

The background of the image is a deep purple with a network of glowing, intersecting diagonal lines in shades of cyan and magenta, creating a sense of digital connectivity and data flow.

AVEVA WORLD

ACCELERATE INDUSTRIAL INTELLIGENCE

AVEVA WORLD 2026
MILAN

From Fragmented Operations to a Co-Packing-Ready Digital Factory

Translating manufacturing complexity into an executable digital operations model.

EXECUTIVE WHISPER:

This session is not about implementing another system. It is about converting fragmented operations into a disciplined execution environment that supports growth and customer trust.



Ali Al Rajhi & Khaled Zedan

Alesayi Beverage Company · Jeddah, KSA



Three high-speed lines today. Five tomorrow. 150+ SKUs on one governed model.

FMCG plant in Jeddah, KSA — CSD, energy drinks, malts, iced tea & soda water · Sweetened and sugar-free variants.

3 → 5

Production Lines

Today → planned

225,000

Cans per Hour

Combined Rated Speed

~1.25 Billion

Cans per Year

≈312 Million L/year

75,000 m²

Built-Up Area

Single-site plant footprint



COMPLEXITY PROFILE

Products

- CSD
- Energy drinks
- Malts drinks
- Iced tea
- Soda Water

Formats

- 185 ml Slim
- 250 ml Slim
- 300 ml Slek
- 330 ml Base
- 200/209 dia necks

Recipes & Process

- Paramix ratio 1+0 → 1+9
- CO₂ carbonation or N₂
- With or without tunnel pasteurization
- Combined-BOM PFS execution
- CIP 3 steps, 5 steps and 7 steps

Infrastructure

- 3 syrup rooms
- Sugar-dissolving plant
- In-house CO₂ plant
- 2 CIP Plant
- RO Plant



Governing this complexity is what makes the co-packing offer credible.



The issue was not missing technology. It was fragmented execution.

Three key factors that drove the need for transformation



Ambition

Strategic Goal

Scale Alesayi Beverage into a credible regional co-packing partner. Capacity is being doubled by commissioning relocated production equipment.

Target: Regional Leadership

Becoming the leading contract manufacturing hub for international beverage brands

● Strategic Priority



Reality

Current State

Disconnected systems, manual data capture, weak end-to-end traceability, slow reporting, inconsistent execution across shifts and lines.

Key Challenges:

Manual data entry
No real-time visibility
Inconsistent processes

● Needs Improvement



The Gap

Execution Challenge

Not strategy vs. tools — business ambition vs. execution capability. The gap between what we want to achieve and what we can reliably deliver.

Critical Insight:

Execution capability must match business ambition

● High Priority



Visibility was not the gap. Governed execution was.

Anchored in our 2023 SIRI assessment (Singapore EDB methodology, FMCG benchmark)



SIRI Assessment

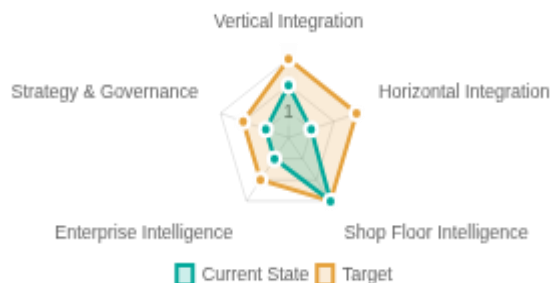
March 2023

16 dimensions evaluated across Process, Technology, and Organization. 13 of 16 dimensions on-par or above FMCG benchmark; 3 below (Horizontal Integration, Workforce L&D, Strategy & Governance).

✓ 13/16 Above Benchmark

Assessor's recommendation: Automate data exchange between shop floor and ERP; pool data into one real-time data store; visualise production status across lines and track KPIs in real time.

The MES program is the operational answer to that recommendation.



Traceability Gaps

Critical

Vertical Integration at Band 2/Digital – needs Integrated level for full traceability



SIRI Band: Band 2 / Digital – needs Integrated

High Priority

Data Flow Limitations

Medium

Limited shop-floor → enterprise data flow (Enterprise Connectivity 1)



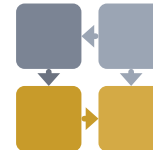
SIRI Band: Enterprise Connectivity · Band 1 / Connected

Medium Priority

Execution Inconsistency

Low

Execution inconsistency including FEFO/FIFO discipline



SIRI Band: Horizontal Integration · Band 1 / Defined

Low Priority

Recipe Governance

Critical

Recipe governance & IP exposure – needs controlled access



SIRI Band: Strategy & Governance · Band 1 / Formalisation

High Priority



04 · MODEL

The governed execution layer

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We didn't build a system. We built a governed execution layer.

ISA-95-aligned. Phase 1: three lines, Microsoft Dynamics 365 ↔ AVEVA Composable MES ↔ **SCADA** via OPC UA.



ERP Layer

Microsoft Dynamics 365

- ✓ Production orders & BOMs
- ✓ Recipe parameters (master)
- ✓ Planning & business transactions



MES Layer

AVEVA, ISA-95 aligned

- ✓ Work orders & job execution
- ✓ Traceability & genealogy
- ✓ Quality workflows



SCADA/PLC Layer

Process control & equipment

- ✓ Real-time signals via OPC UA
- ✓ Equipment control & monitoring



Governance Principles

- ✓ **Boundaries before features:** Clear system boundaries defined first, then functionality added
- ✓ **Master data upstream, execution downstream:** ERP owns master data, MES manages execution
- ✓ **Traceability designed in:** Genealogy and tracking built into the architecture from the start



Phase 1 Scope

- Three production lines: OEE monitoring, batch & recipe execution visibility
- Quality management, inventory management, full traceability
- ERP integration, LMS integration for pallet labeling



Boundaries are the architecture.

Clear system boundaries define responsibilities and data flow between ERP, MES, and SCADA/PLC layers.



Clear boundaries prevent overlap and ensure governed execution across layers.



Recipe protection isn't a feature. It's a commercial trust requirement.

Four critical pillars for secure recipe governance in co-packing operations

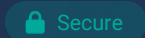


Upstream

ERP Governance

Recipe parameters are **governed and authored in ERP** (Microsoft Dynamics 365). Master data serves as the single source of truth for all recipe configurations.

- ✓ Recipe parameters authored in ERP only
- ✓ Master data as single source of truth
- ✓ No unauthorized modifications allowed



Secure

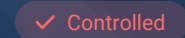


Controlled

MES Transfer

Released data transferred to MES; BOM locked at production-order release. MES displays synchronized parameters without modifying recipe logic.

- ✓ Released data flows to MES
- ✓ BOM locked at order release
- ✓ MES displays, doesn't modify



Controlled



Disciplined

Version Control

Version discipline reduces unauthorized shop-floor changes. MES maintains version history and audit trails for all recipe modifications.

- ✓ Version discipline enforced
- ✓ Audit trail for all changes
- ✓ Unauthorized changes blocked



Monitored



Guardrail

SCADA Boundary

Stop the data path at MES; SCADA/PLC does not receive recipes directly. Recipe data never flows to control layer.

- ✓ Data path stops at MES
- ✓ SCADA doesn't receive recipes
- ✓ Recipe data isolated from control

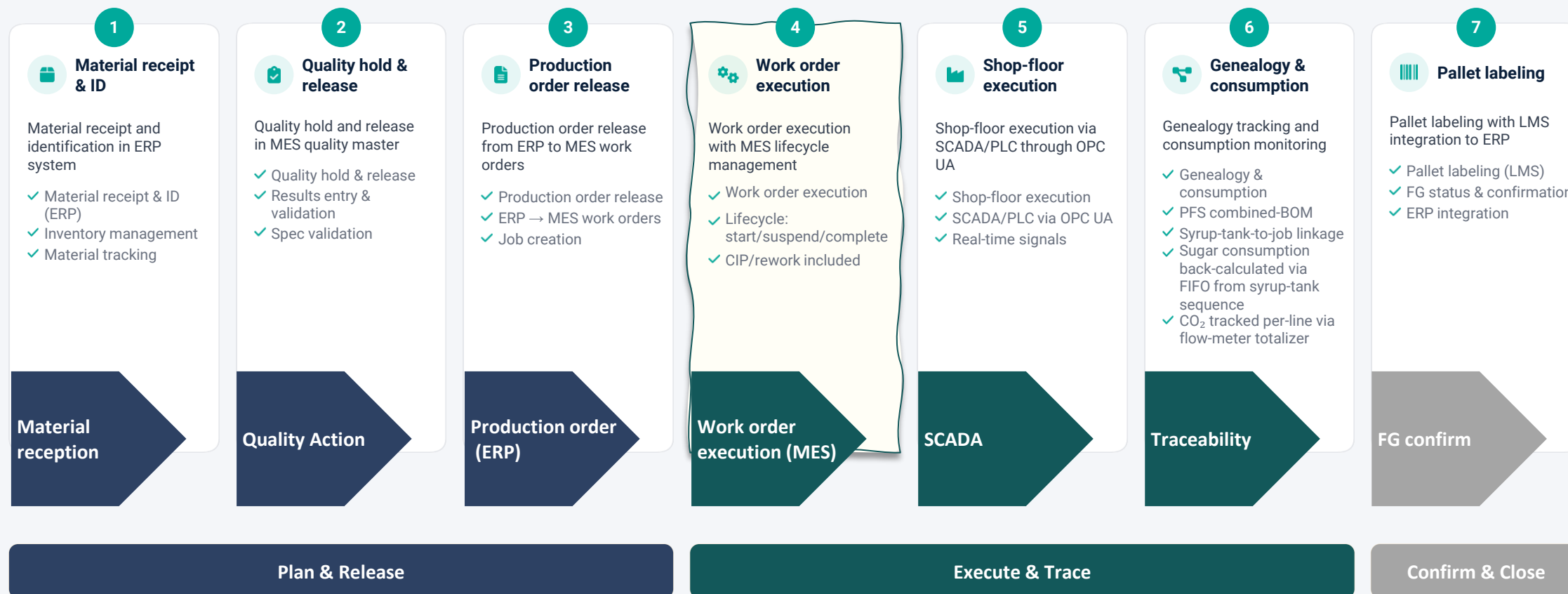


Protected



One flow. Seven controlled handoffs.

Planning, quality, production, and inventory operating as one governed flow.

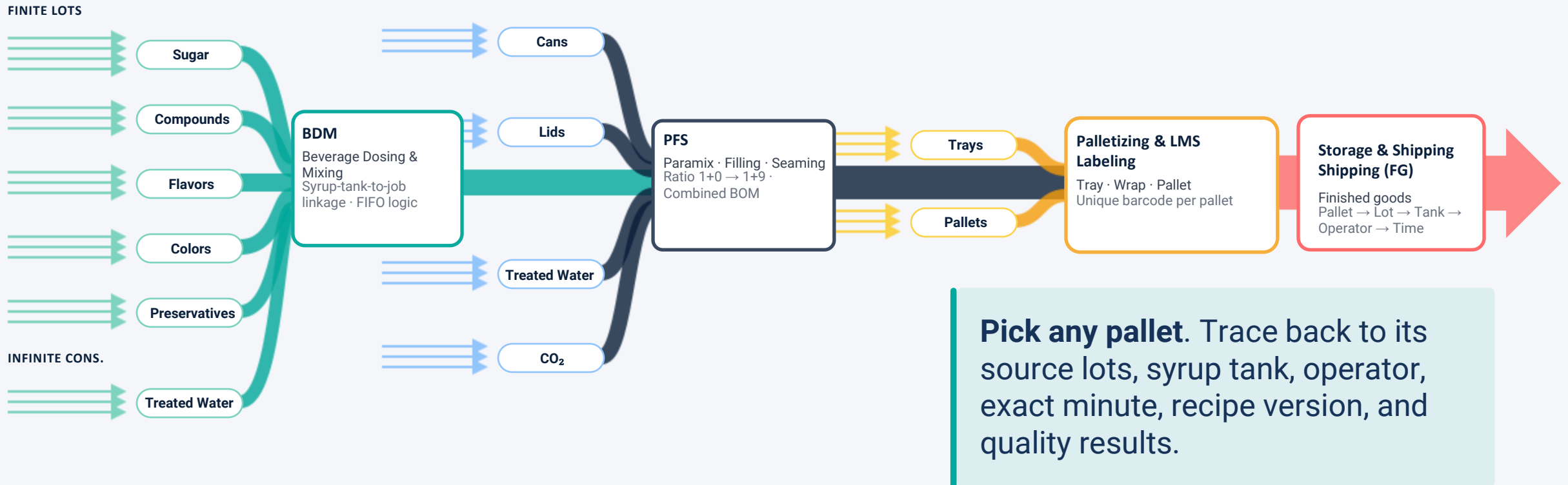


Each handoff is a governed boundary, not a manual workaround.



Forward and backward traceability — down to the operator, tank, and minute.

From raw materials through BDM, PFS, and palletizing — every input traceable to every output.



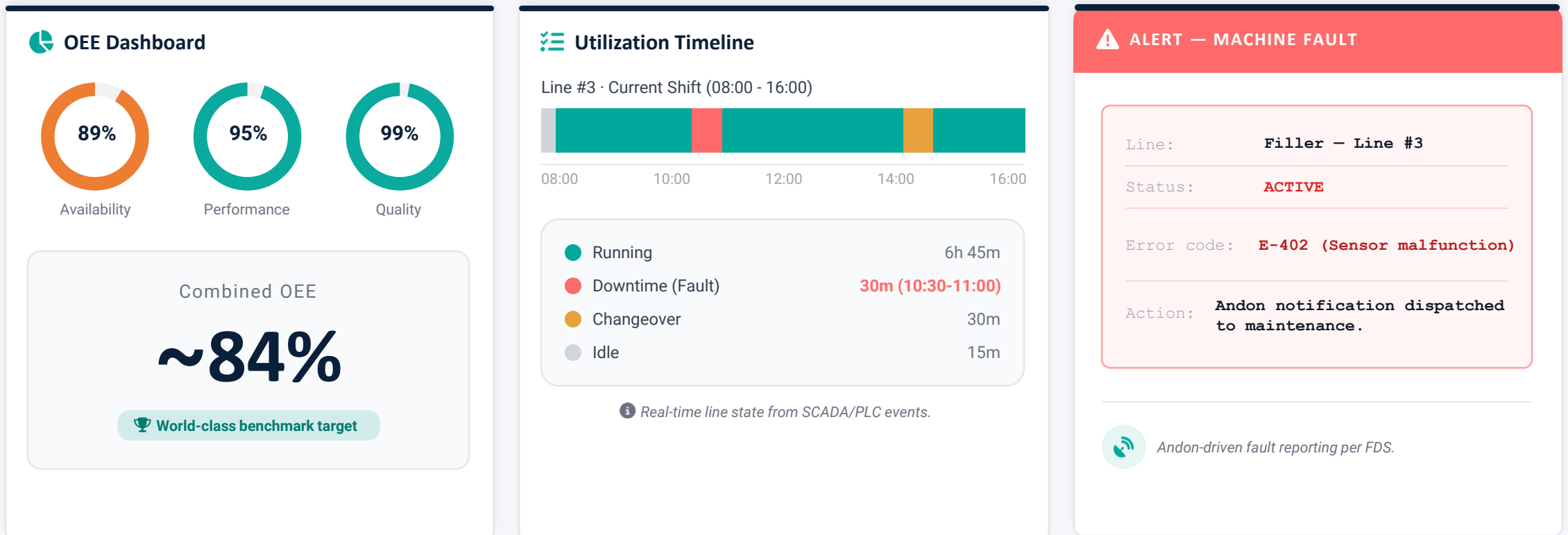
✔ **Full genealogy: what makes a co-packing audit fast — and a customer call short.**



What operators and supervisors will see at go-live.

🔗 Illustrative — Target Design

Phase 1 dashboards — illustrative target view. Operational data flows from Siemens PLCs to MES via OPC UA / AVEVA OI server.



🔗 Performance data flows automatically from SCADA/PLC to MES — removing manual latency and human error.



The value comes from discipline, not dashboards.

Four strategic value dimensions matched to SIRI prioritised dimensions and KPI categories



Faster

Traceability & Investigation Speed

Enhanced traceability and faster investigation capabilities through integrated vertical integration.

- ✓ Real-time traceability across all production lines
- ✓ Faster investigation and root cause analysis
- ✓ Reduced time-to-resolution for quality issues

SIRI: **Vertical Integration**

↑ High Impact



Tighter

Execution Control & Visibility

Stronger execution control and real-time visibility through shop floor intelligence.

- ✓ Real-time execution monitoring
- ✓ Automated quality checks
- ✓ Consistent execution across shifts

SIRI: **Shop Floor Intelligence**

↑ High Impact



Disciplined

Inventory & Quality Discipline

Improved inventory management and quality discipline through material genealogy tracking.

- ✓ Material genealogy tracking
- ✓ Spec validation at each step
- ✓ Reduced waste and rework

SIRI: **Materials & Asset Efficiency**

↑ Medium Impact



Trusted

Co-Packing Readiness

Enhanced customer trust through controlled recipe transfer and version discipline.

- ✓ Controlled recipe transfer
- ✓ Version discipline enforcement
- ✓ Audit trail for compliance

SIRI: **Strategy & Governance**

✓ Critical

Value logic and strategic benefits aligned with transformation goals.



11 · MATURITY

Design maturity vs. expected results

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What is real today. What we expect after go-live.

Design maturity is real; operational benefits are earned at go-live.



Already Real Today

Accomplished design work

✓ **Transformation case:** Target digital execution model defined and documented

Status: **Complete**

✓ Done

✓ **FDS complete and approved:** Functional Design Specification finalized

Status: **Approved**

✓ Done

✓ **Architecture boundaries defined:** ERP/MES/SCADA structure established

Status: **Defined**

✓ Done

✓ **Governance logic designed:** Recipe, inventory, quality, traceability

Status: **Designed**

✓ Done

✓ **Phase 1 scope set:** Three lines, OEE, batch/recipe visibility

Status: **Ready**

✓ Done



Expected After Go-Live

Post-implementation benefits

🕒 Pending

🕒 **Real-time visibility into production and downtime:**

Live production status across all three lines

Status: **Pending**

🔍 **Faster, more reliable end-to-end traceability:**

Investigation speed and data accuracy improvements

Status: **Pending**

📉 **~10% downtime reduction:** Improved equipment reliability

Target: **10% reduction**

💰 **~5% cost reduction:** Operational efficiency gains

Target: **5% reduction**

👥 **Co-packing readiness:** Enhanced customer trust

Target: **Ready**

Design maturity is real; operational benefits are earned at go-live.



12 · LESSONS LEARNED

Key principles from the transformation journey

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Five principles we'd repeat on day one.

Lessons learned from implementing a governed execution layer

1

Business model first. System second.



Start with the business model and operational requirements before selecting technology. The system should serve the business, not dictate it.

✓ Strategic Priority

2

Boundaries are the architecture.



Clear system boundaries define responsibilities. ERP, MES, and SCADA each have distinct roles and data ownership.

✓ Architecture

3

Traceability is designed — never assumed.



Material genealogy and batch traceability must be engineered into the system from the start, not added later.

✓ Design

4

Recipe governance is strategic, not technical.



IP protection and recipe control are commercial requirements for co-packing, not just technical features.

✓ Governance

5

A digital factory is an operating model — not a dashboard.



Digital transformation requires changing how operations are executed, not just adding visualization tools. The focus should be on disciplined execution and governed processes.

✓ Operating Model



MES is the foundation. Not the destination.

Strategic roadmap for evolving from execution foundation to smart factory capability



Horizon 1: Execution Foundation

Phase 1 - Three production lines

Establish the core execution foundation with OEE monitoring, batch visibility, quality management, and full traceability across three production lines.

- ✓ OEE monitoring and batch visibility
- ✓ Quality management and inventory control
- ✓ ERP & LMS integration for three lines

Status: **In Progress**

✓ Active



Horizon 2: Integration & Decision Support

APS, WMS, EMS implementation

Expand integration capabilities with Advanced Planning & Scheduling, Warehouse Management, and Energy Management Systems.

- ✓ APS for detailed production scheduling
- ✓ WMS for warehouse optimization
- ✓ EMS for energy management

Phase: **Phase 2 – post Phase-1 stabilization**

🕒 Planned



Horizon 3: Smart Factory Capability

CMMS, analytics, multi-plant scale

Achieve smart factory capability with predictive maintenance, advanced analytics, and scalable multi-plant operations.

- ✓ CMMS-driven predictive maintenance
- ✓ Advanced analytics and optimization
- ✓ Multi-plant scale and integration

Phase: **Phase 3 – multi-plant scale**

🕒 Future

Each horizon raises the floor of what 'normal' looks like in plant operations.



Alesayi Beverage builds a governed digital execution model for a copacking ready factory

Consumer Products - Beverage | SAUDI ARABIA

● CHALLENGE

The “What” and “Why” — motivation for the transformation

- Fragmented operations across 150+ SKUs and five product families
- Manual data capture, weak end-to-end traceability, inconsistent execution across shifts
- Recipe and IP governance gaps blocking credible co-packing offer
- Unclear execution boundaries between ERP, MES, and SCADA layers

● SOLUTION

The “How” — AVEVA solutions deployed

Designed and architected AVEVA Composable MES, ISA-95–aligned, integrated with Microsoft Dynamics 365 ERP and SCADA/PLC via OPC UA. Phase 1 covers three high speed lines: OEE, recipe execution visibility, quality, inventory, traceability, and Batch Management, Label Management System (LMS) integration for pallet labeling.

● RESULTS

Outcomes and benefits — Phase 1 achievements and targets

- Approved Functional Design Specification across ERP, MES, and SCADA boundaries
- Designed governed execution layer for 150+ SKUs and three lines, scaling to five
- Established Recipe Governance and IP Protection framework for co-packing trust
- Targeted ~10% downtime reduction and ~5% cost reduction, validated post go-live



Alesayi Beverage Co. Ltd.

Jeddah, Kingdom of Saudi Arabia



A digital factory is defined by execution — not connection.

1

Fragmentation was the real problem

The issue was not missing technology, but fragmented execution and disconnected systems.

2

The answer is a governed execution layer

A disciplined execution environment that bridges business planning and plant operations.

3

Co-packing readiness is built on trust and control

Customer-grade control over recipes and process execution, with full traceability and IP protection as commercial trust requirements.

-  Phase 1 covers all three lines. Subsequent phases scale the same governed model.
-  Phase 2 covers all The Second Plant with 7 Production Line.

Thank you

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