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# NCIP

## Circulation/ Interlibrary Loan Interaction: Borrowing Agency Application Profile

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An Application Profile to support ANSI/NISO Z39.83-200x

**Abstract:** This application profile is designed to provide one coherent, agreed-upon set of behaviors, options, and parameters that support the exchange of messages between circulation and Interlibrary Loan (ILL) applications on the borrowing side of the Interlibrary Loan transaction.

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## **1. Introduction**

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This profile, referred to as the NCIP Circulation/Interlibrary Loan Interaction: Borrowing Agency Profile (CILL – 1) of the NISO Circulation Interchange Protocol (NCIP), is designed to provide one coherent, agreed-upon set of behaviors, options, and parameters that support the exchange of messages between circulation and Interlibrary Loan (ILL) applications on the borrowing side of the Interlibrary Loan transaction.

The base standard that enables this communication is NCIP. This profile is based on that protocol, as well as the supporting NCIP Implementation Profile 1.

There is a parallel profile that defines the exchange of messages between a lending agency's circulation and Interlibrary Loan applications.

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### **1.1 Profile Constraints**

This profile imposes no specific requirements on the means by which the Interlibrary Loan application communicates with its peer Interlibrary Loan applications in the external environment. The profile has, however, been prepared with the assumption that many of the events described in the Event Table (Section 7.6 of this document) are supported by the ISO ILL Protocol and the IPIG Profile for the ISO ILL Protocol.

## **2. Description of Application Area**

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This profile is designed to support the exchange of messages between a borrowing agency's circulation and Interlibrary Loan (ILL) applications. Because ILL and circulation share many of the same functions such as tracking loaned items, sending overdue notices to users, etc., libraries are seeking applications that eliminate duplicate record-keeping and streamline functions, and thus, reduce workload for their staff.

## **3. Scope**

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Standard interlibrary loan transactions involve two partners: a borrower and a lender. This profile deals only with the borrowing agency's requirements for the interaction between circulation and Interlibrary Loan applications.

Both the circulation and Interlibrary Loan applications deal with users from their own agency.

This profile does not mandate the mechanism by which a borrowing agency's Interlibrary Loan application interoperates with external Interlibrary Loan applications. This profile does assume, however, that many events described in the Event Table (Section 7.6) of this profile are ones supported by the ISO ILL Protocol and the IPIG

Profile for the ISO ILL Protocol. ILL applications that do not conform to the ISO ILL Protocol or the IPIG Profile may interoperate with circulation applications using this profile as long as the ILL applications support the typical set of events of an ILL transaction.

This profile does not cover how users initiate ILL requests. All user authentication and authorization is considered out of scope for this profile.

## 4. References

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- Implementation Profile 1, a Profile of the NISO Circulation Interchange Protocol
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- NISO Z39.83-200x, NISO Circulation Interchange Protocol
- ISO 10160:1997, Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Service Definition
- ISO 10161-1:1997, Information and Documentation - Open Systems Interconnection - Interlibrary Loan Application Protocol Specification
- Interlibrary Loan Protocol Implementors Group. IPIG Profile for the ISO ILL Protocol, version 2, 10 April 2001
- NCIP Circulation/Interlibrary Loan Interaction: Lending Agency Application Profile

## 5. Definitions

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To clarify the difference between similar but not identical terminology used in this profile and the ISO ILL Protocol, the terms “Borrower” and “Borrowing” are used in preference to the NCIP term of “Requester” or the ISO ILL term of “Requester.” Likewise, the terms “Lender” and “Lending” are used in preference to the NCIP term of “Responder” or the ISO ILL term of “Responder.”

Borrower	The agency that makes use of the ILL and circulation applications to facilitate the management and circulation to its users of items obtained via ILL.
Borrowing Agency	See Borrower.
Circulation Application	The application that manages the circulation of items.
ILL Application	The application that manages the exchange of Interlibrary Loan messages between the borrower and the lender.
Item	An item received from a lender in response to an ILL request made by the borrower.
Lender	The agency that supplies an item in response an ILL request and manages the circulation of

	that item.
Lending Agency	See Lender.
Request	A request for a loan, copy, or other service initiated by the borrowing agency and answered by the lending agency.
User	A user at the borrowing agency who places an ILL request.

## 6. Conformance

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An application that claims conformance to a role SHALL, while operating according to this profile conform to the NISO Circulation Interchange Protocol and the Implementation Profile 1.

## 7. Profile Specification

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### 7.1 Profile Description

The NCIP standard and this profile facilitate the exchange of user, item, and request data to eliminate the need to maintain duplicate records in a borrowing agency's circulation and ILL applications. As a result, borrowing agencies can use this profile to enable local users to check out on their local circulation application items that have been obtained from an ILL partner.

This profile assumes a borrowing agency uses circulation and Interlibrary Loan applications that have no proprietary means of communicating. The need for a communication standard may be unnecessary where the circulation application and Interlibrary Loan application are managed and controlled by the borrowing agency. However, this profile may enhance interoperability in agencies where the two applications are supplied by a single vendor, but do not interoperate using a proprietary protocol.

The primary assumption of this profile is that circulation applications and Interlibrary Loan applications each play long-standing, well-understood roles in the ILL environment. This profile describes a specific implementation of the NISO Circulation Interchange Protocol that supports this traditional division of labor. The circulation application is responsible for the determination of and adherence to the local circulation policy. The ILL application is responsible for sending ILL requests and related messages to external sources, receiving responses from those external sources, and communicating appropriate messages to its local circulation application. Some system implementers or their customers may find value in a model that provides an alternative to the traditional roles. They are encouraged to produce profiles that support those approaches.

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## 7.2 Participating Applications

Two applications are assumed in this profile: the circulation application and the Interlibrary Loan application.

The circulation application operates on behalf of the borrowing agency. It manages the loan of items obtained from external sources, including communicating with the user, determining if a borrowed item is overdue, collecting overdue fines and ILL fees, etc.

The Interlibrary Loan application also operates on behalf of the borrowing agency. This application manages ILL requests, including setting of fees charged to local users, transmitting recall notices to the circulation application, etc.

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## 7.3 Business Rules

The ILL application defines and applies business rules regarding interlibrary loan requests, including the management of user notices and charges related to these requests, up to the point items are received.

Transfer of control moves from ILL to circulation when the requested item has arrived at the borrowing agency's ILL office and the ILL application sends the NCIP Accept Item message to the circulation application. The circulation application defines and applies business rules regarding the circulation of ILL items to users, including the management of user notices and charges related to the circulation of ILL items up to the point loaned items are returned to ILL or copied items are given or transferred to the user.

Transfer of control moves back to ILL when the user returns the item. Depending on where the item was returned, either the circulation application sends the Item Checked In message to the ILL application, or the Interlibrary Loan application sends a Check In Item message to the circulation application.

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## 7.4 Management of User and Staff User Interaction

The ILL application manages the Interlibrary Loan staff user interactions.

The circulation application manages the circulation staff user interactions.

Either application may provide a User Interface through which users can track their ILL requests.

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## 7.5 Required Components

### 7.5.1 Required and Optional Services

The following table lists required and optional services, messages, and responses required by this profile. Agencies that do not allow users to pickup materials at third locations (Pick Up Agencies) do not need the Accept Item message pair. NCIP

services not listed are not used by this profile.

<b>Service</b>	<b>Required (R) or Optional (O)</b>
Accept Item	R
Cancel Request Item	R
Check In Item	R
Circulation Status Updated	R
Item Checked In	R
Item Checked Out	R
Item Renewed	R
Item Request Cancelled	R
Item Request Updated	R
Item Requested	R
Item Shipped	R
Item Updated	R
Recall Item	R
Renew Item	R
Report Circulation Status Change	R
Update Circulation Status	R
Update Item	R
Update Request Item	R
Create User Fiscal Transaction	O
Send User Notice	O

## 7.5.2 Required and Conditionally Required Data Elements

The following table defines the Message/Data Elements that are Optional in the NCIP Protocol or the Implementation Profile 1, but are Mandatory or Conditional in this profile.

<b>Message</b>	<b>Profile Required Elements</b>	<b>Conditions</b>
List the message in which the elements are required.	Specify optional data elements in the NCIP or Implementation Profile that are required in this Application Profile.	Describe conditions under which data elements are required.
Item Requested	Date Available	If Known
Item Requested	Date of User Request	
Item Requested	Bibliographic Description	The circulation application may wish to create a "shadow request" for the item.
Item Requested	Circulation Status	Requested Via ILL
Item Requested	Need Before Date	



Message	Profile Required Elements	Conditions
Accept Item	Unique User Id	Circulation needs to know the User to whom this item is to be circulated.
Accept Item	Bibliographic Description	Circulation may choose to create a temporary item so ILL must include all known bibliographic details.
Accept Item	Item Description	Circulation may need to create a temporary item for circulation so ILL must include all known item details.
Accept Item	Date for Return	If the item is a loan.
Accept Item	Non-Returnable Flag	If the item is a non-returnable copy.
Accept Item Response	Unique Item Id	Circulation must respond with the item Id it has assigned to the accepted item for tracking purposes.
Recall Item	Desired Date Due	ILL must tell circulation when the item is to be returned to ILL.

### 7.5.3 Enumerated Types

The following table presents the Open Enumerated Type Schemes that have been defined for this profile. The scheme name is:

[www.agency.domain/agency/cill/schemes/noticetype.scm](http://www.agency.domain/agency/cill/schemes/noticetype.scm)

Scheme Name	Value	Definition
CILL Notice Type Scheme	Account Reminder	User notice is an account reminder.
CILL Notice Type Scheme	ILL Request Unfilled	The borrower has been unable to obtain the requested item.
CILL Notice Type Scheme	ILL Request Expired	The Need Before Date has passed and the ILL request has not been filled.
CILL Notice Type Scheme	ILL Request Availability Date Changed	The date the requested item is expected to arrive at the borrower has been changed.
CILL Notice Type Scheme	ILL Request Conditional Reply Required	The borrowing agency needs the user to affirm acceptance of all conditions before it can proceed with supplying the requested item.
CILL Notice Type Scheme	Item Overdue	User notice concerns an overdue item.

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CILL Notice Type Scheme	Item Recall	User notice concerns the recall of an item.
CILL Notice Type Scheme	Item To Collect	User notice concerns an item that is available for pickup.
CILL Notice Type Scheme	Subscription	User notice concerns a subscription to a library service.
CILL Notice Type Scheme	Warning	User notice is a warning.

### 7.6 Event Table

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
Describe the event that triggers the application to initiate a service and the location of the event in the application architecture.	Specify which application initiates the service that results from the triggering event.	List the service initiated.	Specify which application responds to the service.	Specify requirements for the initiation and response messages such as optional elements that must be included or are not permitted.
<b>Triggering Events</b>				
Below is a list of events that trigger a message in this profile.				
Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
ILL sends an ILL request to a potential supplier.	ILL	Item Requested	Circulation	Set Circulation Status to "Requested via ILL." Include Bibliographic Details, Date Requested, and Need Before Date.
User cancels an outstanding ILL request at the circulation desk.	Circulation	Cancel Request Item	ILL	It is not appropriate for ILL to refuse this request. ILL shall always agree to cancel the request, regardless of the state of the related ILL request.
User cancels an outstanding ILL request at the ILL Office.	ILL	Item Request Cancelled	Circulation	
ILL cannot fill the request.	ILL	Item Request Updated  Send User Notice (Optional)	Circulation	Set Request Status to "Cannot Fulfill Request."  Set Notice type to "ILL Request Unfilled."

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Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
Need Before date reached before item received.	ILL	Item Request Updated  Send User Notice (Optional)	Circulation	Set Request Status to "Expired."
ILL informed of change in date of availability.	ILL	Item Request Updated	Circulation	Set Date Available to expected arrival date.
		Send User Notice (Optional)		Set Notice Type to "ILL Request Availability Date Changed."
ILL requires User acceptance of conditions on use of item.	ILL	Item Request Updated	Circulation	Set Request Status to "Need to accept conditions."
		Send User Notice (optional)		Set Notice type to "ILL Request Conditional Reply Required."
ILL receives shipped notice from Lender.	ILL	Item Request Updated	Circulation	Set Status to "Shipped."
ILL delivers item to Circulation.	ILL	Accept Item	Circulation	Set Date For Return to a date calculated by ILL on the basis of the date it is due back at the lending library and any other conditions imposed by the Lender on the use of the item.  This hands over management of the item to circulation.  Circulation responds by returning the original Request Id and the Item Id it has assigned to the "accepted" item.
User picks up Item from Circulation.	Circulation	Item Checked Out	ILL	Set due date calculated by Circulation, but can be no later than the Date For Return.
ILL receives recall notice from the Lender.	ILL	Recall Item	Circulation	
User asks Circulation to renew the item but the renewed due date would exceed the Date For Return.  Circulation must therefore ask ILL if the Date For Return can be extended.	Circulation	Renew Item		Set Date For Return.  ILL will respond with "Pending" while it negotiates an extension of the ILL request Due Date with the lender.
ILL approves a renewal.	ILL	Item Renewed	Circulation	Set a new value for Date For Return.
ILL rejects a loan renewal.	ILL	Update Circulation Status	Circulation	Set Circulation Status to "Item Not Renewed."

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
User returns item to Circulation.	Circulation	Item Checked In	ILL	
Circulation returns item to ILL.	Circulation	Item Shipped (Optional)	ILL	
User returns item to ILL.	ILL	Check In Item	Circulation	
User reports to Circulation that the item has been damaged.	Circulation	Update Item	ILL	Set physical condition element appropriately.
User reports to ILL that the item has been damaged.	ILL	Item Updated	Circulation	Set physical condition element appropriately.
User reports to Circulation that the item has been lost.	Circulation	Report Circulation Status Change	ILL	Set Circulation Status to "Lost."
User reports to ILL that the item has been lost.	ILL	Update Circulation Status	Circulation	Set Circulation Status to "Lost."
An ILL fee is to be collected from the User.	ILL	Create User Fiscal Transaction	Circulation	

## 7.7 Lookup Service Table

In order to initiate specific NCIP services, one application may need to obtain information from another application. The table below lists services that may be used to obtain that information. The first column lists the application that provides the information. The second column lists the service executed. The third column lists the identifiers that are optional within NCIP, but are required for this profile. The fourth column lists the data returned.

Responding Application	Lookup Service	Required Unique Ids	Required Response Data Elements
ILL	Lookup User	Unique User Id	Requested Items list
Circulation	Lookup User	Unique User Id	User Details
Circulation	Lookup Item	Unique Item Id	Item Details

Lookup User can be used by the circulation application to retrieve a list of current or completed ILL requests from the ILL application for a given user.

Lookup Item can be used by the circulation application to retrieve details of a particular ILL request from the ILL application.

Lookup User can be used by the ILL application to check the identity of a user.

## **8. Transport Protocol**

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The circulation application SHALL support both of the following transport protocols:

- Direct Transmission over TCP/IP
- HTTPS

The ILL application SHALL support both of the following transport protocols:

- Direct Transmission over TCP/IP
- HTTPS

The selection of the transport protocol by the initiator of a message SHALL govern the transport protocol used by the responder. The responder SHALL respond using the same connection, and therefore the same transport protocol, that was used to send the message.

## **9. Security and Privacy**

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All user authentication and authorization is considered out of scope for this profile

A user is authenticated/authorized when logging into the ILL or circulation user applications, which is out of scope of this profile. By the time the circulation application asks the ILL application for a list of requests for a given user, this profile assumes this request is taking place between two known and trusted systems and that the user making the request is authorized to do so.

This profile assumes that the ILL and circulation applications whose interactions are described in this profile trust each other. Where the two applications are managed by a single agency, trust may be implicit and a minimum exchange of information may be required to enable the applications to communicate. Situations may arise, however, in which the two applications are not managed by the same agency even though a single agency's staff interact with both the ILL application and the circulation application. In this case a preliminary exchange of information will need to be used to allow each application to authenticate and authorize the other. This exchange will require a priori bilateral agreement between the communicating applications and, thus, is out of scope for this profile.

## **10. Registration of Schemes Used in the Profile**

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For information about maintenance and registration activities see Appendix G, Designation of Maintenance and Registration Agency, in the NCIP standard.

## **11. Guidelines for Implementers**

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The following guidelines do not represent behavior required by this profile. They are

offered only as recommended behavior for those implementations in which the ILL applications are in compliance with the ISO ILL Protocol and the IPIG Profile for the ISO ILL Protocol.

**NCIP Messages emitted by the ILL Application as a result of ILL messages received from external ILL Lending Agencies**

Incoming APDU	Appropriate NCIP Message to Send to Circulation Application	Conditions
ILL-Answer: Unfilled	Item Request Updated Send User Notice	
ILL-Answer: Conditional	Item Request Updated Send User Notice	
ILL-Answer: Will Supply	Item Request Updated	
ILL-Answer: Retry	Item Request Updated	An answer of retry may not result in a change of delivery time - the ILL system may opt to try another supplier. Only if ILL decides to stick with the current supplier will the Item Request Updated need to be sent to Circulation.
Shipped	Item Request Updated	
Recall	Recall Item	
Renew-Answer= Yes	Item Renewed	
Renew-Answer = No	Update Circulation Status	

**NCIP Messages emitted by the ILL Application as a result of ILL messages sent to external ILL Lending Agencies**

Outgoing APDU	Appropriate NCIP Message to Send to Circulation Application	Conditions
ILL-Request	Item Requested	Only if this is the first ILL-Request message transmitted for this Request.
Received	Accept Item	

**ISO ILL Protocol Messages Emitted by the ILL Application as the Result of NCIP Messages Received from the Circulation Application**

Incoming NCIP Message	Appropriate APDU to Send external ILL Lending Agency	Conditions
Cancel Request Item	Cancel	ILL only emits a Cancel APDU here if the ILL Request is in a state of Pending.

<b>Incoming NCIP Message</b>	<b>Appropriate APDU to Send external ILL Lending Agency</b>	<b>Conditions</b>
Renew Item	Renew	
Update Item	Damaged	ILL only emits a Damaged APDU here if the Physical Condition value is "damaged."
Report Circulation Status Change	Lost	ILL only emits a Lost APDU here if the Circ. Status is "Lost."