

INN-REACH DCB Application Profile:

Lending and Borrowing

Abstract: This application profile describes the functions, applications, and the operating environment in which the INN-Reach DCB broker application manages circulation transactions.

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1. Introduction

This profile, referred to as the NCIP Direct Consortial Borrowing: INN-REACH DCB Application Profile (INN-REACH DCB) of the NISO Circulation Interchange Protocol (NCIP) describes the functions, applications, and the operating environment in which the INN-REACH DCB application manages the circulation transactions.

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.

2. Description of Application Area

Through the INN-Reach Direct Consortial Borrowing (DCB) application, users of one agency can request and borrow items from another agency within a consortium. This standard facilitates the transfer of user and item data between disparate circulation applications, thereby allowing an agency to manage traffic for non-local patrons and/or provide local control of items belonging to another agency. The INN-Reach DCB Application acts only as an initiator, never as a responder.

3. Scope

This profile outlines the interactions between INN-REACH DCB, the item agency and the user agency. It does not prescribe how the item agency and user agency accomplish subsequent tasks (e.g., creating temporary records).

In response to actions taken by users INN-REACH DCB performs all necessary communication for the completion of a transaction. INN-REACH DCB seeks the necessary information from both the user and item agencies and manages the entire process, updating each circulation application as requests move through their lifecycle. INN-REACH DCB relies on local circulation systems to respond appropriately to messages.

INN-REACH DCB may use the services defined in this profile to instruct a local application to place holds, check items in and out and renew items.

4. References

There are no standards or other references beyond those included in the NISO Circulation Interchange Protocol and the Implementation Profile 1.

5. Definitions

In addition to the definitions in the NCIP protocol, this profile further defines:

INN-REACH DCB	An application that provides a user and staff interface on behalf of a consortium, a user and/or an item agency. INN-REACH DCB initiates NCIP services on behalf of user or item agencies but is itself neither a user nor an item agency.
Event	An indication to an item agency or user agency application that a user or staff user seeks to invoke an NCIP Service or a determination by such an application to invoke an NCIP Service.
Item Agency	The agency to which a specific physical information resource belongs.
User Agency	The agency to which a user (person) is affiliated through registration and/or membership.

6. Conformance

6.1. Introduction to Conformance and Support

This section defines rules for determining whether an application's claim of conformance to this profile and any statement of support for optional features are valid. Throughout this section references to the Event Table are to Section 7.6 and to the Lookup Service Table are to Section 7.7 in this document.

6.1.1 Roles

This profile defines three roles to which an application may claim conformance:

- INN-REACH DCB
- Item Agency
- User Agency

These roles are defined in Section 5 above.

6.1.2. Statements of Conformance

Innovative INN-Reach DCB conforms to the INN-Reach DCB role described above

6.1.3. Requirements of Conformance

An application that claims conformance to a role shall, while operating according to this profile:

1. Conform to the NISO Circulation Interchange Protocol and the Implementation Profile 1.
2. Be able to recognize every Required Event in those rows where its role is listed in the Initiating Application column of the Event Table.
3. Invoke each Required Service in those rows where its role is listed in the Initiating Application column of the Event Table whenever it recognizes an Event.
4. Be able to respond successfully to every Required Service in those rows where its role is listed in the Responding Application column of the Event Table.
5. Meet the Message Constraints as defined in the Event Table for all messages it transmits.
6. Include all required and conditionally required elements in all messages as defined in the Lookup Service Table.
7. Meet all restrictions on enumerated types as stated in Section 7.5.3.

6.2 Optional Features

If the library chooses, the DCB Application can be set up to maintain user information. If the DCB Application maintains user information for a User Agency, the AuthenticateUser and LookupUser messages are optional for agencies performing the User Agency role.

7. Profile Specification

7.1 Scope & Profile Description

This profile is suitable for a consortium whose members rely on a central server running the INN-REACH DCB application to manage the entire circulation process and to inform both the user-managing and the item-managing agencies of activities.

An agency may participate both as an item agency and as a user agency, but for any given circulation transaction an agency must be either an item or user agency. In some situations, a lender may enter a request for their own material, but they still perform the role of item agency.

For any policy determination (e.g, due date, authorization, etc.) INN-REACH DCB makes the determination on behalf of the agency.

INN-REACH DCB can be configured to send user notices or not, depending on the choice of the library. INN-REACH DCB will trigger appropriate communications to the user-managing application in all cases. It is outside the scope of this profile to describe how triggered actions are handled by local automation applications.

7.2 Participating Applications

This profile defines behaviors for applications conforming to one or more roles. Those roles are:

- INN-REACH DCB
- User Agency

- Item Agency

INN-REACH DCB is the only role that initiates NCIP services in this profile. The set of services potentially invoked at item and user agencies are not identical. Ideally, systems will support both set of services; however it is possible to implement only a single set of services, with the result of supporting either borrowing (user agency) or lending (item agency) roles..

It is also likely that a responding application may be the user agency and the item agency for the same circulation transaction. Consequently the typical circulation system is expected to implement both the Item Agency and the User Agency roles. The roles are separated in this profile to permit a precise statement of the requirements for conformance & support, and not to indicate that the roles should be divided between concrete applications.

7.3 Business Rules

The INN-REACH DCB applies all business rules, e.g. circulation policies, as defined by the consortium.

7.4 Management of User and Staff User Interaction

INN-REACH DCB is used in combination with the local circulation system as the user interface for users and staff users. This user interface allows users to place requests and to view the current status of a request, cancel requests, or request renewals. INN-REACH DCB may be used by staff to perform all user agency and/or item agency functions.

7.5 Required Components

7.5.1 Required and Optional Services

The following table lists the required, if applicable, services for this profile. Services not listed are not employed by this profile.

Service	Required/Optional
Authenticate User	Required if the DCB Application is not set up to maintain user information
Authenticate User Response	Required if the DCB Application is not set up to maintain user information
Lookup User	Required if the DCB Application is not set up to maintain user information
Lookup User Response	Required if the DCB Application is not set up to maintain user information
AcceptItem	Required if applicable
CheckinItem	Required if applicable

Service	Required/Optional
CheckoutItem	Required if applicable
RenewItem	Required if applicable
ItemCheckedIn	Required if applicable
ItemCheckedOut	Required if applicable
ItemRecalled	Required if applicable
ItemReceived	Required if applicable
ItemRenewed	Required if applicable
ItemRequestCancelled	Required if applicable
ItemRequested	Required if applicable
ItemShipped	Required if applicable

7.5.2 Required and Conditionally Required Data Elements

Message	Profile Required Elements	Conditions	Purpose
Authenticate User	NcipAddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	Authentication input	Always	User input data (e.g. name and barcode) Note: INN-Reach DCB is pre-configured for appropriate user input prompts for each user agency.
	UniqueUserIdAgency	Always	User agency
Authenticate User Response	NcipaddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueUserIdAgency	Always	User agency
	UniqueUserId	Always	User record identifier (i.e. Patron Key)
LookupUser	FromAgencyID	Always	Lending agency
	NcipaddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueUserId	Always	User record identifier

Message	Profile Required Elements	Conditions	Purpose
LookUpUserResponse	UniqueUserIdAgency	Always	User agency
	User Element Type	Always	Requesting the following: -Name Information -Block or Trap -User Privilege, including -Valid To Date -User Privilege Status, -Agency User Privilege Type -User Privilege Description - Visible User ID - User Address Information (Electronic Address)
	ToAgencyId	Always	Borrowing agency
	UniqueUserIdAgency	Always	User agency
	UniqueUserId	Always	User record number (i.e patron key)
	UserElementType	Always	This will return the following elements: -Name Information -Block or Trap -User Privilege, including -Valid To Date -User Privilege Status, -Agency User Privilege Type -User Privilege Description - Visible User ID - User Address Information (Electronic Address)
AcceptItem	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	ItemType	Always	Item type

Message	Profile Required Elements	Conditions	Purpose
	MandatedAction	Always	Transaction date
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
	PatronBarcode	Always	User record barcode
	PatronType	Always	User type
	RequestedActionType	Always	value always "circulate"
	RequestedActionTypeURI	Always	URL with valid requested action types
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueRequestId	Always	Transaction id
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgencyURI	Always	User agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
	VisibleUserIdIdentifierTypeURI	Always	User record barcode
CheckInItem	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	MandatedAction	Always	Transaction date
	NcipAddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
CheckOutItem	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	MandatedAction	Always	Transaction Date
	NcipAddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
ItemCheckedIn	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	FromAgencyID	Always	Lender's agency
	ItemBarcode	Always	Item record barcode

Message	Profile Required Elements	Conditions	Purpose
	NcipAddrPort	Always	Destination host name and port
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgencyURI	Always	Item agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
ItemCheckedOut	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	DateDue	Always	Due date assigned by DCB
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	ItemType	Always	Item type
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
	PatronBarcode	Always	User record barcode
	PatronType	Always	User type
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
		UniqueAgencyIdURI	Always
UniqueItemId		Always	Item record identifier
UniqueItemIdAgency		Always	Item agency
UniqueUserId		Always	User record identifier
UniqueUserIdAgency		Always	User agency
VisibleItemIdIdentifierTypeURI		Always	Item record barcode
VisibleUserIdIdentifierTypeURI		Always	User record barcode
ItemRecalled	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	DateDue	Always	Due date assigned by DCB
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	ItemType	Always	Item type
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
PatronBarcode	Always	User record barcode	

Message	Profile Required Elements	Conditions	Purpose
	PatronType	Always	User type
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
	VisibleUserIdIdentifierTypeURI	Always	User record barcode
ItemReceived	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	DateReceived	Always	Transaction date
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	ItemType	Always	Item type
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
	PatronType	Always	User type
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
	VisibleUserIdIdentifierTypeURI	Always	User record barcode
ItemRenewed	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	DateDue	Always	Due date assigned by DCB
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	MediumTypeURI	Always	URL with valid item types

Message	Profile Required Elements	Conditions	Purpose
	NcipAddrPort	Always	Destination host name and port
	PatronBarcode	Always	User record barcode
	PatronType	Always	User type
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
	VisibleUserIdIdentifierTypeURI	Always	User record barcode
ItemRequestCancelled	FromAgencyID	Always	Lending agency
	NcipAddrPort	Always	Destination host name and port
	RequestType	Always	value always "hold"
	RequestTypeURI	Always	URL with valid scope type
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyId	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
UniqueItemIdAgency	Always	Item agency	
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
ItemRequested	AgencyUserPrivilegeTypeURI	Always	URL with the valid user types
	Author	Optional	Bib record author
	CallNumber	Optional	Item/Bib record call number
	DateOfUserRequest	Always	Transaction date
	FromAgencyID	Always	Lending agency
	ItemType	Always	Item type
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
	PatronBarcode	Optional	User record barcode
	PatronType	Always	User type
	RequestScopeType	Always	value always "item"
	RequestScopeTypeURI	Always	URL with valid scope type
	RequestType	Always	value always "hold"
	RequestTypeURI	Always	URL with valid scope type
Title	Always	Bib record title	

Message	Profile Required Elements	Conditions	Purpose
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
	UniqueUserIdAgency	Always	User agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
	VisibleUserIdIdentifierTypeURI	Always	User record barcode
ItemShipped	Author	Optional	Item record author
	DateShipped	Always	Transaction date
	ElectronicAddressTypeURI	Always	URL with valid electronic address types
	FromAgencyID	Always	Lending agency
	ItemBarcode	Always	Item record barcode
	ItemType	Always	Item type
	MediumTypeURI	Always	URL with valid item types
	NcipAddrPort	Always	Destination host name and port
	PickupLocation	Always	User agency
	Title	Always	Bib record title
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueRequestId	Always	Request identifier
	UniqueItemIdAgency	Always	Item agency
	VisibleItemIdIdentifierTypeURI	Always	Item record barcode
RenewItem	DesiredDueDate	Always	New due date
	FromAgencyID	Always	Lending agency
	MandatedAction	Always	Transaction date
	NcipAddrPort	Always	Destination host name and port
	ToAgencyId	Always	Borrowing agency
	UniqueAgencyIdURI	Always	URL with valid agency ids
	UniqueItemId	Always	Item record identifier
	UniqueItemIdAgency	Always	Item agency
	UniqueUserId	Always	User record identifier
UniqueUserIdAgency	Always	User agency	

7.5.3 Enumerated Types

This profile makes use of the following defined and undefined enumerated types.

Data Type
Authentication Input Type
Authentication Prompt Type
Bibliographic Item Identifier Code
Bibliographic Level
Block or Trap Type
Circulation Status
Item Use Restriction Type
Request Status Type
Request Type
Requested Action Type
User Element Type
User Privilege Status Type
Visible Agency Identifier Type
Visible Item Identifier Type
Visible User Identifier Type

7.6 Event Table

Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
User begins request session	INN-Reach DCB	AuthenticateUser	User Agency's Circulation Application	
AuthenticateUserResponse	INN-Reach	LookupUser	User Agency's	

Received	DCB		Circulation Application	
User requests item	INN-Reach DCB	ItemRequested	User Agency's Circulation Application and Item Agency's Circulation Application	
Item agency ships item	INN-Reach DCB	ItemShipped	User Agency's Circulation Application	
Item agency ships item	INN-Reach DCB	CheckOutItem	Item Agency's Circulation Application	
Item is received by user agency	INN-Reach DCB	AcceptItem	User Agency's Circulation Application	
User cancels a request for an Item	INN-Reach DCB	ItemRequestCancelled	User Agency's Circulation Application and Item Agency's Circulation Application	
User agency checks out Item to User	INN-Reach DCB	ItemCheckedOut	User Agency's Circulation Application	
User agency checks in Item	INN-Reach DCB	ItemCheckedIn	User Agency's Circulation Application	
Item agency receives item	INN-Reach DCB	ItemReceived	User Agency's Circulation Application	
Item agency receives item	INN-Reach DCB	CheckInItem	Item Agency's Circulation Application	
User renews Item	INN-Reach DCB	ItemRenewed	User Agency's Circulation Application	
User renews Item	INN-Reach DCB	RenewItem	Item Agency's Circulation Application	
Item is recalled	INN-Reach DCB	ItemRecalled	User Agency's Circulation Application and Item Agency's Circulation Application	

7.7 Lookup Service Table

The table below lists services that can be initiated in order to obtain needed data.

Responding Application	Lookup Service	Required Ids	Required Response Data Elements
User Agency	Authenticate User	ToAgencyId UniqueUserId	NCIPAddrPort ToAgencyID UniqueAgencyIdURI UniqueUserId
User Agency	Lookup User	ToAgencyId	ToAgencyId UnqiueUserIdAgency UserElementType

8. Transport Protocol

INN-REACH DCB employs HTTPS as the transport protocol.

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

This profile requires the transmission of confidential personal information by the user agency to other agencies. While it provides for the use of a reasonably secure transport protocol (HTTPS), this profile is not intended for use where such sharing of confidential personal information is not acceptable.

The implication of this is that a user agency participating in activity according to this profile is assumed to trust the other agencies with which it shares this confidential user information.

Authentication of the user is assumed to occur prior to invoking further NCIP services at the direction of the user. This profile requires conforming user agency applications to support the use of the Lookup User service for this purpose.

An agency that recognizes events indicated by staff users should authenticate those staff users, however whether it does so and how it does so is outside the scope of this profile.

Responding applications may require From Agency Authentication and/or From System Authentication elements in the initiation header of some or all messages. Whether they do, and if so what the value should be is outside the scope of this profile, as are the implications for the consortium if some applications are not able to provide this in initiation messages.

10. Registration of Schemes Used in the Profile

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

11. Guidelines For Implementers (Non-normative)

The guidelines listed below are intended to assist vendors in implementing the INN-REACH DCB Application Profile. As guidelines, they are non-normative and represent non-protocol assumptions or options that might be employed by a well-designed application that is conformant to this profile.

The success of inter-system interoperability depends on many factors beyond proper coding and decoding of standards-based messages. These guidelines list some of the additional considerations libraries and systems should address as part of their NCIP implementation.

General Performance Issues

- Users can be expected to search and request materials at any time of day. Applications may run aging processes in a batch mode. In order to ensure that messages are not lost the listening port should be open as close to 24*7*365 as possible. Because NCIP services are assumed to occur in “real time”, messages should not be queued but rather processed immediately; if the responding application is unable to do so it should refuse the connection attempt.

Messages

- In order to support the widest range of functionality, while not required by the protocol or the profile, applications should send the most complete version of any message or message response including optional data.
- Applications should provide means of sending repeat messages in the event where the first message was not received or the response indicates the message could not be understood. Detection of unintentional duplication of messages is the responsibility of the application and not within the scope of the profile.
- It is the responsibility of the item-managing application to determine whether the request requires placing a hold or retrieval from stacks. In either case, the appropriate action occurs at the item agency without staff intervention at either the item or user agency. How the item is delivered is beyond the scope of the profile, as is the way in which non-NCIP errors are detected and handled by INN-REACH DCB and/or some local system at the user or item agency.