



STANDARD MANUFACTURING OPERATING SYSTEM

EMMa Operations

A factory operating system in which the Business System is not a binder of documents but a running part of the application — every business event raises the process it should raise, every process puts named work in front of the right person, and every completed step leaves evidence.

Built according to the Efficiency Management Method

Elgibe Solutions SRL

elgibesolutions.net · emma-operations.com

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EMMa arrives already knowing how a factory works — and asks you to confirm it.

The difference from every other manufacturing system project.

You do not begin by writing a specification for how your plant should operate. EMMa Operations ships with a complete factory Business System — the processes, the responsibilities, the events, the evidence rules and the KPI formulas are already defined. Implementation starts by validating that model against your reality, not by inventing it.

What EMMa Operations is, in plain words

If you read only one page of this document, read this one.

EMMa is an application that lets a factory run the entire flow from a customer order to a delivered product — and, in the same system, the same system, the processes that keep the plant improving: employee assignments, KPIs, controlled documents, industrialization industrialization projects, training and qualification, maintenance and problem solving.

Customer orders Take the order, check you can make it, commit a date	Planning Turn confirmed demand into an executable plan	Production Run the work and record what actually happened	Quality Control, contain, correct — and prove it
Maintenance Keep equipment and tooling available	Material & warehouse Get material where it is needed, in and out	Purchasing Secure supply on controlled supplier terms	People & training Who may do what, and who is ready to do it
Industrialization Take a new product through to serial production	Documents Controlled documents, with read confirmation	Performance KPIs that turn into named work with a due date	Management Objectives, reviews and process ownership

All of it is one connected system — not twelve separate tools that someone has to keep in step by hand.

The starting point in most factories

Very few plants have the time, the people or the internal expertise to define a complete digital Business System from zero. This is what an honest assessment usually finds.

● Processes exist only partially

● Responsibilities are implicit, not defined

● Process maps do not reflect day-to-day reality

● Critical know-how sits with a few experienced people

● Departments understand only their own activities

● Procedures were written mainly for audits

● Business requirements are mixed with historical habits

● Nobody can prove what actually happened last month

A blank workflow platform makes this worse, not better. Asking a plant in this state to design its own operating model in configuration screens is asking it to do the hardest part of the work with the least support.

EMMa therefore arrives with a complete baseline already built in.

The method behind it, in one loop

EMM — the Efficiency Management Method — connects a business fact to real work, to proof, and back to improvement. EMMa executes this loop for a factory.



A process should not only describe work. It should trigger, guide and prove its execution.

EMM is the method. EMMa is the product.

The two are often confused. Keeping them apart makes the rest of this deck easy to follow.

EMM

Efficiency Management Method

The general method. It defines how business requirements, processes, application events, responsibilities, execution, evidence and improvement stay connected — in any organization, with any software.

Product-independent

+



EMMa
OPERATIONS

The opinionated manufacturing implementation of that method. EMMa applies EMM to a real factory and ships it as a working product:

Manufacturing business requirements

Predefined factory processes

Manufacturing personas & RACI

Operational modules

Business events & process runtime

Assignments & evidence

Manufacturing KPIs

Process & evidence traceability

Fit-validation implementation

EMMa is not an empty workflow platform. It is a factory operating model that already exists, in software.

One product, many factory shapes

EMMa is opinionated about how work is governed — not about what your plant looks like. The shape of the factory is yours to configure, and there is no assumed number of areas, shifts or products.

YOUR FACTORY CONFIGURES

● As many production areas as you run

● Machines, lines, work centres and tooling

● Plant calendar

● Reference catalogues and document types

● Cost models and capacity profiles

● Customer agreements and supplier terms

● Any working programs and shift patterns

● Products and production configurations

● Departments, job titles and people

● KPI targets, owners and review cadence

● Quality plans and control characteristics

● Notification text and delay values

WHAT IS FIXED

1 The built-in business processes

The steps, the transitions, the event bindings and the evidence each step requires.

2 The personas

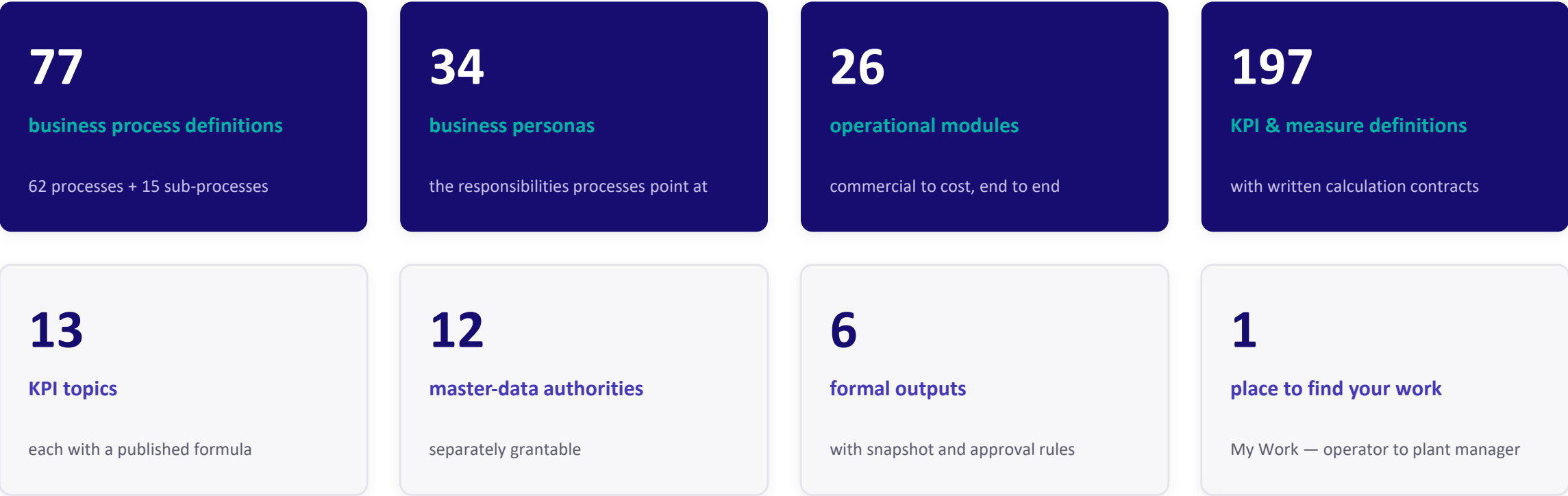
The named business responsibilities every process step points at.

At runtime you map the personas onto your own employees.

The examples named in this deck describe one configured plant — not a limit on what EMMa supports.

What ships with the product

Every number below is a definition that arrives with EMMa Operations. A factory does not author them — it maps them onto its own organization and starts working.



The definitions, the personas and the KPI contracts are the product — not a roadmap.

Five process routes hold the factory together

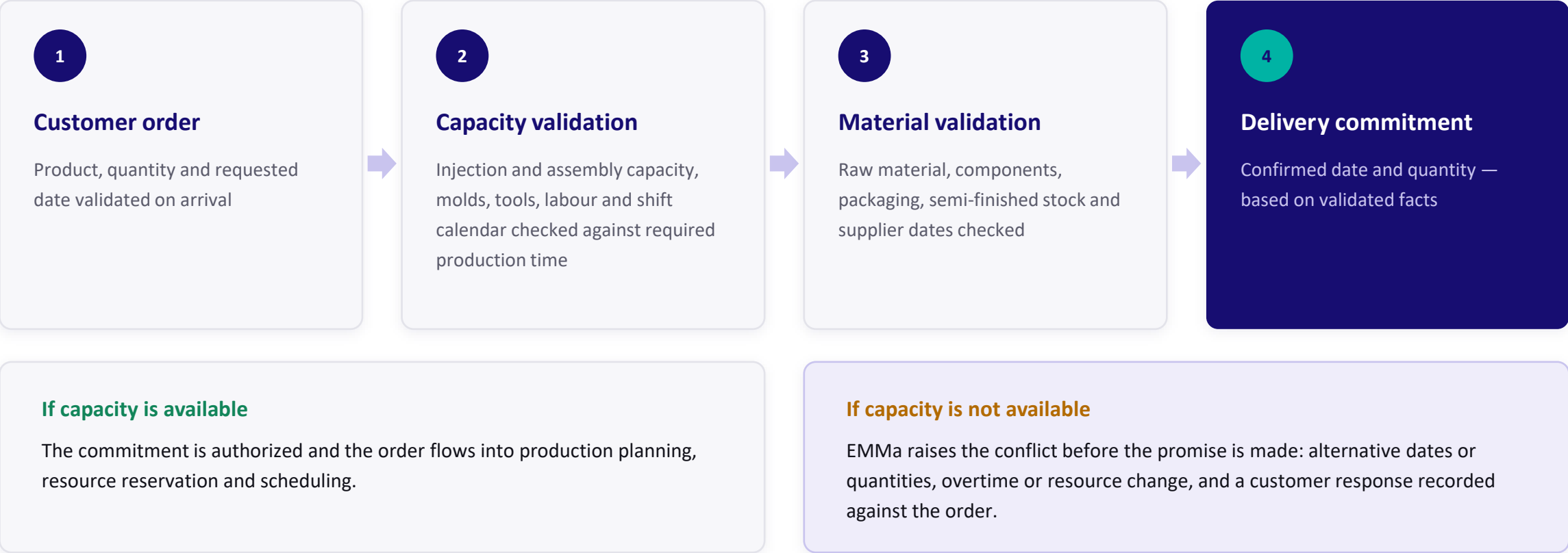
Almost everything a plant does belongs to one of these five journeys. EMMa models each of them end to end, across every department they touch.



Every checkpoint on every route has a trigger, a responsible persona, an assignment, a validation and evidence.

Route A — from an order to a promise you can keep

The most expensive mistake a factory makes is committing to a delivery it cannot produce. EMMA puts capacity and material validation between the order and the promise.



Commit based on facts, not optimism.

Plan by shift. Monitor by shift.

Quantity alone is not a plan. A production manager needs to know where, when and during which shifts the work will happen — so EMMa treats the working program and the shift as a first-class planning dimension, whatever pattern your plant runs.

EXAMPLE — THE DEMAND

Product A

12,000 pcs

Standard cycle

20 sec

Target OEE

80 %

Required time

calculated by EMMa

EXAMPLE — ONE PLANT'S MONDAY

Shift 1

06:00–14:00

IM-01 → Product A

Assembly 1 → Product X

Shift 2

14:00–22:00

IM-01 → Product A

Assembly 1 → Product X

Shift 3

22:00–06:00

IM-01 → Product A

Assembly 2 → Product Y

Because the plan is built by shift, everything downstream is measured by shift too:

Planned vs produced

Good vs scrap

Downtime

Runtime

OEE

Operator assignment

Machine status

Tooling in use

Shift handover

Overtime

A breakdown, a shortage or a priority change creates work for the planner — not a silent edit.

Production execution — one model, area-specific behaviour

A plant configures as many production areas as it runs. Each follows the same operating model while keeping the resources, steps and events its own technology needs. Two examples:

EXAMPLE — INJECTION MOLDING

- Production order released
- Material, mold and machine ready
- Setup by the setter
- First-off inspection and release
- Production and in-process quality
- Quantity confirmation
- Order completion

EVENTS THE AREA PUBLISHES

Setup.Started / Completed · Production.QuantityReported ·
Downtime.Started / Ended · Scrap.Reported ·
Mold.ChangeRequired

EXAMPLE — ASSEMBLY

- Production order released
- Components and line ready
- Setup and line clearance
- First piece validation
- Assembly and functional test
- Packing and quantity confirmation
- Order completion

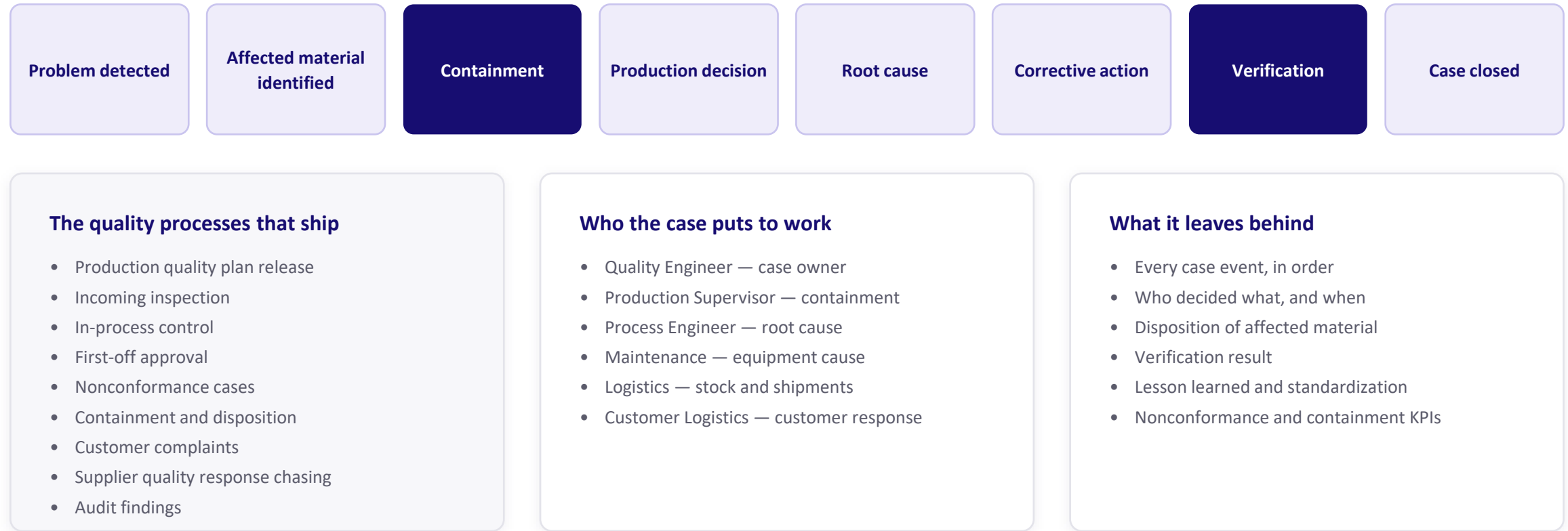
EVENTS THE AREA PUBLISHES

Line.SetupCompleted · Station.Blocked · QualityIssue.Reported
· MaterialShortage.Reported · AssemblyOrder.Completed

Where one area feeds another through intermediate stock, EMMA makes the shortage visible before the receiving area is blocked.

Quality — a problem becomes a traceable case

A nonconformance is not a note in a logbook. It is a case with containment, disposition, root cause, corrective action, verification and a full event history.



The same shape covers a customer complaint: contain first, answer the customer, then find the cause and prove the fix.

Maintenance, equipment and molds

Availability is planned, not hoped for. Preventive plans are released versions, breakdowns are cases, and tooling gets handling of its own where a plant depends on it.

PREVENTIVE — MaintenancePlan.Due

Plan intervention → confirm production window → assign technician → execute → record findings → replace parts → validate equipment → close

The checklist text is copied onto the work order when it is created — editing the template later cannot change what a technician was actually told to do.

BREAKDOWN — Machine.BreakdownReported

Maintenance assignment → diagnosis → repair → test → production validation → close → failure history updated

The same event also reaches the planner: a breakdown that changes the plan creates an assignment to evaluate the impact on customer orders.

Tooling — molds, for example — is managed as a first-class asset

Tool-machine compatibility

Cavity count

Shot / cycle count

Maintenance interval

Repair history

Storage location

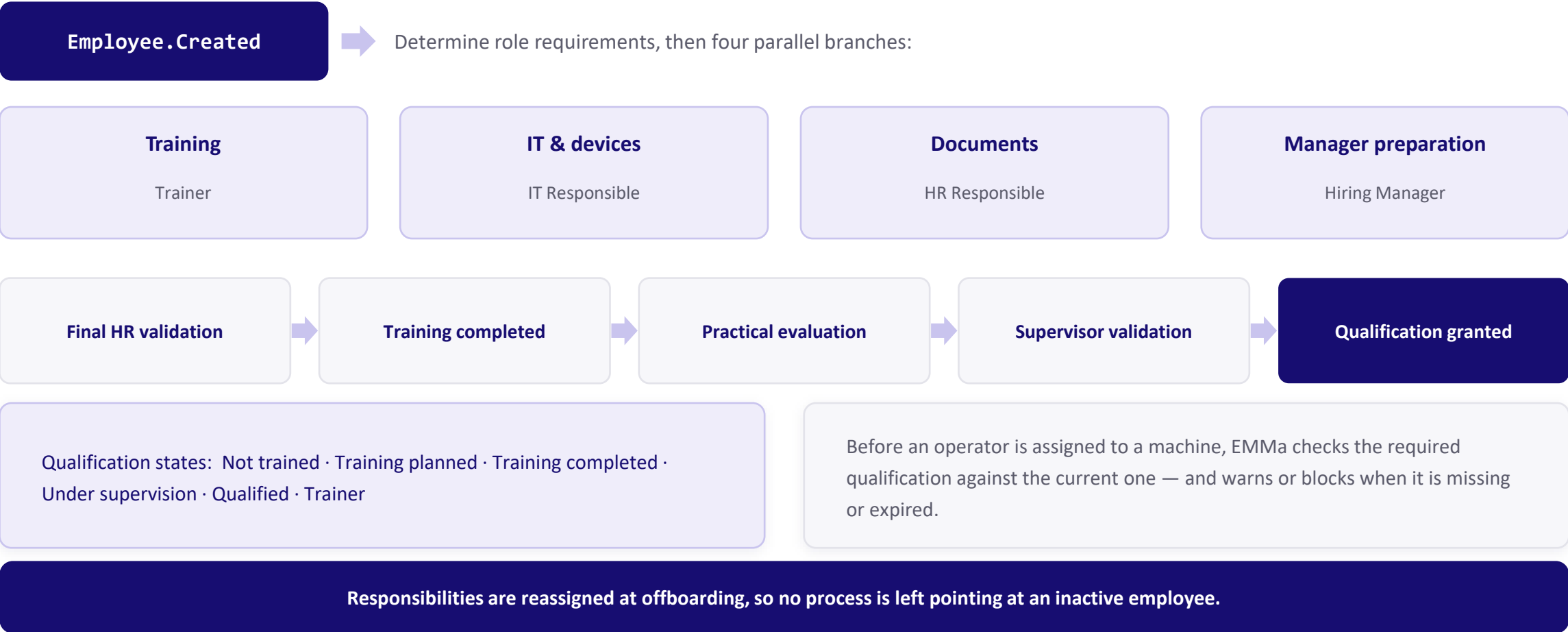
Approved products

Availability & status

Spare parts, failure modes, MTBF and MTTR come from the same records — no separate reliability spreadsheet.

People and competence — nobody works unqualified

Employee Onboarding is EMMA's first end-to-end reference process. It runs from the moment HR creates the employee to the moment the plant can safely put them on a machine.



Product industrialization — the gate to serial production

A new product reaches the shop floor only when the process behind it has been proven. EMMa makes that gate explicit, with named owners and required evidence.



PRODUCTION RELEASE — the process is not released until every item is true

✓ Equipment ready

✓ Tooling ready

✓ Process parameters approved

✓ Control plan approved

✓ Work instructions approved

✓ Material available

✓ Operators trained

✓ Quality criteria validated

✓ Packaging defined

✓ Maintenance plan created

✓ Production master data complete

✓ Capability data recorded

Thirty-four personas, and RACI that produces work

Every process step names the persona responsible, accountable, consulted or informed. Your plant maps those personas onto its own job titles — that is configuration, not development.

A SAMPLE OF THE STANDARD PERSONA CATALOGUE			
Plant Manager	Production Manager	Shift Leader	Production Planner
Customer Logistics	Quality Engineer	Maintenance Technician	Process Engineer
Industrial Engineer	Tooling Engineer	Trainer	HR Responsible
Warehouse Responsible	Buyer	Setter	Operator

WHAT RACI DOES AT RUNTIME

R

an assignment appears in that person's queue, with a due date

A

an approval or validation, and the escalation target

C

a consultation the step waits for

I

a notification — nothing to complete

Resolution follows real relationships

Recipients resolve through assignee, line manager and shift supervisor — never a hard-coded name.

Delegation is recorded

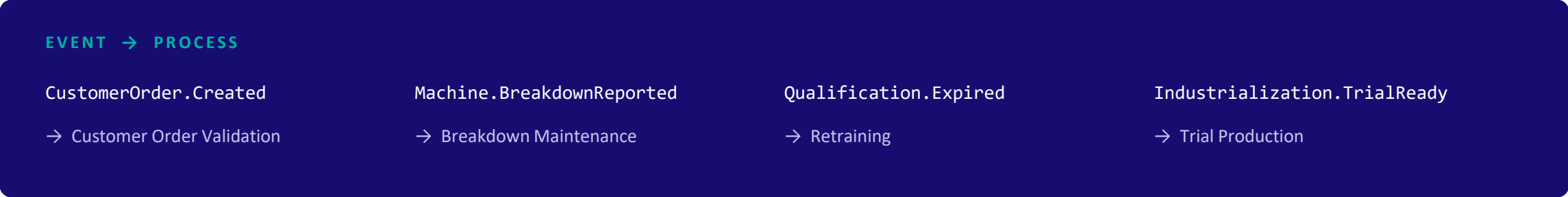
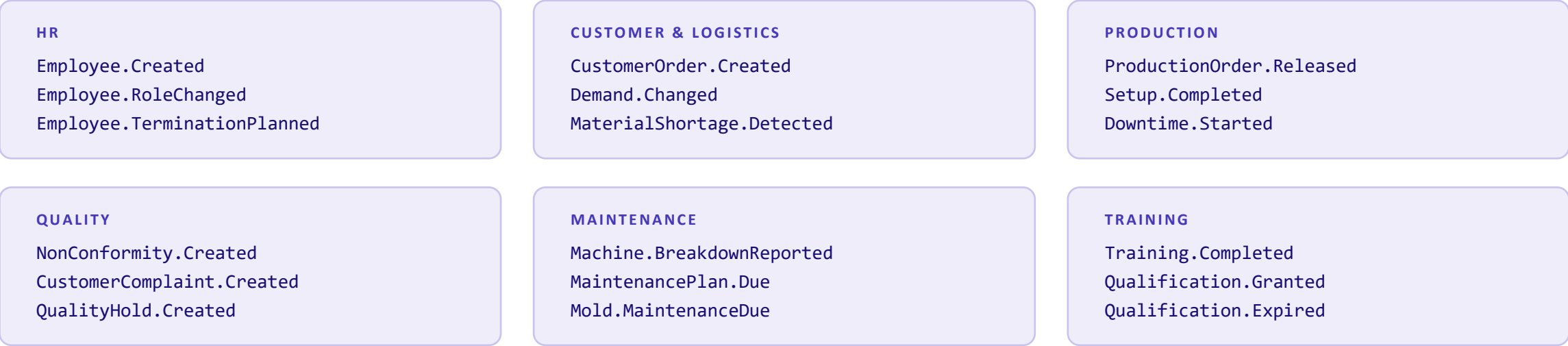
Authority can be delegated for absence or holiday, and the delegation is part of the record.

Unmapped personas are caught

Before go-live EMMA reports unmapped personas, missing owners and inactive employees. Nothing fails silently.

Business events — what actually starts the work

Modules publish business facts. The Business System decides which processes those facts must start. Neither has to know the other's internals.



Events are persisted before dispatch, processed once, and re-drivable if they fail — a process is never lost to a restart.

One place that answers “what is on me today?”

No user needs to know which module a task came from. The process decides who does the work; My Work is where they find it — for everyone from everyone from operator to plant manager.

MY WORK — TODAY

Employee Onboarding

Plan training for John Smith

Due today

Industrialization

Validate trial results for Project X

Due today

Quality

Complete containment for NC-184

Overdue 2h

Production

Validate first-off sample for PO-1292

Due now

My Work also carries

My shift, from the published factory calendar · My documents, with read confirmation and comprehension quizzes · My notifications and preferences · My profile, language and password · My support tickets

Work reaches people, not modules

An assignment names the business subject — “plan training for John Smith” — never an engine step number. It carries the process it belongs to, a due date, the expected result and the evidence that closes it.

Ordered worst-first

The home page leads with whatever is furthest from target in the parts of the plant that person can actually act on.

Built for the floor

The shift board, kanban calls and the technician queue are designed for gloved hands on wall-mounted and handheld terminals.

Degraded, never blank

When live data is unavailable, a floor terminal shows the last known good data with a timestamp. A spinner is a stopped line.

A measurement layer that already knows the formulas

197 KPI, supporting-measure and operational-indicator definitions across 13 topics — each with a written calculation contract: the formula, the inputs, the valid dimensions, and the rules for late and corrected data.



Three kinds, never mixed

A KPI is a normalized indicator. A supporting measure is a quantity used inside KPIs. An operational indicator is a risk or queue you act on now.

Calculated on a timer

Checkpoints are computed continuously by a background worker — not when somebody happens to open a page. Late evidence raises an explicit recalculation.

From a red KPI to real work

A KPI has an owner, a target, a review cadence and a link to the tasks raised against it — so a red indicator produces named work with a due date.

OEE by equipment/day and OEE by area/week are the same definition at two scopes — not two competing KPIs.

Proof is a by-product, not a project

Because work executes inside processes, the record of who did what, when, against which released version of which definition, is produced by ordinary operation.

Immutable released versions

A definition is released as a version. Once released it never changes — a new version supersedes it.

Instances carry their version

A running process remembers the definition and configuration version it started under. Changing tomorrow's rules does not rewrite yesterday's execution.

Effective-dated configuration

Shift systems, cost rates, capacity profiles, verification policies and supplier terms are version chains, so the application can answer “what was in force then?”

Frozen assignments

Text, due date, assignee and the versions in force are frozen on the assignment. A later change does not rewrite what somebody was asked to do.

Recalculation, not silent rewriting

When late evidence arrives, a checkpoint is recalculated and superseded explicitly. Historical calculation evidence is never quietly overwritten.

Attributed outputs

Every generated document records who produced it. Exports inherit every visibility rule of the query behind them.

An audit stops being an act of reconstruction: here is our process · here is the owner · here is the RACI · here are the triggers · here are the running and completed instances · here is the evidence · here is the performance · here are the improvements.

What EMMa defines, and what your factory configures

EMMa Operations is opinionated on purpose, and the boundary is explicit. A factory user never has to design a process — and cannot accidentally break one.

EMMa DEFINES AND RELEASES

- Processes and sub-processes
- Steps, transitions and event bindings
- Responsible personas
- KPI definitions and formulas
- The notification catalogue
- Assignment structure
- Evidence and validation rules

All of it defined when the product is built — never editable in an admin screen.

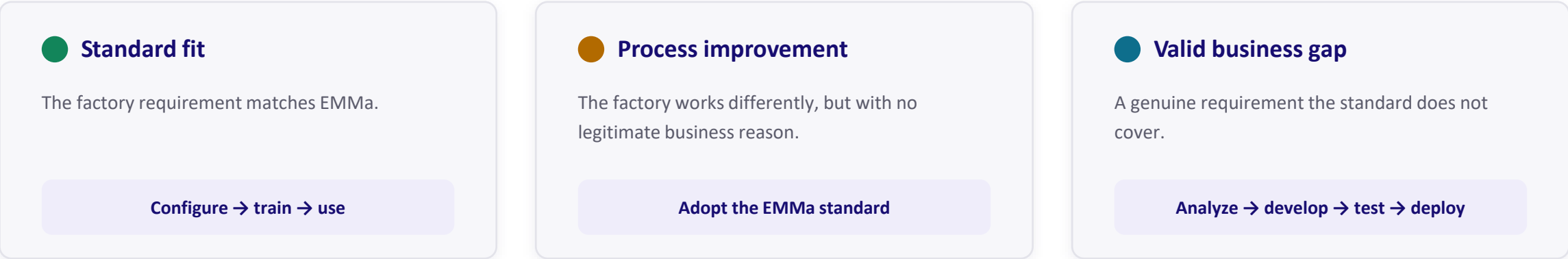
YOUR FACTORY CONFIGURES

- Plant model — production areas, resources, machines, lines, tooling
- Factory calendar, shift systems and working programs — any pattern
- Products, production configurations and bills of material
- Persona → department and job-title mapping
- KPI targets, owners and review cadence
- Notification text and delay values
- Reference catalogues, document types, audiences and quizzes
- Cost models, capacity profiles, quality plans, supplier and customer terms

Everything on the right is versioned or audited wherever a historical record depends on it. Widening who may verify a parameter tomorrow does not retroactively legitimise a check performed by someone who was not authorized yesterday.

Implementation is fit validation, not design from zero

The usual first phase of a manufacturing system project — months of workshops producing a process design — becomes a review of a design that already exists and already runs.



Training follows the same principle. Because personas, processes and pages are standard, the training material is standard too — a person is trained on their persona, not on a bespoke configuration nobody else has ever seen.

What it takes to run it

EMMa Operations is a web application, installed once on a server inside your own network. Nothing is installed on office computers, tablets or shop-floor terminals — people open a browser and work.

THE DEPLOYMENT

Where it runs	A virtual machine on your own infrastructure. Cloud is possible; on-premise is recommended.
Operating system	Linux or Windows Server — your choice.
Database	Microsoft SQL Server or PostgreSQL — your choice.
Application VM	Minimum 4 cores · 8 GB RAM · 100 GB disk. Recommended 8 cores · 16 GB RAM · 250 GB SSD.
What a user needs	A modern web browser. Nothing else.

FOR THE APPROVER

- 1 application VM
- 1 database — SQL Server or PostgreSQL
- 1 internal DNS name and an HTTPS certificate (an internal CA is fine)
- Backup of database and attachments, with a tested restore

AI is optional

Every operational feature in this deck works with AI switched off. To run the in-app assistant on your own hardware — recommended when plant information should stay on-premise — a separate GPU host is required.

The base application needs no internet connection. It runs entirely inside the plant network.

What EMMa Operations does not require

Most of the cost and delay in a manufacturing system project comes from the dependencies nobody mentioned at the start. Here are the ones that do not apply.



No client installation

Not on office PCs, shop-floor terminals or handhelds.



No internet for the base application

The base deployment runs inside the plant network.



No cloud AI dependency

Local AI is supported; cloud chat and voice are optional.



No cloud subscription

A provider account is needed only for cloud services you choose to enable.



No per-device licence

Licensing is not tied to the number of browsers or terminals.



No proprietary database

SQL Server or PostgreSQL, according to your choice.



No specialist hardware

GPU hardware is needed only if you choose local AI at production scale.



No internet-exposed database

Users reach EMMa over HTTPS; the database stays an internal service.

And no requirement to write a specification first. The Business System arrives with the product.

The EMMa promise to a factory

- 1 You do not need to write a software requirements specification first.
- 2 EMMa already contains the standard factory processes it was built to support.
- 3 We validate those processes against your factory.
- 4 We map the standard responsibilities to your organization.
- 5 We configure your employees, equipment, products, shifts and master data.
- 6 We train your people on the processes and responsibilities they actually hold.
- 7 Where you have a genuine requirement outside the standard, EMMa is extended deliberately.

**EMMa Operations does not ask a factory to describe how it should work.
It arrives already knowing — and asks the factory to confirm.**



Talk to us

If you want to see EMMa Operations against your own factory — your products, your shifts, your machines — or need help preparing the ground before digitalization starts, talk to the people who built it.

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The product — EMMa Operations

A standard manufacturing operating system with a predefined factory Business System already implemented.

emma-operations.com

The service — digitalization consultancy

Understanding and standardizing your processes, fit validation against the EMMa standard, organizational mapping, master data preparation, implementation and employee training.

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