

I'll redesign the system architecture to focus on assertion-driven, explicit relationship creation through the UI, moving away from automated inference to human-guided relationship establishment. Now let me create a detailed workflow diagram showing the assertion-driven process: Now let me create a component interaction diagram showing the explicit relationship creation process: ## **Redesigned System Architecture Summary**

## Core Philosophy Shift

**FROM:** Automated relationship inference and discovery

**TO:** Human-guided, assertion-driven, explicit relationship creation

## Key Architectural Changes

### 1. Strict Scope Separation

- **Within MDMs:** Ownership, customer-vendor, account relationships (managed by each MDM)
- **Cross-MDM Only:** Operational authority, management, service provision relationships
- **No Automatic Creation:** Every cross-MDM relationship requires human operator validation

### 2. Assertion-Driven Process

Document → Assertions → Human Review → Entity Resolution → Relationship Creation

- **Assertions** are extractions, NOT relationships
- **Human operators** validate every entity mapping
- **Explicit creation** of each relationship with full audit trail

### 3. Human-Centric UI Workflow

#### Step 1: Assertion Review

- Present extracted text with context
- Show entity mentions and confidence scores
- Allow operator to skip irrelevant assertions

#### Step 2: Cross-MDM Entity Resolution

- Search across all MDM systems simultaneously
- Present candidate entities with match confidence
- Require explicit operator selection for source and target

#### Step 3: Relationship Definition

- Select from cross-MDM relationship types only
- Define authority scope, geographic limits, temporal parameters
- Validate relationship compatibility

## Step 4: Explicit Creation

- Validate logical consistency and proof backing
- Create relationship with complete audit trail
- Link to supporting proof documents

## 4. Relationship Types (Cross-MDM Only)

- **has\_trading\_authority\_for**: Individual (Wealth MDM) → Corporate entity (Commercial MDM)
- **manages**: Service provider → Client entity across systems
- **operates\_on\_behalf\_of**: Agent → Principal across MDMs
- **is\_custodian\_for**: Custodian → Asset holder across systems
- **provides\_services\_to**: Service provider → Client across MDMs
- **is\_advisor\_to**: Advisor → Advisory client across systems

## 5. Complete Audit Trail

Every relationship includes:

- **Source assertion** and extraction method
- **Entity resolution decisions** and operator rationale
- **Validation steps** performed
- **Proof document backing**
- **Operator identity** and creation timestamp
- **Change history** with approval workflows

## Benefits of This Approach

1. **Regulatory Compliance**: Human validation ensures defensible relationships
2. **Audit Readiness**: Complete decision trail for every relationship
3. **Quality Control**: No automated errors in critical operational relationships
4. **Flexibility**: Operators can handle complex cases that automation cannot
5. **Accountability**: Clear responsibility for each relationship decision
6. **Scalability**: Focus on cross-MDM relationships only (smaller scope)

## Operational Impact

- **Operators become** relationship validation specialists, not data processors
- **System provides** intelligent assistance but requires human judgment
- **Audit trail** supports regulatory examinations and compliance reporting
- **Quality** increases through human oversight of critical operational relationships
- **Scope** is manageable by focusing only on cross-MDM operational authorities

This architecture ensures that your proof repository creates **defensible, auditable, and accurate** cross-MDM relationships while leveraging human expertise for the complex entity resolution and relationship validation that automation cannot reliably perform.