
Self Service: Unmediated Online Circulation with Offline Recovery Application Profile

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

Abstract: This application profile describes the functions, applications, and the operating environment for a self service application that accepts transactions and transfers them to a circulation application for processing. This profile also supports offline processing of transactions and transferring those transactions to the circulation application for processing at a later time.

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1. Introduction

This profile, referred to as Self Service: Unmediated Online Circulation with Offline Recovery (SS-2) describes the functions, applications, and the operating environment for a self service application that accepts transactions and transfers them to a circulation application for processing at a later time. The rules governing circulation are applied at the self service application

Application Area:	Self Service
Profile Name:	Unmediated Online Circulation with Offline Recovery (SS-2)
Implementation Profile:	Implementation Profile 1

2. Description of Application Area

Self service applications support user or device-initiated requests for circulation services without intervention by library staff. This includes kiosk and other hardware-based systems, as well as third-party web-based applications. In all cases, the self service application must communicate with the circulation system in order to process the user's requests. Self service applications described herein are designed to operate in offline mode (but may offer a more limited range of functionality while offline).

Self service applications can vary greatly in the extent of functionality offered. Some self service systems may be very specialized (check-in/sorters, for example) while others may support the complete range of circulation services. Services that may be supported in the self service environment include check-in/check-out, renewal, fee payment, place/cancel holds, and view/update user record.

Self service applications can only act as initiators of requests, never as responders. A characteristic of all the NCIP self service profiles is, therefore, that services are always and only initiated by the self service client, and responses are always and only given by the circulation application.

3. Scope

This profile describes self service applications (often called "patron empowerment" or "patron self service" modules) that have an offline recovery feature; that is, the application can operate even when not connected to a circulation system. For example, such applications allow library users to request circulation services from kiosk units and web browsers.

In a consortial environment, these third-party self service applications may be intended to communicate with several circulation systems. Within the context of this profile, however, it is assumed that the user of the self service application is known to the agency from which services are being requested (most commonly, this would mean the user is represented by a patron record in the agency's database). Self service applications not

conforming to this restriction are out of scope for this profile.

4. References

This profile has no references beyond those included in the NCIP and the Implementation Profile 1.

5. Definitions

Circulation Application	A system responsible for receiving requests for circulation services and acting on those requests. Synonymous with circulation system.
Item Agency	The agency to which a specific physical or electronic information resource belongs.
Request	A request for an item the user wishes to have. The nature of the request must be specified as part of the request; request types supported by this profile are: hold/reserve, stack retrieval, loan, and non-returnable copy.
Self Service Application	A system (device or client application) that communicates with a circulation system to request services on behalf of a library user.
User	In this profile, user is defined to mean the user of the self service application. User is further defined to be an individual library user affiliated with the agency from which he or she is requesting services.
User Agency	The agency to which a user (person) affiliates himself through use of a library card or authorization/password when representing himself to other agencies for access to those agencies' resources. The user agency typically is responsible for providing the Unique User ID and stores other user information such as name, address and user privilege.

6. Conformance

There are different conformance requirements for each participating application type:

Circulation Application

A circulation application is conformant if it supports all of the NCIP messages defined in this profile (as responder only). A circulation application cannot send a request to the self

service application. The circulation application must also be compliant with all rules defined in the NCIP and the Implementation Profile 1.

Self Service Application

A self service application is conformant if it uses NCIP messages to initiate circulation activities. The self service application can only act as initiator in this profile. Any other activities conducted by the self service application are out of scope. The self service application must also be compliant with all rules defined in the NCIP standard and the Implementation Profile 1.

7. Profile Specification

7.1 Profile Description

This profile describes the interaction between a circulation application and a self service application (often called “patron empowerment” or “patron self service” modules) that allows library users at remote locations (i.e., anywhere on the Internet) or inside the Library to request circulation services without staff mediation.

There are two distinct types of interaction defined by this protocol, online unmediated circulation and offline recovery of unmediated circulation. Online unmediated circulation occurs when the circulation and self service application are interacting in real time. All policies and rules are being defined by the circulation system. Offline recovery of unmediated circulation occurs when the circulation and the self service system have been offline and the self service is requesting updates on the circulation system for stored transactions. The self service system defines policy and rules while offline.

In this profile, a wide range of circulation services may be supported. Circulation applications are required to implement all functionality. Self service applications may implement any of the services described.

7.2 Participating Applications

This profile permits only two participants, a self service application and a circulation application. In this context, the user agency and the item agency must be the same, therefore there can only be one circulation application involved in any transaction.

The self service application always initiates requests for circulation services. The circulation application only responds.

7.3 Business Rules

In the self service application area, the item agency and user agency are the same. The circulation application applies its business rules for all circulation functions. This applies to all three objects: Agency, User and Item.

During offline recovery, the business rules for circulation have already been applied by the self service application. This applies for all three objects: Agency, User and Item.

7.4 Management of User and Staff User Interaction

The self service application is responsible for providing an interface for the user (library user or staff user) to request circulation services. Every self service application will have its own user interface. The only requirement in the context of this profile is that the user interface shall provide for one or more NCIP services.

7.5 Required Components

7.5.1 Required and Optional Services

The table below defines required and optional services for this profile. The self service application has two distinct modes. online and offline recovery. Services allowed vary based on the mode, as shown below. A blank cell indicates that the service is not supported in that mode. NCIP services not listed are not employed by this profile.

Service	Required (R) or Optional (O)		
	Self Service Application		Circulation Application
	Online	Offline	
Authenticate User	O	O	R
Cancel Request Item	O		R
Check In Item	O	O	R
Check Out Item	O	O	R
Create User	O		R
Create User Fiscal Transaction	O		R
Lookup Agency	O		R
Lookup Item	O		R
Lookup User	O	O	R
Renew Item	O	O	R
Request Item	O		R
Undo Check Out Item	O	O	R
Update Request Item	O		R
Update User	O		R

The self service application must support a minimum of one service.

None of the NCIP notification services are supported in this profile.

Note: The self service application initiates requests and the circulation application responds. Therefore, in the table above, the Self Service column is referring to the initiation of the request, while the circulation application column refers to responding to a request.

7.5.2 Required and Conditionally Required Data Elements

Message	Profile Required Elements	Conditions
Messages in which the elements are required.	Data elements, which are optional in the NCIP or Implementation Profile 1, which are required by this profile.	Conditions when the data elements are required.
Check In Item	Mandated Action	If processing offline transactions, Mandated action must be sent.
Check In Item Response	Routing Information	Required for check-in/sorting systems
	Routing Information Unique User Id	Required to print "hold for patron" information during check in
Check Out Item	Mandated Action Due Date	If processing offline transactions, Mandated action must be sent.
	Acknowledged Fee Amount	Required in order to lend items for which a fee will be assessed
	Acknowledged Item Use Restriction Type Required Item Use Restriction Type	Required when use restrictions must be acknowledged in order to borrow item
Check Out Item Response	Due Date Renewal Count	Required Required to determine if item is renewed or initial checkout
	Required Fee Amount	Required if fee required for loan of item
Create User Fiscal Transaction	Mandated Action	Required when self service application includes device for cash acceptance
Renew Item	Mandated Action Due Date	If processing offline transactions, Mandated action must be sent.

Message	Profile Required Elements	Conditions
	Acknowledged Fee Amount	Required when use restrictions must be acknowledged in order to renew item
	Acknowledged Item Use Restriction Type Required Item Use Restriction Type	Required in order to renew items for which a fee will be assessed
Request Item	Acknowledged Fee Amount	Required in order to renew items for which a fee will be assessed
	Acknowledged Item Use Restriction Type Required Item Use Restriction Type	Required when use restrictions must be acknowledged in order to request item

Note: As noted in the standard (see introductory text in Section 5.4), the circulation application is not required to supply an element requested by the self service application when, for example, the data is unavailable or when policy or practice restricts access

7.5.3 Enumerated Types

There are no additional schemes for open enumerated types and no enumerated types or undefined types that are closed by this profile.

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.
Triggering Events				
Below is a list of events that trigger a message in this profile.				
User cancels a request for an item	Self service	Cancel Request Item	Circulation	
User presents item for check in	Self service	Check In Item	Circulation	
User presents item for check out	Self service	Check Out Item	Circulation	
User acknowledges fee for check out	Self service	Check Out Item	Circulation	Acknowledged Fee Amount element required
User asks to register for service (i.e., new user is created)	Self service	Create User	Circulation	
User requests to pay fine or fee	Self service	Create User Fiscal Transaction	Circulation	
User deposits monetary value to pay fine or fee	Self service	Create User Fiscal Transaction	Circulation	Mandated Action element required
User requests information about an item	Self service	Lookup Item	Circulation	
User requests information about his current loans and requests	Self service	Lookup User Lookup Item	Circulation	
User requests item be renewed.	Self service	Renew Item	Circulation	
User acknowledges fee for renewal	Self service	Renew Item	Circulation	Acknowledged Fee Amount element required
User requests an item be placed on hold	Self service	Request Item	Circulation	Request Type = Hold
User requests an item be retrieved from stacks	Self service	Request Item	Circulation	Request Type = Stack Retrieval
User asks to borrow an item not available locally	Self service	Request Item	Circulation	Request Type = Loan

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Triggering Event and Event Location	Initiating Application	Service Initiated	Responding Application	Message Constraints
User requests a non-returnable copy of an item not available locally	Self service	Request Item	Circulation	Request Type = Non-returnable Copy
User acknowledges fee for item requested	Self service	Request Item	Circulation	Acknowledged Fee Amount required
User changes request for an item	Self service	Update Request Item	Circulation	
User asks to update user information	Self service	Update User	Circulation	
Suspicious activity during check-out	Self service	Undo Check Out Item	Circulation	
Application requests block or trap due to suspicious activity	Self service	Update User	Circulation	Block or Trap element required Mandated Action required if card was confiscated by the Self Service Application.
Item Checked In during offline processing	Self service	Check In Item	Circulation	Mandated Action element required.
Item Checked Out during offline processing.	Self service	Check Out Item	Circulation	Mandated Action and Due Date data elements required.
User requested item be renewed during offline processing.	Self service	Renew Item	Circulation	Mandated Action and Due Date data elements required.
Application requests cancellation of previous checkout during offline processing	Self service	Undo Checkout Item	Circulation	Mandated Action element required.

7.7 Lookup Service Table

In order to initiate some NCIP services, one application may need to obtain information from another application. The table below lists services that can be initiated in order to obtain such 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 the 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
Circulation	Lookup Agency	Unique Agency Id	Authentication Prompt
Circulation	Lookup Item	Unique Item Id	Medium Type
Circulation	Lookup Item	Unique Item Id	(current circulation status of an item, location/routing information)
Circulation	Lookup User	Unique User Id or Authentication Input	(information about the user)
Circulation	Authenticate User	Authentication Input	Unique User Id

8. Transport Protocol

The self service system SHALL support one of the following transport protocols:

- HTTP
- HTTPS
- Direct Transmission over TCP/IP

The circulation system SHALL support all of following transport protocols:

- HTTP
- HTTPS
- Direct Transmission over TCP/IP

The selection of the transport protocol by the initiator (Self Service application) of a message will govern the transport protocol used by the responder (Circulation application). It SHALL respond using the same connection, and therefore the same transport protocol, that was used to send the message.

9. Security and Privacy

Authentication of the user is handled by the circulation application. The self service application may use the NCIP Authenticate User service for this purpose, but

authentication through other means is permitted.

User authorization is also handled by the circulation application. A successful response to the user's request for service is assumed to indicate that the user is authorized for that service.

Use of encryption or any other security mechanisms is neither required nor prohibited in this profile.

10. Registration of Schemes Used in the Profile

There are no profile-specific schemes for this profile. For information about maintenance and registration activities see Appendix G, Designation of Maintenance and Registration Agency in the NCIP standard.

11. Guidelines for Implementors (Non-normative)

Guidelines listed below are intended to assist vendors in implementing this 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.

Optional Elements

There are several elements defined as optional in the protocol. These optional elements may be required for some functionality on the self service system. For example, if the title is not returned in a Check Out Item response, the self service unit will not have the capability to display the title for the user.

The following list defines elements that should be returned if requested to provide the self service clients the greatest functionality. The functionality list below exists in self service systems today. There may be additional functionality can be provided with these elements, but not listed.

Service / Elements	Example: Self Service System Functionality
Cancel Request Item	
	Existing Fiscal Transaction
	Notification to user of fiscal activity
	Item Optional Fields
	Bibliographic Description
	Medium type
	Verification Item id same as requested.
	Title
	Verification Item id same as requested.
	Item Description
	Call Number
	Display to user for verification of cancellation.
Check In Item	

Service / Elements		Example: Self Service System Functionality
	Unique Item Id	Verification Item id same as requested.
	Unique User id	Verification User id same as requested.
	Routing Information	Sorting
	Unique User Id	Exception Printing / Routing
	New Fiscal Transaction	Notification of charges at checkin
	Item Optional Fields	
	Bibliographic Description	
	Medium type	Can be used to determine how to sensitize the item.
	Title	Display on Receipt
	Sensitization Flag	Used to determine if the item should be sensitized.
	Security Marker	Can be used to determine how to sensitize the item.
	Physical Condition	Sorting
	Location	Sorting
	Item Description	
	Visible Item Id	Display on Receipt / User Interface
	Call Number	Sorting
	User Optional Fields	
	Visible User Id	Display user if on receipt / User Interface
	Name Information	Display user name on receipt / User Interface
Check Out Item		
	Required Fee Amount	Allows for collection or acknowledgement of fee at Self Service system.
	Unique Item Id	Verification Item id same as requested.
	Unique User id	Verification User id same as requested.
	Due Date or Non Returnable Flag or IndeterminateLoanPeriodFlag	Display due date on receipt / User Interface
	Renewal Count	Notify user of initial checkout or renewal action taken.
	Electronic Resource	Delivery of electronic resource
	New Fiscal Transaction	
	Item Optional Fields	
	Bibliographic Description	
	Medium type	Can be used to determine how to de-sensitize the item.
	Title	Display on Receipt
	Sensitization Flag	Used to determine if the item should be de-sensitized.

Service / Elements			Example: Self Service System Functionality
		Security Marker	Can be used to determine how to de-sensitize the item.
		Item Description	
		Visible Item Id	Display on Receipt / User Interface
		Call Number	Sorting
	User Optional Fields		
		Visible User Id	Display user if on receipt / User Interface
		Name Information	Display user name on receipt / User Interface
Lookup Agency			
	Organization Name Information		Display organization name
	Agency Address Information		Display address
	Authentication Prompts		Display prompts to users for authentication
	Behavior Profile Supported Type		System validation for compatibility
	Agency User Privilege Type		Systems may behave differently based on user privileges.
Lookup Item			
	Hold Pickup Date		Display to user
	Date Recalled		Display to user.
	Item Optional Fields		
		Bibliographic Description	All fields - Display
		Item User Restriction type	Display or system may take action based on value.
		Hold Queue Length	Display queue length
		Circulation Status	Display or take action based on value
		Location	Display / Sorting
		Physical Condition	Display / Sorting
		Sensitization Flag	Used to determine if the item should be de-sensitized.
		Security Marker	Can be used to determine how to de-sensitize the item.
		Item Description	
		Visible Item Id	Display / Sorting
		Copy Number	Display
		Call Number	Display / Sorting
Lookup User			
	ALL optional fields		Display / Update
Renew Item			
	Required Fee Amount		Allows for collection or acknowledgement of fee at Self Service system.
	Unique Item Id		Verification Item id same as requested.

Service / Elements		Example: Self Service System Functionality
	Unique User id	Verification User id same as requested.
	Due Date	Display due date on receipt / User Interface
	Renewal Count	Notify user of initial checkout or renewal action taken.
	Electronic Resource	Delivery of electronic resource
	Item Optional Fields	
	Bibliographic Description	
	Medium type	Can be used to determine how to de-sensitize the item.
	Title	Display on Receipt
	Sensitization Flag	Used to determine if the item should be de-sensitized.
	Security Marker	Can be used to determine how to de-sensitize the item.
	Item Description	
	Visible Item Id	Display on Receipt / User Interface
	Call Number	Sorting
	User Optional Fields	
	Visible User Id	Display user if on receipt / User Interface
	Name Information	Display user name on receipt / User Interface
Request Item		
	Required Fee Amount	Allows for collection or acknowledgement of fee at Self Service system.
	Required Item Use Restriction Type	Display or change behavior based on value
	Shipping Info	Display for user verification
	Date Available	Display
	Hold PickUp Date	Display
	New Fiscal Transaction	Verification of fee collected / assessed.
	Item Optional Fields	
	Bibliographic Description	All fields - Display
	Item Description	
	Visible Item Id	Display on Receipt / User Interface
	Call Number	Sorting
	User Optional Fields	
	Visible User Id	Display
	Call Number	Display
	Copy Number	Display
Undo Check Out Item		

Service / Elements		Example: Self Service System Functionality
	Unique User Id	Verification User id same as requested.
	Existing Fiscal Transaction	Verification / fee refunded / display
Update Request Item		
	Required Fee Amount	Allows for collection or acknowledgement of fee at Self Service system.
	Date available	Display / print
	Hold Pickup Date	Display / print
	Fiscal Account Update	Display / Verification of funds collected.
	Item Optional Fields	All fields – display
	User Optional Fields	Display / verification User id same as requestor.
	Existing Fiscal Transaction	Verification / fee refunded / display