Business Terminology of the Talc Inventory System

■ Station

A **Station** is a physical operational site in the business.

Examples include processing plants or storage yards such as:

* ABS
* PSS
* KEF

A Station represents a real-world location where material is:

* Received
* Processed
* Stored
* Dispatched

A Station is a physical business unit.

■ MMA (Material Movement Area)

An **MMA** is a defined stock area within a Station.

It represents a specific operational condition or processing stage of material.

Examples:

* `ABS_RAW`
* `ABS_SCREENED`
* `PSS_SORTED`

Material in one MMA is considered **operationally different** from material in another MMA — even if Supplier, Shade, and Size are the same.

Important:

An MMA is **not a single pile of material**.

An MMA is a **structured stock bucket** that contains multiple measurable stock units.

■ Slot

A **Slot** is the smallest measurable stock unit in the system.

A Slot is defined by the 4S combination:

> **Station/MMA + Supplier + Shade + Size**

This combination uniquely identifies one specific pile of material.

Stock balance is always calculated at the **Slot level**.

If any one of the four elements changes, it becomes a different Slot.

■ Transport Reference

A **Transport Reference** is a unique business identifier for a shipment.

It links:

* The source MMA
* The destination MMA
* The quantity moved

It ensures that Dispatch and Receive actions are tied together under one traceable shipment record.

■ 4S Inventory System

The Talc 4S Inventory Model

■ Overview

The Talc Inventory System is built on what we call the **4S Model**.

Every unit of stock (Slot) in the business is uniquely defined using four business dimensions:

> **Station/MMA + Supplier + Shade + Size**

These four dimensions together define a single measurable stock bucket called a **Slot**.

All stock movements operate strictly within this structure.

No stock exists outside the 4S framework.

■ The Four Dimensions

1■■ Station / MMA

Defines **where** the material exists within the operational process.

Each MMA represents a distinct processing or storage stage inside a Station.

Example:

Material in `ABS_RAW` is operationally different from material in `ABS_SCREENED`, even if Supplier, Shade, and Size are identical.

An MMA therefore represents a **business state** of material, not just a physical location.

2■■ Supplier

Defines **ownership or source** of the material.

Material from different suppliers is always tracked separately.

> Ownership inside a Slot is never mixed prior to processing.
> After processing is completed, the resulting stock becomes company-owned inventory.

This rule ensures clear accountability and clean supplier reconciliation.

3■■ Shade

Defines the **quality classification or product grade** of the material.

Different shades are never mixed in stock calculation or reporting.

Shade separation protects quality integrity across the system.

4■■ Size

Defines the **physical granularity or form** of the material
(e.g., lumps, chips, fine, mixed).

In early processing stages, size may default to a general category such as `"mixed"` when granularity is not yet separated.

■ Structure of an MMA

An MMA is a **group of Slots**.

Within a single MMA:

* Multiple Suppliers may exist
* Each Supplier may have multiple Shades
* Each Shade may have multiple Sizes

Each unique combination forms a separate Slot with its own independent stock balance.

Structurally:

MMA
■■■ Supplier A
■ ■■■ Shade X
■ ■ ■■■ Size 1
■ ■ ■■■ Size 2
■ ■■■ Shade Y
■ ■■■ Size 1
■■■ Supplier B
■ ■■■ Shade X
■ ■ ■■■ Size 1
■ ■■■ Shade Y
■■■ Supplier C
■■■ Shade X
■■■ Size 1

Each leaf node in this structure represents a Slot.

Stock is always calculated at this lowest level.

■ Ownership Transition Rule

The 4S system strictly separates ownership during pre-processing stages.

Before processing:

* Stock remains supplier-specific.
* Slots remain separated by Supplier.

After processing:

* Output stock becomes company-owned.
* Supplier separation no longer applies unless explicitly required.

This transition reflects the real business flow from raw material intake to finished product inventory.

■ Why the 4S Model Matters

The 4S structure guarantees:

* Clear separation of ownership
* Clear separation of quality
* No unintended mixing of material
* Full traceability
* Transparent supplier accountability
* Clean, auditable stock reporting

Stock is never recorded loosely.

Every increase or decrease applies to one clearly defined Slot within the 4S structure.

■ Talc Engine

Business Introduction to the Append-Only Inventory Core

■ Core Principle — Append-Only Ledger

The Talc Engine is built on an **Append-Only Ledger** principle.

This means:

* No stock record is ever edited
* No movement is deleted
* No history is overwritten

Every business action creates a new ledger entry.

If a mistake occurs, it is corrected through a new reversing entry — not by changing the past.

This guarantees:

* Complete traceability
* Transparent audit history
* Strong stock integrity
* Business accountability

The system behaves like financial accounting — but for material movement.

■■ The Five Business Verbs

The engine recognizes five operational actions. Everything else in the system is derived from these.

1■■ Deposit

Material enters an MMA

Business Meaning:

Stock increases in a defined Slot.

Required Business Data

Field	Meaning
`toMmaCode`	The destination operational stage
`supplierId`	Owner of the material
`shade`	Quality classification
`size`	Physical form (may default)
`qty`	Quantity being added
`reason`	Business reason (default: DEPOSIT)
`timestamp`	Date and time of entry

Business Effect:

Creates a positive stock entry in one Slot.

2■■ Withdraw

Material is consumed or processed

Business Meaning:

Stock decreases from a defined Slot.

Required Business Data

Field	Meaning
`fromMmaCode`	Source operational stage
`supplierId`	Owner (if pre-processing stage)
`shade`	Quality classification
`size`	Physical form
`qty`	Quantity being removed
`reason`	Business reason (default: WITHDRAW)
`timestamp`	Date and time

Business Effect:

Creates a negative stock entry.

System Guard:

Cannot withdraw more than available stock.

3■■ Dispatch

Material is sent from one MMA to another

Business Meaning:

Stock decreases at source and is marked “in transit”.

Required Business Data

Field	Meaning
`transportId`	Unique shipment reference
`fromMmaCode`	Source MMA
`toMmaCode`	Destination MMA
`supplierId`	Owner
`shade`	Quality

`size`	Physical form
`qty`	Quantity shipped
`timestamp`	Date and time

Business Effect:

* Negative entry at source
* Shipment record created

Stock is now “in transit”.

4■■ Receive

Material arrives at destination

Business Meaning:

Shipment is completed and stock increases at the destination MMA.

Required Business Data

Field	Meaning
----------	----------
`transportId`	Shipment reference
`timestamp`	Date and time of arrival

Business Effect:

* Positive entry at destination
* Shipment closed

System Guarantee:

Cannot receive twice (idempotent protection).

5■■ Cancel

Shipment is reversed before arrival

Business Meaning:

If a dispatched shipment does not complete, it is formally canceled.

Required Business Data

Field	Meaning
`transportId`	Shipment reference
`timestamp`	Date and time of cancellation

Business Effect:

* Shipment marked canceled
* Stock is restored to source MMA

This maintains integrity without deleting history.

■ What the Engine Records

For every movement, the engine records:

* Station / MMA
* Supplier
* Shade
* Size
* Quantity (positive or negative)
* Timestamp
* Business reason
* Transport reference (if applicable)

Every ton of material is traceable to a specific Slot within the 4S system.

Nothing moves anonymously.

■ Why This Matters to the Business

Because the system is Append-Only:

* Historical records cannot be manipulated
* Inventory can always be reconstructed
* Disputes can be resolved with data
* Supplier reconciliation is clean
* Processing losses are visible
* Movement is accountable

The engine does not manage money.
It does not manage customers.
It does not handle accounting entries.

It performs one function with precision:

> Controlled, auditable movement of material across defined operational stages.