SharedLens Multi-Source Supplier Management

# Approved Sources & Procurement Display

# 1. Executive Summary

**Problem Statement:**

Engineering defines a single specification (e.g., ball bearing with specific dimensions and performance). Procurement needs to purchase from multiple approved suppliers, each with their own manufacturer part numbers and potentially different lead times, pricing, and packaging. The current "Qualifier" field (Part.SKF, Part.NTN, etc.) attempts to handle this but creates confusion by appearing to be multiple part revisions.

**SharedLens Solution:**

Separate the engineering specification from procurement sourcing. Store one canonical engineering part with multiple approved supplier sources. Display appropriately in each lens:

* • Engineering Lens: Single part specification, no supplier confusion
* • Procurement Lens: Approved sources table with supplier details, preferred supplier badge, lead times, and pricing
* • Conflict Analysis Lens: Compare engineering requirement vs. supplier capabilities

# 2. Current State vs. Proposed Design

## 2.1 Current State (Problems)

**Example: Part 1082A12G03**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Item Number | Qualifier | Manufacturer | MFG Part # | Status |
| 1082A12G03 | Part.SKF | SKF | 6207ZJ-C3||VT264 | In Production |
| 1082A12G03 | Part.NTN | NTN | 6207X15ZC3 | In Production |
| 1082A12G03 | Part.NEW DEPARTURE | NEW DEPARTURE | 7507LIUI | In Production |
| 1082A12G03 | Part.0 | SKF||NTN||NEW DEP | Multiple | Rejected |

**Issues:**

* 1. Looks like 4 different parts/revisions, not 1 part with 3 approved sources
* 2. No way to designate preferred supplier
* 3. Engineering spec duplicated across all rows
* 4. Unclear which source is actually approved (Part.0 rejected?)
* 5. No place for lead time, MOQ, pricing per supplier

## 2.2 Proposed Design

**Data Structure:**

One engineering part record:

* part\_number: "1082A12G03"
* inside\_diameter: 71.975 mm (storage\_uom: "mm")
* outside\_diameter: 35.001 mm
* overall\_width: 17.018 mm
* bearing\_type: "DEEP GROOVE"
* dynamic\_load\_rating: 27.00 kN
* ... (all engineering attributes)

Multiple approved source records (linked to part):

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Supplier | Preferred | MFG Part # | Status | Lead Time | MOQ |
| SKF | ✓ Primary | 6207ZJ-C3||VT264 | Active | 6 weeks | 100 EA |
| NTN | Alternate | 6207X15ZC3 | Active | 8 weeks | 50 EA |
| NEW DEPARTURE | Alternate | 7507LIUI | Active | 12 weeks | 25 EA |

# 3. Data Schema Design

## 3.1 Core Tables

Item (Engineering Part Master)

item {

* item\_id: uuid (PK)
* part\_number: string (unique)
* revision: string
* part\_name: string
* category: string
* status: enum [Draft, Review, Released, Obsolete]
* // All engineering attributes stored here
* inside\_diameter: decimal
* inside\_diameter\_uom: string (FK to SI\_UOM)
* dynamic\_load\_rating: decimal
* dynamic\_load\_rating\_uom: string
* ...

}

ApprovedSource (Procurement)

approved\_source {

* source\_id: uuid (PK)
* item\_id: uuid (FK to item)
* supplier\_name: string
* manufacturer\_name: string
* manufacturer\_part\_number: string
* is\_preferred: boolean (default: false)
* preference\_rank: integer (1=primary, 2=first alternate, etc.)
* status: enum [Active, Inactive, Phase\_Out, Pending\_Approval]
* approval\_date: date
* approved\_by: string
* lead\_time\_days: integer
* minimum\_order\_qty: integer
* order\_multiple: integer
* package\_type: string (e.g., "Box", "Spool")
* package\_quantity: integer
* unit\_price: decimal (nullable)
* currency: string (nullable)
* last\_price\_update: date (nullable)
* supplier\_notes: text
* url: string (supplier catalog link)
* created\_date: datetime
* created\_by: string

}

## 3.2 Business Rules

**Preferred Supplier Logic:**

* 1. Only ONE source can have is\_preferred = true per item
* 2. When setting is\_preferred = true, system automatically sets previous preferred to false
* 3. Preferred source must have status = 'Active'
* 4. Preference\_rank determines fallback order (1, 2, 3, ...)

**Source Status Workflow:**

* Pending\_Approval → Active (via approval process)
* Active → Phase\_Out (planning discontinuation)
* Phase\_Out → Inactive (no longer purchaseable)
* Inactive sources retained for historical reference

# 4. User Interface Design

## 4.1 Engineering Lens View

**Focus:** Technical specifications without supplier confusion

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BALL BEARING - DEEP GROOVE

Part Number: 1082A12G03 Rev: - Status: Released

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DIMENSIONAL SPECIFICATIONS

* Bore Diameter: 72.0 mm (2.834 in)
* Outside Diameter: 35.0 mm (1.378 in)
* Width: 17.0 mm (0.67 in)

PERFORMANCE SPECIFICATIONS

* Dynamic Load Rating: 27.0 kN (6,069.9 lbf)
* Static Load Rating: 15.3 kN (3,439.6 lbf)
* Limiting Speed: 10,000 rpm

CONFIGURATION

* Bearing Type: Deep Groove
* Closure Type: Single Shielded
* Cage Material: Steel
* Clearance: C3

**ℹ** PROCUREMENT NOTE: 3 approved suppliers available

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**Key Features:**

* • Single, clean engineering specification
* • No supplier clutter
* • Light procurement awareness (note about approved sources)
* • All measurements with dual UOM display for convenience

## 4.2 Procurement Lens View

**Focus:** Approved sources, supplier comparison, ordering information

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BEARING-COMPR SHIELD

Part Number: 1082A12G03 Category: Ball Bearings

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APPROVED SOURCES (3)

┌─ ⭐ PREFERRED SUPPLIER ────────────────────┐

│ SKF GROUP │

│ MFG Part#: 6207ZJ-C3 / VT264 │

│ Lead Time: 6 weeks │

│ MOQ: 100 EA | Order Multiple: 10 EA │

│ Package: Box of 10 │

│ Status: Active | Approved: 2022-03-10 │

│ [View Catalog] [Contact Supplier] │

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┌─ ALTERNATE SOURCE #1 ──────────────────────┐

│ NTN CORPORATION │

│ MFG Part#: 6207X15ZC3 │

│ Lead Time: 8 weeks │

│ MOQ: 50 EA | Order Multiple: 25 EA │

│ Package: Box of 25 │

│ Status: Active | Approved: 2022-03-10 │

│ [View Catalog] [Contact Supplier] │

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┌─ ALTERNATE SOURCE #2 ──────────────────────┐

│ NEW DEPARTURE │

│ MFG Part#: 7507LIUI │

│ Lead Time: 12 weeks │

│ MOQ: 25 EA | Order Multiple: 5 EA │

│ Package: Box of 5 │

│ Status: Active | Approved: 2022-03-10 │

│ [View Catalog] [Contact Supplier] │

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ENGINEERING SPECIFICATIONS

* Inside Diameter: 2.834 in | Outside Diameter: 1.378 in
* Width: 0.67 in | Type: Deep Groove, Single Shielded
* Dynamic Load: 6,069.9 lbf | Static Load: 3,439.6 lbf
* [View Full Engineering Spec]

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**Key Features:**

* • Preferred supplier prominently displayed with ⭐ badge
* • All approved sources visible in rank order
* • Lead time, MOQ, packaging clearly shown
* • Engineering specs available but not primary focus
* • Quick access to supplier catalogs and contacts

## 4.3 Supplier Comparison View

**Purpose:** Side-by-side comparison for sourcing decisions

|  |  |  |  |
| --- | --- | --- | --- |
| Criteria | ⭐ SKF | NTN | NEW DEPARTURE |
| Status | ✓ Preferred | Alternate #1 | Alternate #2 |
| MFG Part # | 6207ZJ-C3 | 6207X15ZC3 | 7507LIUI |
| Lead Time | 6 weeks | 8 weeks | 12 weeks |
| MOQ | 100 EA | 50 EA | 25 EA |
| Order Multiple | 10 EA | 25 EA | 5 EA |
| Package Type | Box of 10 | Box of 25 | Box of 5 |
| Unit Price | $12.50 | $11.80 | $13.20 |
| Best For | Standard orders | Lower cost | Small quantity |

**Decision Support:**

* • Visual highlighting of preferred source
* • Easy comparison of lead times, pricing, and packaging
* • Helps procurement choose best source for specific need
* • Can filter/sort by various criteria

# 5. Admin Interface - Manage Approved Sources

## 5.1 Add New Approved Source

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ADD APPROVED SOURCE

Part Number: 1082A12G03 - Ball Bearing

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SUPPLIER INFORMATION

* Supplier Name: [Dropdown: SKF | NTN | Timken | ...]
* Manufacturer Name: [Auto-populated or manual]
* Manufacturer Part Number: [Text field]
* Catalog URL: [URL field]

SOURCING DETAILS

* ☐ Set as Preferred Supplier
* Preference Rank: [1] (1=Primary, 2=First Alt, 3=Second Alt...)
* Lead Time (days): [42]
* Minimum Order Quantity: [100] EA
* Order Multiple: [10] EA
* Package Type: [Dropdown: Box | Spool | Pallet | ...]
* Package Quantity: [10] EA per package

PRICING (Optional)

* Unit Price: [$12.50]
* Currency: [USD]
* Last Price Update: [2024-10-15]

APPROVAL

* Approved By: [Current user]
* Approval Date: [Today]
* Notes: [Free text field for special instructions]

[Save as Active] [Save as Pending Approval] [Cancel]

**⚠** Warning: Setting as preferred will remove preferred status from SKF

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## 5.2 Change Preferred Supplier

**Action:** Click "Make Preferred" button on alternate source

System Workflow:

* 1. Prompt: "Change preferred supplier from SKF to NTN?"
* 2. Require reason: [Dropdown: Better Pricing | Faster Lead Time | Quality Issues | ...]
* 3. Optional comment: [Free text]
* 4. Log change with timestamp and user
* 5. Update is\_preferred flags automatically
* 6. Notify relevant users (procurement team, planners)

## 5.3 Phase Out Source

When supplier is discontinuing a part or quality issues arise:

Actions Available:

* • Mark as "Phase Out" (still orderable but transitioning)
* • Set phase-out date
* • Add notes about reason
* • System flags this in procurement lens with warning
* • Eventually mark as "Inactive" when fully discontinued

**Business Rule:** Cannot phase out the only active source. Must have at least one other active source or be replacing the part.

# 6. Migration Strategy

## 6.1 Current Data Transformation

Step 1: Identify Unique Parts

* GROUP BY: Item Number
* Example: 1082A12G03 has 4 rows (Part.SKF, Part.NTN, Part.NEW DEPARTURE, Part.0)

Step 2: Create Single Item Record

* • Choose best quality row for engineering attributes (usually first non-Part.0)
* • Copy all engineering specs: dimensions, load ratings, bearing type, etc.
* • Use Part.0 status if it exists and is most recent
* • Skip rows with Status='Rejected' for source creation

Step 3: Create Approved Source Records

* FOR EACH qualifier that is not 'Part.0' and Status != 'Rejected':
  + Extract supplier from qualifier (Part.SKF → SKF)
  + Create approved\_source record with:
    - - manufacturer\_name from row
    - - manufacturer\_part\_number from row
    - - is\_preferred = true for FIRST active source found
    - - preference\_rank = 1, 2, 3... based on order
    - - status = 'Active' (since they're in production)
    - - approval\_date = Release Date or Created Date

Step 4: Handle Fill Rate and Qualifier Columns

* • Fill Rate: Move to item-level data quality tracking (not per-source)
* • Qualifier: Archive for reference, no longer needed in new schema

## 6.2 Example Transformation

BEFORE (4 rows):

1082A12G03 | Part.SKF | SKF | 6207ZJ-C3 | In Production

1082A12G03 | Part.NTN | NTN | 6207X15ZC3 | In Production

1082A12G03 | Part.NEW DEPARTURE | NEW DEPARTURE | 7507LIUI | In Production

1082A12G03 | Part.0 | Multiple | Multiple | Rejected

AFTER:

Item Table (1 row):

* item\_id: uuid-1234
* part\_number: 1082A12G03
* status: Released (from engineering perspective)
* inside\_diameter: 71.975 mm
* ... (all engineering attributes)

Approved\_Source Table (3 rows):

Row 1:

* source\_id: uuid-5678
* item\_id: uuid-1234
* supplier\_name: SKF GROUP
* manufacturer\_part\_number: 6207ZJ-C3
* is\_preferred: true ⭐
* preference\_rank: 1
* status: Active

Row 2:

* source\_id: uuid-5679
* item\_id: uuid-1234
* supplier\_name: NTN CORPORATION
* manufacturer\_part\_number: 6207X15ZC3
* is\_preferred: false
* preference\_rank: 2
* status: Active

Row 3:

* source\_id: uuid-5680
* item\_id: uuid-1234
* supplier\_name: NEW DEPARTURE
* manufacturer\_part\_number: 7507LIUI
* is\_preferred: false
* preference\_rank: 3
* status: Active

# 7. Benefits Summary

## 7.1 For Engineering

* ✓ Single, clean specification per part number
* ✓ No confusion from supplier variations
* ✓ Clear technical requirements without procurement noise
* ✓ Ability to see that approved sources exist without details

## 7.2 For Procurement

* ✓ Clear visibility of all approved suppliers
* ✓ Obvious preferred supplier designation
* ✓ Easy comparison of lead times, MOQs, pricing
* ✓ Flexibility to choose alternate sources based on situation
* ✓ Historical tracking of source approvals and changes

## 7.3 For Supply Chain Management

* ✓ Risk mitigation through multi-sourcing
* ✓ Audit trail of supplier approvals and changes
* ✓ Ability to phase out sources in controlled manner
* ✓ Support for supplier performance tracking
* ✓ Better continuity planning and disaster recovery

## 7.4 For Data Management

* ✓ No duplicate engineering specs (single source of truth)
* ✓ Clean data model with proper separation of concerns
* ✓ Easier reporting (count parts, not part-supplier combinations)
* ✓ Reduced storage (engineering attributes stored once)
* ✓ Better data quality metrics (one spec to maintain)

# 8. Implementation Recommendation

The proposed multi-source supplier management approach:

* 1. Eliminates confusion from qualifier field
* 2. Provides clear preferred supplier designation
* 3. Supports procurement flexibility while maintaining control
* 4. Separates engineering concerns from sourcing concerns
* 5. Enables better lens-specific displays

**Next Steps:**

* 1. Review and approve data schema design
* 2. Prototype UI mockups for Engineering and Procurement lenses
* 3. Develop migration script for existing data
* 4. Pilot with Ball Bearings category (40 items → ~12 unique parts)
* 5. Gather feedback and refine before broader rollout

End of Design Document

SharedLens Multi-Source Supplier Management

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