13 10:19 AM					2023/11/13 10:46 AM					26 minutes 46 seconds					05.3-Packaging change					05-Change				
2023/11/13 12:12 PM					2023/11/13 12:19 PM					6 minutes 23 seconds					05.1-Tub change					05-Change				
2023/11/13 01:41 PM					2023/11/13 02:05 PM					24 minutes 34 seconds					06.1-Cleaning					06-Preventive maintenance				
2023/11/13 03:00 PM					2023/11/13 03:06 PM					5 minutes 32 seconds					05.1-Tub change					05-Change				
2023/12/20 02:21 PM															03.4-Printer/Labeler					03-Technical breakdown				
																				dozenprinterfout				

Register machine stops directly from the operator dashboard

Keep an overview of all orders and their actual status

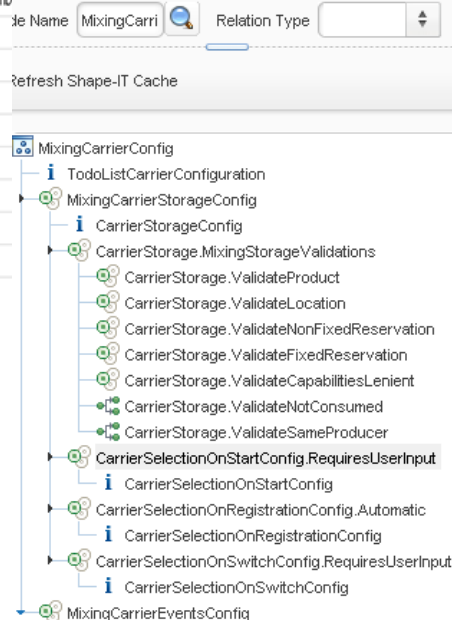
Keep track of reasons and categories, configurable per machine.

With PLC integration: automatic registration of stops and reasons

Production Management – Carriers/WIP

Opgehaald Fixed reserve Transport Unfix reservation Kuip atrop Trigger herberekening

Vaste reservatie	Carrier	Nodig Om	Huidige locatie	Naar locatie	Order no	Reservatie machine	Carrier status
☐	K659		A57	Afwas			Af te wassen
☒	K501	06-03-2020 11:44	A02	HAL8	2116737510	D 09	Afgewassen
☒	K517	06-03-2020 15:36	Afwas	AttapLipD25			Afgewassen
☒	K522	09-03-2020 15:16	HAL14	AttapLipD25			Afgewassen
☒	K543	16-03-2020 08:42	HAL8	A56			Afgewassen
☐	K575	16-03-2020 08:55	HAL8	HAL4			Afgewassen
☐	K506	18-03-2020 15:10	Afwas	HAL4			Afgewassen
☐	K568	18-03-2020 15:10	Afwas	HAL14			Afgewassen
☐	K571	18-03-2020 15:10	Afwas	HAL14			Afgewassen
☐	K572	18-03-2020 15:10	Afwas	HAL8			Afgewassen
☐	K576	18-03-2020 15:10	Afwas	HAL8			Afgewassen
☐	K583	18-03-2020 15:25	Afwas	HAL4			Afgewassen
☐	K631	18-03-2020 15:25	Afwas	HAL4			Afgewassen



Plan and Track WIP in

- mobile vessels
- silos
- disposable recipients

Integrated with delivery and staging process in production

- Validation of carrier type/capabilities
- Validation of assigned formula/materials

Fully configurable in business rule engine, eg:

- Carrier in correct location
- *Carrier contains right product*
- *Carrier has right capabilities*
- *Carrier is one of fixed carriers in case a carrier is fixed*
- *Only one producer in carrier, etc.*

Staging

[Back](#)

Create staging Interface In process Execute Cancel Remark Print list Print label Create picking Trigger staging													
Line no	Due Date	Status	Planned Quantity	UOM	Product No	Product description	Lot	Mat.Prov.Code	Destination	Po no	SOL No	Resource	
STOL16102210	2023/05/24 08:40 AM	Request pending	420 piece	345680	CAR BNTZT 280ML Sil Multisuo Bronze SAM			P2HAL13	Buffer staging	21889571/0		A64	
STOL16063750	2023/05/24 08:45 AM	Request pending	2,800 piece	350047	CAR BNTZT 290ML FIBOSEAL GREY			P2HAL13	Buffer staging	21887066/0		A67	
STOL16172632	2023/05/24 08:46 AM	Request pending	1,000 piece	345229	LAB C 600+150mL PU foam GG DIY ES/PT			ETKETTENHAL	Machine staging	21891633/0		L04	
STOL16083791	2023/05/24 08:47 AM	Request pending	3,360 piece	342384	CAR 280ML FP W&W ACR SEALANT WHITE WEST			P2HAL13	Buffer staging	21888104/0		A51	
STOL16159424	2023/05/24 08:48 AM	Requested SAP	283 piece	343154	BOX 12x300ML Scheur Genius Gun			MAGAZUN	Machine staging	21886770/0		L04	
STOL16174753	2023/05/24 08:50 AM	Request pending	1,547 piece	300231	BUSS333 AER BLNK BUS PU-Schuim 65*157 18 bar			MAGAZUN	Buffer staging	21891693/0		L04	
STOL16172953	2023/05/24 08:52 AM	Request pending	1,000 piece	345168	LAB C 500+250ml Genius Gun			ETKETTENHAL	Machine staging	21891858/0		L04	
STOL16175174	2023/05/24 08:52 AM	Request pending	3,360 piece	337708	CAR BNTZT 290mL Multibond SMX 25 white			P2HAL13	Buffer staging	21892063/0		A84.label	
STOL16174622	2023/05/24 08:54 AM	Request pending	3,360 piece	349240	CAR Acryrub NL-EN-FR-DE-I-PL white 310ml			P2HAL13	Buffer staging	21889891/0		A45	
STOL16172846	2023/05/24 08:55 AM	Request pending	1,000 piece	345369	LAB C 750ML BERNER372460UNVSCHAUM A/CH			ETKETTENHAL	Machine staging	21891812/0		L04	
STOL16120974	2023/05/24 09:02 AM	Request pending	3,360 piece	349313	CAR PCR D BNTZT 290ml Fx ALL Turbo N-F			P2HAL13	Buffer staging	21890404/0		A84.label	
STOL16099302	2023/05/24 09:02 AM	Request pending	3,360 piece	341933	CAR D BNTZT 290ML REVIMAR FLEXY FIX WHITE			P2HAL13	Buffer staging	21888852/0		A84.label	
STOL16176189	2023/05/24 09:03 AM	Request pending	884 piece	300210	BUSS169 AER 65x300 DOT2Q BLANCO 29oz			MAGAZUN	Buffer staging	21891795/0		L04	
STOL16061393	2023/05/24 09:04 AM	Processed SAP	1,260 piece	336704	CAR 280ML GOION ACRYL BLANC WEISS			P2HAL13	Machine staging	21880141/0		A43	
STOL16118897	2023/05/24 09:05 AM	Request pending	1,326 piece	350357	BLU AER 300ML Criscolor Espuma PU Man			MAGAZUN	Buffer staging	21886883/0		L04	
STOL16175602	2023/05/24 09:06 AM	Request pending	2,660 piece	300205	BUSS148 AER 65X157 DOT2Q BLANCO 120z			MAGAZUN	Buffer staging	21891848/0		L04	
STOL16173162	2023/05/24 09:07 AM	Request pending	2,650 piece	342020	LAB OV+N- 400G FixALL X-Treme Ex Zwart DE			P1PRODETK	Machine staging	21893508/0		A84.label	
STOL16175228	2023/05/24 09:09 AM	Request pending	3,360 piece	344100	CAR 300ml Silrub LM EUH211			P2HAL13	Buffer staging	21889447/0		A62	
STOL16175362	2023/05/24 09:09 AM	Request pending	3,360 piece	344100	CAR 300ml Silrub LM EUH211			P2HAL13	Buffer staging	21889477/0		A62	
STOL16173342	2023/05/24 09:09 AM	Request pending	1,000 piece	344947	LAB C 600mL Mega PUSchuim GG			ETKETTENHAL	Machine staging	21891792/0		L04	
STOL16175047	2023/05/24 09:10 AM	Request pending	3,360 piece	340877	CAR 280mL BR Silikon grau 8-talig			P2HAL13	Buffer staging	21893108/0		A75.label	
STOL16174720	2023/05/24 09:10 AM	Request pending	3,360 piece	339446	CAR BNTZT 280 ML Silrub AC+ Cinza/Gris			P2HAL13	Buffer staging	21889748/0		A64	
STOL16124433	2023/05/24 09:10 AM	Request pending	3,360 piece	339443	CAR BNTZT280mL SilrubAC+ Preto BRA			P2HAL13	Buffer staging	21889458/0		A64	
STOL16176015	2023/05/24 09:10 AM	Request pending	3,360 piece	347302	CAR 280ML B1 SILKON GRAU			P2HAL13	Buffer staging	21893145/0		A64	
STOL16107863	2023/05/24 09:10 AM	Request pending	3,360 piece	339443	CAR BNTZT280mL SilrubAC+ Preto BRA			P2HAL13	Buffer staging	21889645/0		A64	
STOL16176027	2023/05/24 09:16 AM	Request pending	1,105 piece	300212	BUSS185 AER BLNK BUS Dot2Q NI 65x2400			MAGAZUN	Buffer staging	21891850/0		L04	
STOL16136262	2023/05/24 09:16 AM	Request pending	3,220 piece	348938	CAR 310mL BER 372626-24 ACRYL WHITE AT			P2HAL13	Buffer staging	21889935/0		A40	
STOL16172249	2023/05/24 09:18 AM	Request pending	1,000 piece	325453	LAB C 300mL PU Foam ES/PT/BRA			ETKETTENHAL	Machine staging	21891732/0		L04	



Scheduling of internal logistics (staging of materials)

- (external) Warehouse > Buffer
- Buffer > Machine

Recalculation – adapt to reality

Automatic vs Manual

Timing realtime recalculated

Resequencing based on production rescheduling

Quality Control

The screenshot displays the PearlCI Quality Control interface. At the top, there are tabs for 'Inspection QC raw materials' and 'Inspection production results'. Below these are search and filter fields for Job No, Status, Inspection type, Lot No, Reference, Assignee, Product, Description, Result, Quality, and Warehouse. A table lists inspection orders with columns for Job No, Resource, Modified, Priority, Inspection, Reference, Status, Supplier, Product No, Product, Quantity, UOM, Lot No, Batch ref., Quality, Result, Remark, Event, Needed, and Created. The selected order is IO-112031, QC QC (CR), Bart, Reception, RE-008401, New, Hatzopoulos, VP20804101, Folie Cant., 215899.0, uom.af, 000043812, Inspection, Inspection, 2022/06/17.

The 'Inspection details' section shows job information (Job No: IO-112031, Resource: QC QC (CR), Status: New, Started, Ended, Result) and inspection properties (Event: InspectionEvent.Reception, Reference: RE-008401, Created: 2022/06/17, Updated). The 'Stock entry' section shows product details (Product no: VP20804101, Product name: Folie Cantata 125g, Location: 1A000, Lot No: 000043812, Batch reference, Expiration date).

The 'Inspection properties' section shows a table with columns for Total, To inspect, and Inspected. The values are 67, 67, and 0 respectively. Below this is a 'Remark' field with the value VP23973005.

The 'Inspection details' section also shows a list of inspection orders with columns for TypeRef, Location, and Lot. The list includes:

TypeRef	Location	Lot
R RE-008214	1A000	000043473
Remark VP23973005 Description Capsule zwart met barriere (Menshen) Quantity 157173 pc		
R RE-008139	1A000	000043363
R RE-008156	1A000	000043387
R RE-008251	1A000	000043542

At the bottom, there is a '1/17' indicator and a 'Next' button. A barcode field shows the lot number 000043473. Below this are buttons for 'Cancel', 'Start inspection', 'Accept', 'Reject', 'On hold', 'Skip', and 'Extra'.

Quality inspection,
integrated with operational
processes

Create inspection orders for
different type of quality
checks / different
frequencies / different
events

- Configured in workflows
- Event-driven

Mobile client for registration
in the plant

Inspection types
(lot/package unit,
order/batch)
Inspection frequency: time
based/quantity based

ASRS Control



Automated storage and retrieval systems can drastically reduce costs and improve efficiency/space consumption and safety.

Using dedicated workflow components for storing/retrieving goods in/out of the ASRS, it is possible to integrate the storage activities into the bigger picture of the entire operation.

The ASRS can act as a black box or can be monitored in detail by PearlChain (including lot/location management)

Operation Management

Design Create or maintain report

Run Schedule Execution

View Result Download or Open execution Result

File Edit View Format Preview Window Tools Help

Empty datasource

Report1 - Properties

Report name: report1

Page size: 595

Page width: 842

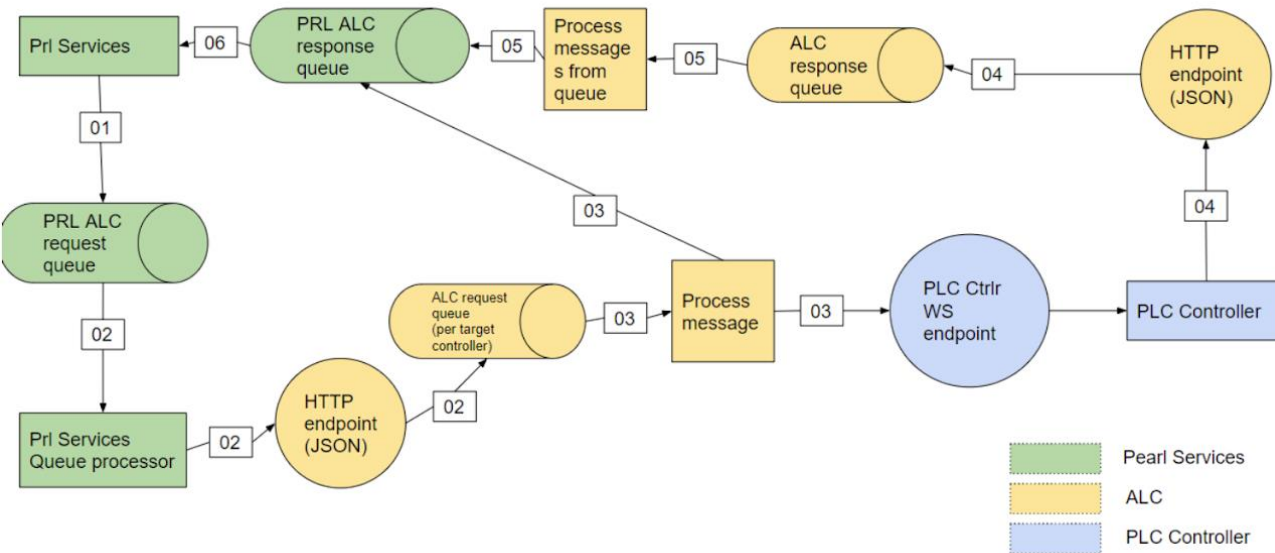
Page height: 842

Orientation: Portrait

Margins: Left margin: 20, Right margin: 20, Top margin: 20

- Report creation in runtime via SQL
- Report creation from CSV definition
- Parameterization
- Integration with Dashboards for web based access & visualization
- Scheduling of reports via job scheduling
- Excel report templates (pivot table/charts, etc)
- Jasper report templates for advanced layouting
- Report assignment to users and user groups
- Realm aware for organizational access restriction
- Can report on data in non-PearlChain DBs via linked servers

PLC Integration



Capturing what's going during the execution (PLCs-ALC)

- Progress registration monitoring
- Registration of production & execution variables
- Creation of alerts when deviations are detected
- Logic to take actions defined in workflows

Steering machines (ALC-PLCs)

- Which order to produce
- Giving “machine level instructions” (parameters)
- Reacting to parameters received from the PLC (machine) using workflows.

Inline Printing

[Back](#)



Printing and applying of labels, pallet sheets, or even directly on boxes, products can be done inline during production, or as part of the logistic process.

PearlChain helps automate these printing processes by sending the correct instructions to the printers, at the appropriate time.

Operators can focus on other activities, while data entry errors are avoided.

Even printing of digital artwork on the final product can be supported.

Integration with Bartender, Getra installations

AGV/AMR Control

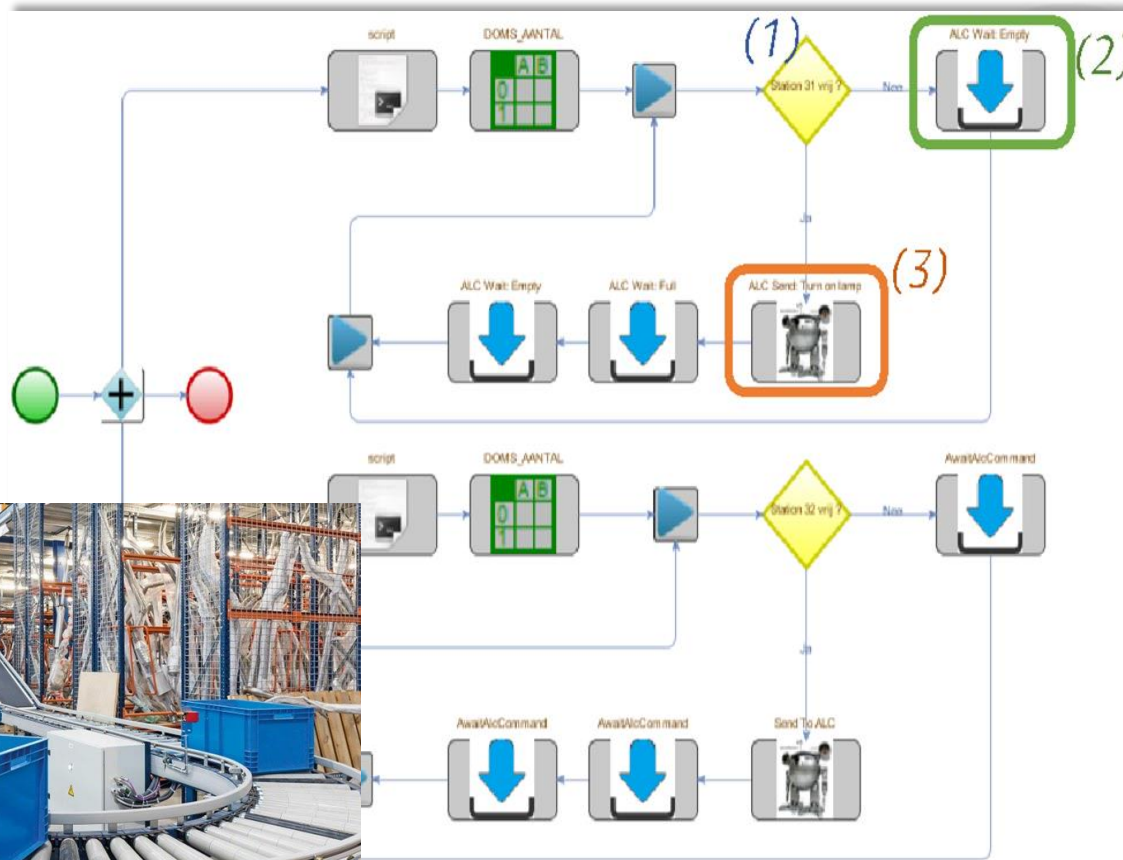


AVG/AMR orders are created and traced by the PearlChain AGV/AMR submodule, which can be integrated with any supplier/brand.

The orders are created from workflows (conditionally, based on events), where the route is calculated and sent to the traffic control system.

Routes be dynamically changed, even when already in execution, in case the route depends on activities that are happening along the way.

Conveyor Control



Generic ALC commands are custom integration blocks are used to control conveyor belts

- Integrated with control of other robots such as AVGs/AMR, packaging installations, etc

Conveyors can be automated to move pallets and materials in carriers, ... within the warehouse and the factory.

Using events that are triggered by sensors on the lines, a workflow will steer the behavior of the line, often synchronized with other robots such as AGV/AMRs that transport the material on/away from the conveyor.

Inventory management

Inventory X

Find Clear

Warehouse: 0 Lot:

Location description: Quality:

Company: 1000 Plants:

Product no: Product description:

Group: Status: Open

Product status: Product subtype:

Product EAN: Batch reference:

Expiration date horizon(days): Find lookup types: ☐

Exclude empty stock: ☒ Critical Products: ☐

SSCC:

new Print stock entry Clear stock entry

Plant	No	Creatio...	Modific...	Status	Product...	Product...	Wareho...	Location	Locatio...	Lot	Quantity	UOM	Quality	Quality ...	Batch r...
1000	SE-0748085	2023/12/1...	2023/12/1...	Open	KIT08	Kit	TmpltPrj	M10	M10	1222	10	Piece	Approved		
1000	SE-0748084	2023/11/2...	2023/11/2...	Open	WH001	Pump WH	TmpltPrj	M10	M10	21824633...	5	Piece	Approved		218246331
1000	SE-0748083	2023/11/2...	2023/11/2...	Open	WL002	Cylinder	TmpltPrj	M10	M10	21824632...	2	Piece	Approved		218246322
1000	SE-0748082	2023/11/2...	2023/11/2...	Open	WL002	Cylinder	TmpltPrj	M10	M10	21824632...	2	Piece	Approved		218246321
1000	SE-0748046	2023/11/2...	2023/11/2...	Open	WB001	Pump	TmpltPrj	M10	M10	21824605...	1	Piece	Approved		218246051
1000	SE-0748045	2023/11/2...	2023/11/2...	Open	WB001	Pump	TmpltPrj	M10	M10		1	Piece	Approved		

Realtime updated inventory

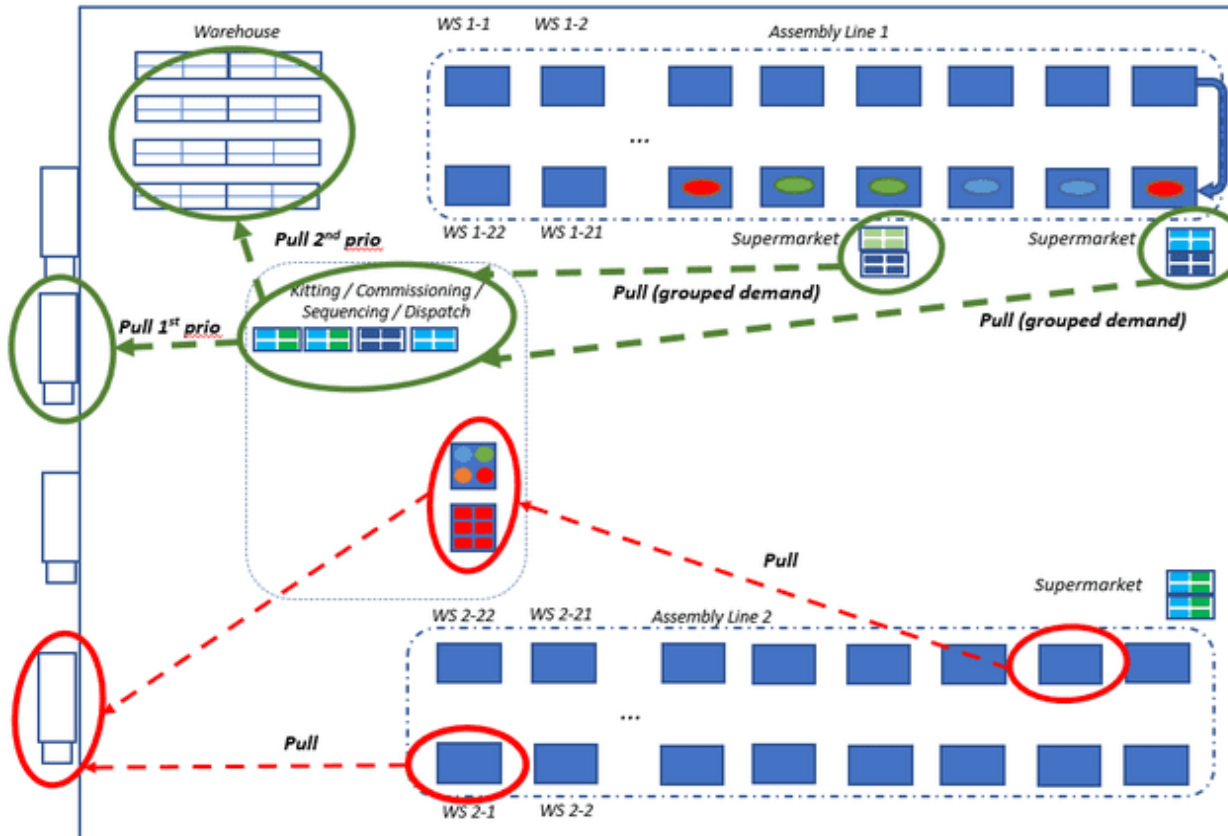
- Triggered by internal events or
- MQ based integration with external MES/LES systems

Location/Quality/Lot traced

Multiplant/Warehouse

Traceability accross the entire supply chain (receipt/production/shipment product flows)

Inventory – In plant logistics



In-plant flows based on pull mechanism

Demand from customer steers material flow

- In-plant logistic flow real-time adapted to reality of the production process & shipments
- Delivering materials to the line only when needed
- Delivering materials to the outbound shipment location only when needed
- Producing goods when necessary & in the right sequence
- Avoid cumulating unnecessary stock at the line, shipment location and intermediate locations
- Avoid shortages
- Optimal use of transports
- Optimal use of space
- Track & optimize all movements of materials

PearlChain Integration

Replication Errors			Details Replication Errors		
Queue	Shop	Errors	Queue	Shop	Remark
ReplicationIN	WEB AND OFFICE	3	ReplicationIN	COF0200	[Tue Apr 14 12:20:47 GMT 2020] failing after [0] retries. (1586866847386) VALIDATION_ERR
			ReplicationIN	COF0200	[Tue Apr 14 12:09:23 GMT 2020] failing after [0] retries. (1586866163584) VALIDATION_ERR
			ReplicationIN	COF0200	[Tue Apr 14 12:07:43 GMT 2020] failing after [0] retries. (1586866063143) VALIDATION_ERR

ReplicationIN Finished			ReplicationOUT Finished			Replication NEW		
Realm	LastReplicatedDate	HoursAgo	Realm	LastReplicatedDate	HoursAgo	Queue	Shop	
MARTYRS	Apr 14 2020 11:14AM	1	TOURVILLE	Apr 14 2020 12:14PM	0	ReplicationOUT	CHAMBRAY LES TOURS	
TOURS	Apr 14 2020 11:26AM	1	PARIS	Apr 14 2020 12:14PM	0	ReplicationOUT	PARIS 17	
TOULON	Apr 14 2020 12:05PM	0	WEB AND OFFICE	Apr 14 2020 12:14PM	0	ReplicationOUT	MARTYRS	
WEB AND OFFICE	Apr 14 2020 12:13PM	0	PARIS 17	Apr 14 2020 12:17PM	0	ReplicationOUT	IC LAVIDE	

Replication Errors/Event Type				Replication NEW messages / Event Type			
Queue	Shop	Event Type	Total	Queue	Shop	Event Type	Total
ReplicationIN	WEB AND OFFICE	SalesRegistration	5	ReplicationOUT	AMIENS CITY	CustomerRegistration	862
				ReplicationOUT	BEAUVAIS	CustomerRegistration	808
				ReplicationOUT	PARIS 18	CustomerRegistration	785

Integration framework

- Synchronous/asynchronous
- Multi-protocol / transport mechanism and data formats (XML/Json/...)
- Data transformation
- Message requencing
- Batch and realtime/near realtime
- Direct system communication or integrated with middleware frameworks
- Reliability via error recovery or DLQ approaches

Monitoring dashboard and configurable alerting

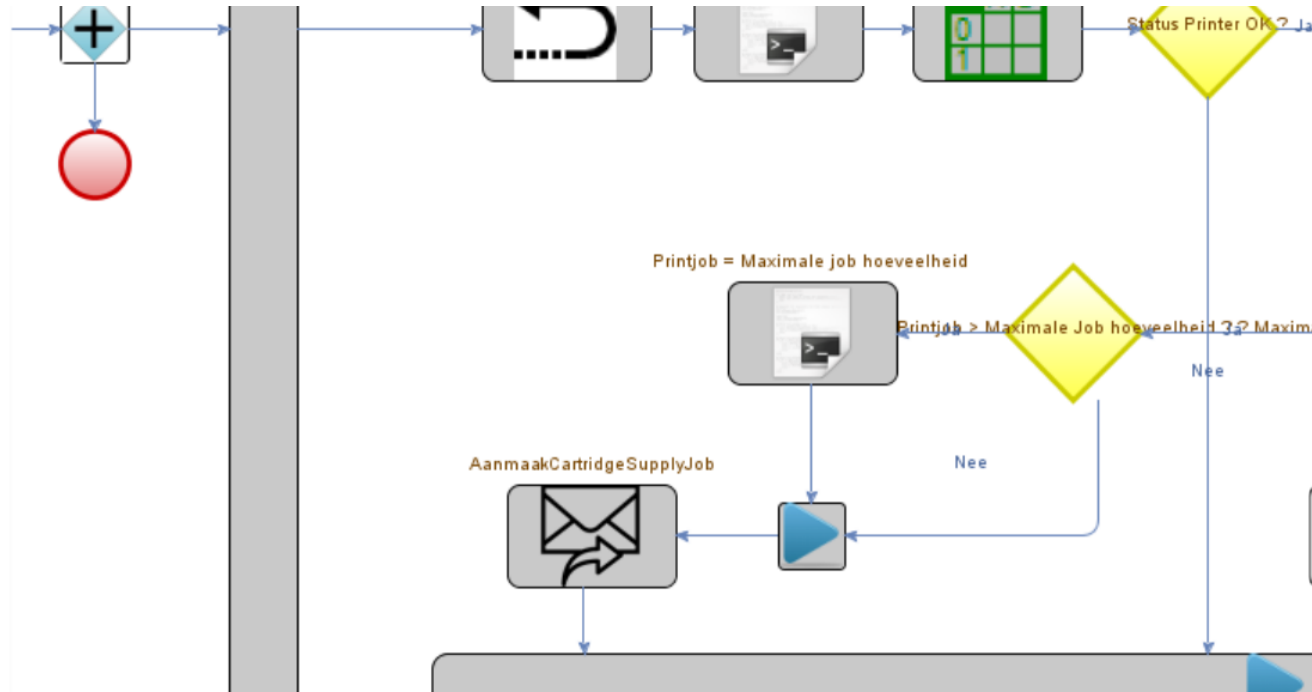
Embedded BI



- Operational, Analytical or Strategic dashboards
- Compatible with mobile devices
- Configurable widgets
- Dynamic setup without development cycles
- Extensible with plugin mechanism
- Integration possible in planning/execution screens
- Enterprise designer for custom, graphical monitoring screens



Workflow & BPMN engine



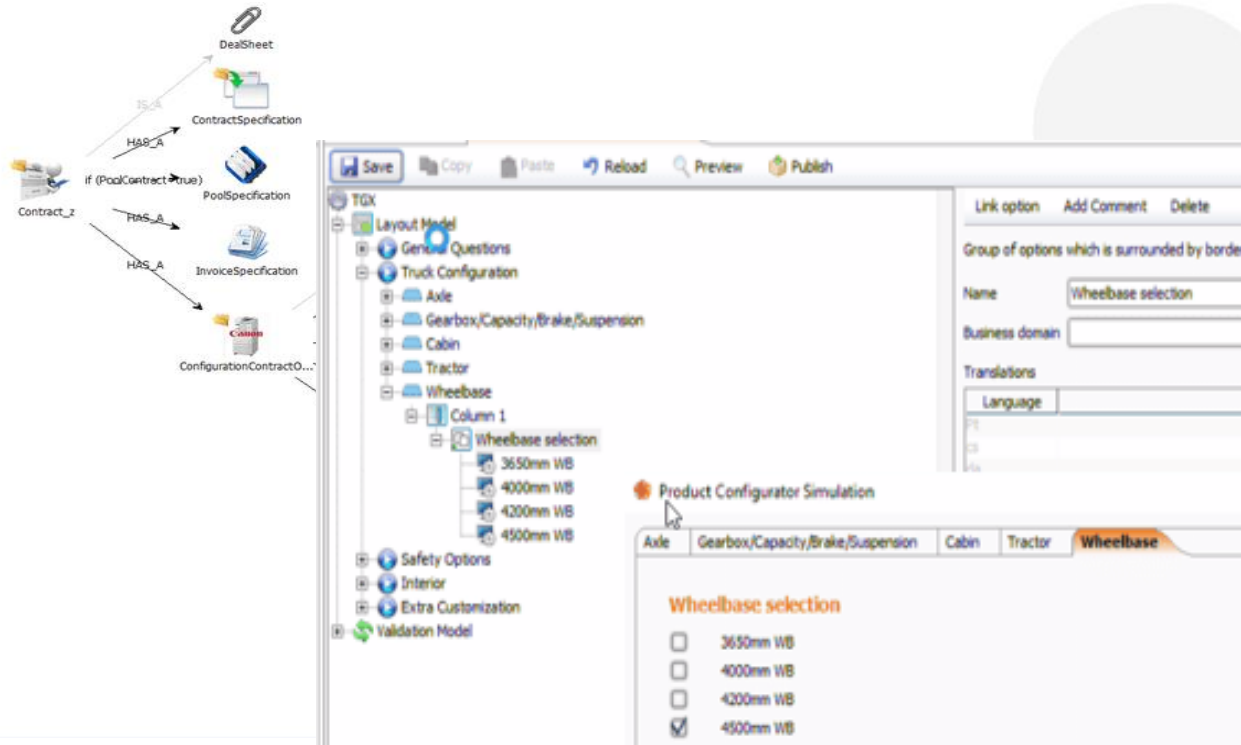
Process control across production and logistical activities can be set up by designing workflows that orchestrate activities on the production flow.

Typically, the workflows are triggered by an event and will steer automated action by a robot/machine, but it's also possible to include human activities (QA checks, approvals, etc.).

A complete production hall can be steered by the system, acting as a digital supervisor and drastically reducing the required workforce while increasing quality/efficiency.

The complete flow from inbound supply, moving with AGV/AMRs, conveyors or other transport systems, packing/unpacking, wrapping, etc, can be orchestrated by process engineers and without custom development! This means that the process experts can design and implement the automation without the need for a multi-skilled team.

Shape-IT: Business Rule & Modeling Engine



- Excludes business logic, complex algorithms, UI logic & metadata from code
- Manages rules outside of code where these are more explicit & transparent
- Moves business rules from the developer to the business expert
- Allows more rapid, yet controlled changes to configuration of Uis/data models/Algorithms and service logic

Reporting Engine

[Back](#)

Job Scheduling

[Back](#)

Document Creation & Distribution

Add Top Level Group Approve Catalog Changes Reject Catalog Changes

The screenshot shows the PearlChain PDF-Viewer interface. On the left, a file tree lists various documents under 'Safety Management System - Office' and 'HEALTH, SAFETY, ENVIRONMENT & O'. The main window displays a PDF document titled 'Operational Safety, Risk Analysis and Permits' from 'Exmar Shipmanagement NV HSEQ'. A search bar in the top left of the viewer shows 'Q- weather' and 'cold'. The search results on the left list 'Microsoft Word - Operational Safety' with sub-results for 'Page 2 (1 result)', 'Page 3 (1 result)', 'Page 6 (1 result)', 'Page 7 (1 result)', and 'Page 9 (4 results)'. The document content on the right includes a table with 'Date Modified: 03/02/2015 11:39:02' and 'Date Created: 19/06/2008 11:43:32', and a list of work procedures including 'Welding + Hot & Cold work procedures'.

Control the document lifecycle process

Creation

- template approach
- Barcode/QR code generation

Upload/Storage & Archiving

Search engine

Printing

- Configurable routes
- Document variants/copies/etc

Distribution via email

- Distribution lists (to:, cc:, bcc:)
- Configurable texts

Multilanguage/Locale



PearlChain

by adaptive