# OLE Loan Technical Document

## (Circulation Policies using KRMS)

# Purpose

The Loan interface is used to create temporary links from the patron to the item(s) being loaned.

# Loan Policy - KRMS

UI Approach (Option #1)

KRMS offers a UI framework to setup and manage rules. With some backend code wiring, users can create and edit rules, in particular loan periods, borrower limts etc. Some of this was covered during Eric Westfall's KRMS training in March 2012, where the focus was on exercises pertaining to Circ policies.

- Setup default parameters like Category,Context,Rules etc using UI
- Setup appropriate Term(s), FunctionLoaders, ActionTypeService etc using backend code
- Create CircPolicy (KRMS Agenda) using both above

**Pros:**
- User can create, view and edit rules without having to worry too much about the backend implementation details

**Cons:**
- For this story, simple rules using the UI doesn't for setting up rules wont suffice and needs backend setup.
- Updates to rules, enhancements and longer term extensibility is going to be very limited due to the mixed approach of UI and backend coding.
- The version of xStream being used by rice framework is not compatible with the version of xStream needed to perform some of the docstore functionalities and hence cant go too far with the UI approach ([Bug Reported in Rice](#)).

Profile Approach (Option #2)

KRMS has been utilized for Staff Upload (Batch Ingest) process in KOLE with custom setup of rules, actions etc using a profile concept; KRMS UI doesn't offer support for setting up custom rules etc, and so the intent here is to leverage what was done for staff upload for 0.6 release and extend the functionality to circ policies.

We are going to abstract out the common parts such as setting up function loaders, term resolvers etc and then have specific implementations for staff upload, circ polices. This will also enable future extensibility of such custom setups.

- Profile.xml detailing terms, rules, actions etc
- Similar to staff upload profile
- Create Circ Policy (KRMS Agenda) using existing ProfileBuilder which is a custom engine that uses a profile.xml and setups up all the rules/actions etc..
- Apply the policy to Patron type

**Pros**
- XML approach for defining rules, actions etc.
- Extensibility and flexibility supported by providing a generic profile concept that can then be used for setting up various agendas (policies).
- No prior KRMS knowledge required for setting up of rules etc.

- Leveraging existing profile builder for staff upload

**Cons**

- Complete rules set may not be viewable using the KRMS UI
- May need to provide a custom UI to export the profile xml

The sample KRMS agenda for OLE's circulation policy can be found at [current version]/ole-app/olefs/target/test-classes/org/kuali/ole/ingest/krms/builder/deliver.xml

# Dependencies (db tables)

Tables used in Loan creation

| | |
|---|---|
| OLE_DLVR_LOAN_STAT | |
| OLE_PTRN | Patron |
| OLE_DLVR_LOAN_TERM _UNIT | |
| OLE_CAT_ITM_TYP | Item Type |
| OLE_CRCL_DSK | Circulation Desk |
| | Item |
| OLE_LOCN_LEVEL | Location Level |
| OLE_LOCN | Location |

Tables where LOAN_ID is used/referenced

| | |
|---|---|
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| | |
| | |

# Logical Data Model (Class Structure)

# Physical Data Model (Database Schema)

The OLE_DLVR_ITEM_AVAIL_STAT_T table in the DM is a maint. table, values of which will be used to update the item information in docstore. This table doesn't have a direct co-relation to the Loan UI
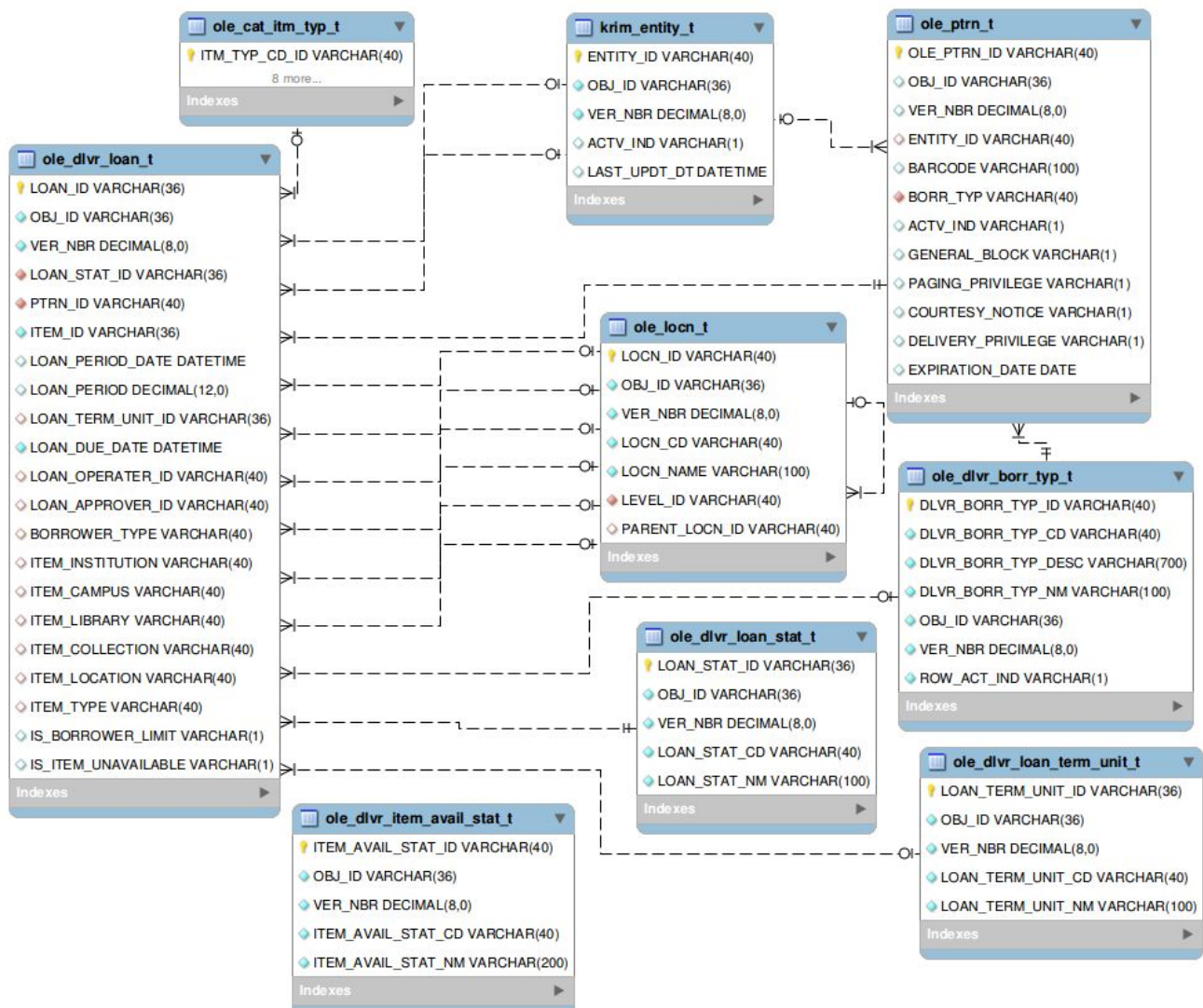


# Service Interface Design (Java)

# Business Rules Class

# Service Interface Design (SOAP)

# User Interface Design

A simple KRAD document was used to create a new Loan. The initial design idea:



was expanded upon to include additional options related to the items checked out (alter due date, claim return, note missing or damaged pieces, renew)

# Data Importing

A [sample KRMS agenda](#) for creating rules can be found at in Google Drive.  (Current to April 10, 2015)

1. The above xml contains an "Agendas" containing seven Agenda.
   - General Checks - contain rules to validate if the Patron or proxy Patron account is active.  It also contains rules to check for general blocks, address verification, barcode format.
   - CheckOut Validation - contains rules to validate if an item has been requested or is on hold for another patron, if an item is checked out and overdue or lost, if an item has previously been damaged or is missing pieces, if the item barcode or check out location is invalid. It also contains sub rules for 4 check out policies based on combinations of Item and Patron characteristics: loan periods, checks for existing 'claims' and fines, limits on # of items checked out and overdue items
   - Renewal - contains rules to check if the item barcode or renewal location is invalid. It also contains sub rule for renewal policies based on combinations of item and Patron characteristics: policies set loan periods, checks on patron claims, fines, number of times renewed
   - Check-in - contains rules to check if the item barcode is invalid, check on the item status (in transit; intransit for hold; intransit for staff request) and set new status as appropriate, and check for requests against the item and set new statuses as appropriate. It also contains sub rules for check in policies based on combined characteristics of item and patron: policies set "lost" and overdue penalties
   - Request Validation - contains policies for requests: if requests = page or copy requests then the request is routed, if the request = recall then a notice is generated. It also contains a fine check and sub rules for request policies based on combined characteristics of item and patron: policies check max numbers of requests, due dates, and claim returns.
   - Notice Validation - contains policies for when to send notices and how many times (such as for courtesy notices)
   - Batch Program Agenda - allows OLE to know when to delete Temporary item history records and Notice Type Check which allows libraries to determine the type of notice to send to it's patrons (mail, email, sms); noticeTypecheck is only for select borrowerTypes and select circdesks
2. An Agenda contains list of Rules,each rule contains either a simple proposition or compound proposition.
   a. A Simple proposition can be validated in two different ways namely
      i. LHS & RHS validations (LHS-Term,RHS-Constant)
      ii. Function validations(Term as argument).
   b. A Compound proposition is a collection of Simple proposition with an operand.

The Following rules are implemented in many of the agendas:
- Check Digit Routine : Checks whether the barcode format is valid.
- ValidatePatronDate : Checks whether the patron's record is active or expired.
- borrowerLimitForCheckedOutItems : Checks whether a number of items loaned exceeds X.

- CheckOut Status Validation : Checks whether the item is loaned, has a pending request or hold.
- Overdue Fine Status Validation : Checks if the item is on loan to another patron or if it is overdue.
- Lost Status With Replacement Fee Fine : Checks if the item is lost or has been billed for replacement.
- Item Status Damaged Checkout : Checks if the item has been flagged as damaged.
- LocationValidation : Checks if the item can circulate from the circulation desk.
- Check Claims Returned : Checks if the patron has reached the maximum amount of claims returns.
- Check all Overdue fine amount : Checks if patron fines exceed $X amount.
- Check Replacement fee amt : Checks if patron's replacement feeds exceed $X amount.

For a more complete listing of the rules in each agenda, see the DeliverKRMSCheatSheet

# Workflow

The Loan Interface allows the user to begin and complete the checkout process.  This differs from the OLE e-documents in that there is not any routing involved.  The user enters patron information and OLE checks whether the patron exists and, if so, whether the patron is allowed to borrow.  If patron blocks exist, persons with the permission(s) OLE10298, OLE10299, OLE10300, OLE10301, OLE10302, OLE10303, OLE10304,  OLE10305, OLE10306, OLE10307, OLE10311,  and/or OLE10312 may override the block.

Next, the user enters the item barcode and OLE checks whether the item is available and calculate the due date.  Item availability and the calculated due date are dependant on KRMS rules.  If the rule determines the item is unavailable, persons with the permission(s) OLE10308, OLE10309, OLE10313, OLE10314, OLE10315, and/or OLE10324 may override the block

If the item's loan period is "undefined" within the rules, OLE will ask the user to provide a due date for the item. Otherwise OLE will use the loan period to calculate the due date using the current date and time and the loan period and create the loan.

The user may continue to loan additional materials to the patron or click "Clear Patron" to begin the process again or enter a new patron barcode in the patron field.

# System Parameters

| Namespace Code | Parameter Name | Description |
| --- | --- | --- |
| OLE-DLVR | AUDIO_OPTION | This is for configuring the audio option to turn on/off |
| OLE-DLVR | CLAIMS_CHECKED_OUT_NOTE | This is for configuring claims checked out note<br><br>If an item is marked claims returned at the time of check out, this is the note that will be displayed in the |

| | | Note section of the patron's record. [0] = item barcode; [1] = timestamp; [2] = circulation desk |
|---|---|---|
| OLE-DLVR | DAMAGED_PIECE_CHECKED_OUT_NOTE | This is for configuring Damaged Item checked out note<br><br>If an item is marked damaged at the time of check out, this is the note that will be displayed in the Note section of the patron's record. [0] = item barcode; [1] = timestamp; [2] = circulation desk |
| OLE-DLVR | DEF_CLOSE_TIME | This is the default value for close time |
| OLE-DLVR | FAST_ADD_ITEM_DEFAULT_STATUS | This is for configuring the default item status |
| OLE-DLVR | INCLUDE_NON_WORKING_HRS | This is for configuring the excluding non working hrs<br><br>Allows the lending library to include or exclude working hours when determining due dates for circulation. |
| OLE-DLVR | ITEM_DIGIT_ROUTINE | This is for setting patron digit routine boolean<br><br>Makes the application authenticate the item barcode with the regular expression pattern defined in the ITEM_DIGIT_ROUTINE_PATTERN. |
| OLE-DLVR | ITEM_DIGIT_ROUTINE_PATTERN | This is for setting regular expression for patron barcode |
| OLE-DLVR | mail.smtp.host | This is for configuring the smtp host<br><br>Used to configure sending notices via emails |
| OLE-DLVR | mail.smtp.password | This is for setting the password |
| OLE-DLVR | mail.smtp.port | This is for configuring the smtp port number |
| OLE-DLVR | MAX_TIME_LOAN | This is for setting max session time to loan<br><br>The time, in minutes, for the loan screen to reset due to no activity. |
| OLE-DLVR | MISSING_PIECE_CHECKED_OUT_NOTE | This is for configuring Missing Piece Item checked out note<br><br>If an item is marked missing pieces at the time of check out, this is the note that will be displayed in the Note section of the patron's record. [0] = item barcode; [1] = timestamp; [2] = circulation desk; [3] = pieces missing |
| OLE-DLVR | PRINT_DUE_DATE_PER_TRANSACTION | Print the due date slip for every loan |

| OLE-DLVR | SIP2_INSTITUTION_NAME | This parameter hold the Institution name for 3M machine |
|----------|------------------------|---------------------------------------------------------|
| OLE-DLVR | SIP2_OPERATOR_ID | This parameter hold the operator id for 3M machine to perform checking/checkout operation |
| | | |
| For Patron Receipts: | | |
| OLE-PRNT | Item_Title_BGColor | This is the back ground color for Item Title |
| OLE-PRNT | Item_Title_Font | This is the font for Item Title |
| OLE-PRNT | OverDue_Fine_BGColor | This is the back ground color for OverDue Fine |
| OLE-PRNT | OverDue_Fine_Font | This is the font for OverDue Fine |
| OLE-PRNT | Patron_Name_BGColor | This is the back ground color for Patron Name |
| OLE-PRNT | Patron_Name_Font | This is the font for Patron Name |
| OLE-PRNT | Service_Fee_BGColor | This is the back ground color for Service Fee |
| OLE-PRNT | Service_Fee_Font | This is the font for Service Fee |
| OLE-PRNT | Template | This is the template for the print |
| OLE-PRNT | Total_BGColor | This is the back ground color for Total |
| OLE-PRNT | Total_Font | This is the font for Total |

# Roles and Permissions

Permissions are linked to roles which are in turn linked to Users to give them access to screens and functions.

| Permission ID | Permission Name |
|---------------|-----------------|
| | **Patron and Item blocks used while loaning items** |
| OLE10298 | Patron record expired |
| OLE10299 | Proxy patron record expired |
| OLE10300 | Patron has a general block |
| OLE10301 | Patron has max # of items checked out |
| OLE10302 | Patron has max # of checked out items marked 'claimed returned' |
| OLE10303 | Patron has max amount of overdue fines |

| OLE10304 | Patron has max amount of replacement fees |
|---|---|
| OLE10305 | Patron has max amount of all charges |
| OLE10306 | Patron has max # of overdue items checked out |
| OLE10307 | Patron has max # of recalled overdue items checked out |
| OLE10308 | Item on hold for another patron |
| OLE10309 | Renewal limit reached |
| OLE10311 | Patron has at least one item overdue for more than n days |
| OLE10312 | Patron has at least one recalled item overdue for more than n days |
| OLE10313 | Item currently loaned to another patron |
| OLE10314 | Item has pending request queue where patron presenting item is NOT the patron in queue position '1' |
| OLE10315 | Item not at circ desk authorized to service the item's shelving location |
| OLE10324 | Item contains the pending request |
|  | **Permissions for the Loan interface** |
| OLE10192 | Can Remove Note |
| OLE10198 | Update due date |
| OLE10201 | Can Override |
| OLE10187 | Can Override Loan |
| OLE10195 | Create fastadd |

| Role ID | Role Name | Permissions |
|---|---|---|
| OLE10063 | Operator | OLE10201 |
| OLE10061 | Unit Manager | OLE10187 |
| OLE10073 | Super Circulation Supervisor | OLE10195, OLE10198, OLE10201, OLE10298, OLE10299, OLE10300, OLE10301, OLE10302, OLE10303, OLE10304,  OLE10305, OLE10306, OLE10307, OLE10308, OLE10309, OLE10311, OLE10312, OLE10313, OLE10314, OLE10315, OLE10324 |
| OLE10074 | Circulation Supervisor | OLE10195, OLE10198, OLE10201, OLE10298, OLE10299, OLE10300, OLE10301, OLE10302, OLE10303, OLE10304,  OLE10305, |

| | | OLE10306, OLE10307, OLE10308, OLE10309, OLE10311, OLE10312, OLE10313, OLE10314, OLE10315, OLE10324 |
|---|---|---|
| OLE10075 | Circ Desk Attendant I | OLE10201, OLE10195, OLE10301 |
| OLE10076 | Circ Desk Attendant II | OLE10195, OLE10198, OLE10201, OLE10298, OLE10299, OLE10300, OLE10301, OLE10302, OLE10303, OLE10304,  OLE10305, OLE10306, OLE10307, OLE10311, OLE10312 |