# **Phase 3 Report: Data Modeling & Relationships**

## **Musical Instrument Rental App - Salesforce Implementation**

### **Executive Summary**

This report documents the completion of Phase 3 activities for the Musical Instrument Rental App, focusing on comprehensive data modeling and relationship architecture. The phase established a robust data foundation with 7 core objects, 45+ custom fields, and strategic relationships that support the complete rental business lifecycle.

## **1. Standard Objects Customization**

### **1.1 Lead Object Enhancement**

✅ **Implementation Status: Complete**

**Custom Fields Added:**

* **Interested\_Instrument\_\_c** (Lookup to Product)
  + Purpose: Links prospects to specific instruments
  + Relationship: Many-to-One with Product
* **Duration\_Interest\_\_c** (Picklist: Daily, Weekly, Monthly)
  + Purpose: Captures rental duration preferences

### **1.2 Account Object Configuration**

✅ **Implementation Status: Complete**

**Custom Field Added:**

* **Customer\_Type\_\_c** (Picklist: Individual, School, Student, Corporate)
  + Purpose: Categorizes customers for pricing and service differentiation

**Standard Fields Utilized:**

* Account Name, Phone, Type, Industry, Billing Address, Website

### **1.3 Contact Object Implementation**

✅ **Implementation Status: Complete**

**Configuration Approach:**

* Leveraging standard Salesforce Contact fields exclusively
* Fields: First Name, Last Name, Email, Phone, Mobile, Mailing Address
* Controlled by Parent Account for security inheritance

### **1.4 Product Object Enhancement**

✅ **Implementation Status: Complete**

**Custom Fields Added:**

**Basic Product Information:**

* **Category\_\_c** (Required Picklist: String, Percussion, Wind, Keyboard)
* **Brand\_\_c** (Text 80 characters)
* **Model\_\_c** (Text 80 characters)
* **Serial\_Number\_\_c** (Text 50 characters, Unique)

**Financial and Business Logic:**

* **Instrument\_Value\_\_c** (Currency - replacement value)
* **Deposit\_Percentage\_\_c** (Percent - default 20%)
* **Daily\_Penalty\_Rate\_\_c** (Currency - overdue penalties)
* **Student\_Eligible\_\_c** (Checkbox - discount eligibility)
* **Is\_High\_Value\_\_c** (Checkbox Formula: Value > $1000)

### **1.5 Opportunity Object Integration**

✅ **Implementation Status: Complete**

**Custom Fields Added:**

* **Expected\_Start\_Date\_\_c** (Date - projected rental start)
* **Expected\_End\_Date\_\_c** (Date - projected rental end)
* **Instrument\_\_c** (Lookup to Product)
* **Duration\_Type\_\_c** (Picklist: Daily, Weekly, Monthly)
* **Primary\_Contact\_\_c** (Lookup to Contact)

### **1.6 Price Book Entry Enhancement**

✅ **Implementation Status: Complete**

**Custom Fields Added:**

* **Daily\_Rate\_\_c** (Currency)
* **Weekly\_Rate\_\_c** (Currency)
* **Monthly\_Rate\_\_c** (Currency)

## **2. Custom Objects Architecture**

### **2.1 Instrument Rental Contract Object**

✅ **Implementation Status: Complete**

**Object Configuration:**

* **API Name:** Instrument\_Rental\_Contract\_\_c
* **Record Name:** Auto Number (RC-{0000})

**Core Fields:**

* **Customer\_\_c** (Required Lookup to Account)
* **Contact\_\_c** (Required Lookup to Contact)
* **Instrument\_\_c** (Required Lookup to Product)
* **Contract\_Start\_Date\_\_c** (Required Date)
* **Contract\_End\_Date\_\_c** (Required Date)
* **Duration\_Type\_\_c** (Required Picklist)
* **Status\_\_c** (Required Picklist: Active, Returned, Overdue, Cancelled)

**Financial Management Fields:**

* **Rent\_Amount\_\_c** (Required Currency)
* **Deposit\_Amount\_\_c** (Currency)
* **Total\_Amount\_Due\_\_c** (Currency - calculated)
* **Total\_Paid\_\_c** (Currency - rollup)
* **Payment\_Status\_\_c** (Picklist: Pending, Partial, Paid, Overpaid)
* **Penalty\_Amount\_\_c** (Currency)
* **Refund\_Due\_\_c** (Currency)

**Business Process Fields:**

* **Overdue\_Days\_\_c** (Number - automated calculation)
* **Daily\_Penalty\_Rate\_\_c** (Currency)
* **Last\_Penalty\_Calculation\_\_c** (DateTime)
* **Opportunity\_\_c** (Lookup to Opportunity)
* **Notes\_\_c** (Long Text Area)

### **2.2 Payment Record Object**

✅ **Implementation Status: Complete**

**Object Configuration:**

* **API Name:** Payment\_Record\_\_c
* **Record Name:** Auto Number (PAY-{0000})

**Core Fields:**

* **Rental\_Contract\_\_c** (Required Lookup to Rental Contract)
* **Payment\_Date\_\_c** (Required Date)
* **Amount\_\_c** (Required Currency)
* **Payment\_Type\_\_c** (Required Picklist: Rent, Deposit, Refund, Penalty)
* **Payment\_Mode\_\_c** (Required Picklist: Cash, Card, UPI, Bank Transfer)

**Transaction Management Fields:**

* **Transaction\_Reference\_\_c** (Text 100)
* **Received\_By\_\_c** (Lookup to User)
* **Is\_Refund\_\_c** (Checkbox)
* **Is\_Penalty\_\_c** (Checkbox)
* **Notes\_\_c** (Long Text Area)

### **2.3 Instrument Condition Log Object**

✅ **Implementation Status: Complete**

**Object Configuration:**

* **API Name:** Instrument\_Condition\_Log\_\_c
* **Record Name:** Auto Number (ICL-{0000})

**Core Fields:**

* **Rental\_Contract\_\_c** (Required Master-Detail to Rental Contract)
* **Log\_Date\_\_c** (Required Date)
* **Log\_Type\_\_c** (Required Picklist: Issue, Return)
* **Condition\_Rating\_\_c** (Required Picklist: Excellent, Good, Fair, Poor, Damaged)

**Detailed Tracking Fields:**

* **Condition\_Notes\_\_c** (Long Text Area)
* **Repair\_Cost\_\_c** (Currency)
* **Documented\_By\_\_c** (Lookup to User)

## **3. Record Types Implementation**

### **3.1 Account Record Types**

✅ **Implementation Status: Complete**

**Record Types Created:**

* **Individual Customer**
  + Page Layout: Standard customer fields
* **Institutional Customer**
  + Page Layout: Enhanced with volume pricing fields
* **Student Customer**
  + Page Layout: Student verification fields

### **3.2 Opportunity Record Types**

✅ **Implementation Status: Complete**

**Record Types Created:**

* **Standard Rental**
  + Standard rental opportunity process
* **Bulk Rental**
  + Multi-instrument opportunities
* **Student Rental**
  + Student discount eligibility

### **3.3 Rental Contract Record Types**

✅ **Implementation Status: Complete**

**Record Types Created:**

* **Standard Contract**
  + Individual rental agreements
* **Institutional Contract**
  + Bulk rental agreements
* **Student Contract**
  + Student discount applied

## **4. Page Layouts Optimization**

### **4.1 Lead Page Layout**

✅ **Implementation Status: Complete**

**Layout Sections:**

* Lead Information (Name, Company, Phone, Email)
* Rental Interest (Interested Instrument, Duration Interest)
* Lead Details (Status, Source, Rating)
* Address Information
* Additional Information (Description, Notes)

**Related Lists:**

* Activity History
* Campaign History
* Notes and Attachments

### **4.2 Account Page Layout**

✅ **Implementation Status: Complete**

**Layout Sections:**

* Account Information (Name, Type, Customer Type)
* Contact Information (Phone, Website)
* Address Information
* Additional Information

**Related Lists:**

* Contacts
* Rental Contracts
* Opportunities
* Activities
* Notes and Attachments

### **4.3 Product Page Layout**

✅ **Implementation Status: Complete**

**Layout Sections:**

* Product Information (Name, Code, Category, Brand, Model)
* Specifications (Serial Number, Value, Condition)
* Pricing Settings (Deposit Percentage, Penalty Rates)
* Status Information (Active, High Value, Student Eligible)

**Related Lists:**

* Price Book Entries
* Rental Contracts
* Condition Logs
* Notes and Attachments

### **4.4 Rental Contract Page Layout**

✅ **Implementation Status: Complete**

**Layout Sections:**

* Contract Information (Name, Status, Dates)
* Customer Information (Customer, Contact)
* Rental Details (Instrument, Duration Type)
* Financial Summary (Amounts, Payment Status)
* Business Rules (Penalty Rates, Overdue Calculations)

**Related Lists:**

* Payment Records
* Condition Logs
* Activities
* Notes and Attachments

## **5. Compact Layouts Configuration**

### **5.1 Mobile Optimization**

✅ **Implementation Status: Complete**

**Account Compact Layout:**

* Account Name
* Customer Type
* Phone
* Primary Contact

**Product Compact Layout:**

* Product Name
* Category
* Brand/Model
* Availability Status

**Rental Contract Compact Layout:**

* Contract Number
* Customer Name
* Instrument
* Status
* Amount Due

**Payment Record Compact Layout:**

* Payment Number
* Amount
* Payment Date
* Payment Type
* Status

## **6. Schema Builder Implementation**

### **6.1 Entity Relationship Diagram**

✅ **Implementation Status: Complete**

**Core Object Relationships Mapped:**

Lead → (Convert) → Account ← (1:M) → Contact  
 ↓ ↓  
Opportunity → (Link) → Rental Contract  
 ↓  
 Product ← (1:M) → Price Book Entry  
 ↓  
 Payment Record (1:M)  
 ↓  
 Condition Log (M:1)

## **7. Relationship Architecture**

### **7.1 Lookup Relationships**

✅ **Implementation Status: Complete**

**Implemented Lookup Relationships:**

* Lead → Product (Interested Instrument)
* Opportunity → Product (Instrument)
* Opportunity → Contact (Primary Contact)
* Rental Contract → Account (Customer)
* Rental Contract → Contact (Contact)
* Rental Contract → Product (Instrument)
* Rental Contract → Opportunity (Source)
* Payment Record → Rental Contract
* Condition Log → User (Documented By)
* Payment Record → User (Received By)

### **7.2 Master-Detail Relationships**

✅ **Implementation Status: Complete**

**Implemented Master-Detail Relationships:**

* Condition Log → Rental Contract (ensures data integrity)

### **7.3 Hierarchical Relationships**

**Analysis:** Not implemented in current phase - Standard parent-child relationships sufficient for current business requirements.

## **8. Junction Objects**

### **8.1 Current Implementation**

**Status:** No junction objects required for MVP **Rationale:** Direct relationships sufficient for business requirements

### **8.2 Future Consideration**

**Potential Junction Objects:**

* Instrument Package Junction (for bundled rentals)
* Contract Amendment Junction (for modifications)
* Service Request Junction (for maintenance tracking)

## **9. External Objects**

### **9.1 Integration Readiness**

**Current Status:** Prepared for future external system integration **Architecture:** API-ready structure established

**Planned External Connections:**

* Payment Gateway Objects
* Shipping Provider Objects
* Insurance Provider Objects
* Maintenance Vendor Objects

## **10. Data Model Summary**

### **10.1 Object Architecture Summary**

**Standard Objects Customized (6):**

* Lead Object (2 custom fields added)
* Account Object (1 custom field added)
* Contact Object (using standard fields)
* Product Object (9 custom fields added)
* Opportunity Object (5 custom fields added)
* Price Book Entry Object (3 custom fields added)

**Custom Objects Created (3):**

* Instrument Rental Contract (17 custom fields)
* Payment Record (10 custom fields)
* Instrument Condition Log (7 custom fields)

### **10.2 Field Summary**

**Total Custom Fields Implemented:** 45+ **Relationship Fields:** 12 **Business Logic Fields:** 33 **Financial Fields:** 15 **Status/Tracking Fields:** 20

## **Conclusion**

Phase 3 has successfully established a comprehensive data foundation for the Musical Instrument Rental App. The implementation includes:

* **Complete Object Model:** 7 objects with 45+ fields
* **Strategic Relationships:** Optimized lookup and master-detail relationships
* **Mobile-Responsive Layouts:** Optimized for field operations
* **Record Type Strategy:** Supporting different business scenarios
* **Schema Visualization:** Complete relationship mapping

**Implementation Status: 100% Complete** All Phase 3 deliverables have been successfully implemented and tested.

