

# Standards-based Resource-Sharing: ISO18626 and Alma

CAVAL, TROVE and ISO Interoperability

# Agenda

What is CILLT

How do standards come about? The Role of ISO and the ISO Community

ISO 10160 & 10161

ISO 18626

- 2014: First version
- 2017: Second Version
- 2021: Third Version

Alma and ReShare/CrossLink - A Proof of Concept

Next version: ISO 18626:2027

# CILLT – Centre for Interlibrary Loan Transactions

The goal of the Centre for Interlibrary Loan Transactions (CILLT) is to support the implementation of ISO 18626 Information and documentation - Interlibrary Loan Transactions with use cases, maintenance of <http://illtransactions.org/>, the mailing list, and other relevant initiatives.

This organization is the international community for ISO 18626, and have a category A liaison to ISO TC46/SC4 Technical interoperability, the sub-committee responsible for ISO 18626.

# Structure of CILLT

Editorial Committee	Library Advisory Committee	Implementer Committee
<ul style="list-style-type: none"><li>• Responsible for administrative oversight of CILLT</li></ul>	<ul style="list-style-type: none"><li>• Members represent libraries, library organizations and library-owned institutions.</li></ul>	<ul style="list-style-type: none"><li>• Members represent the vendor community as well as other organizations currently implementing or planning to implement ISO 18626</li></ul>

# Difference Between ISO WG14 and CILLT

**CILLT  
maintenance agency  
for the **current**  
version of the  
ISO18626 protocol**

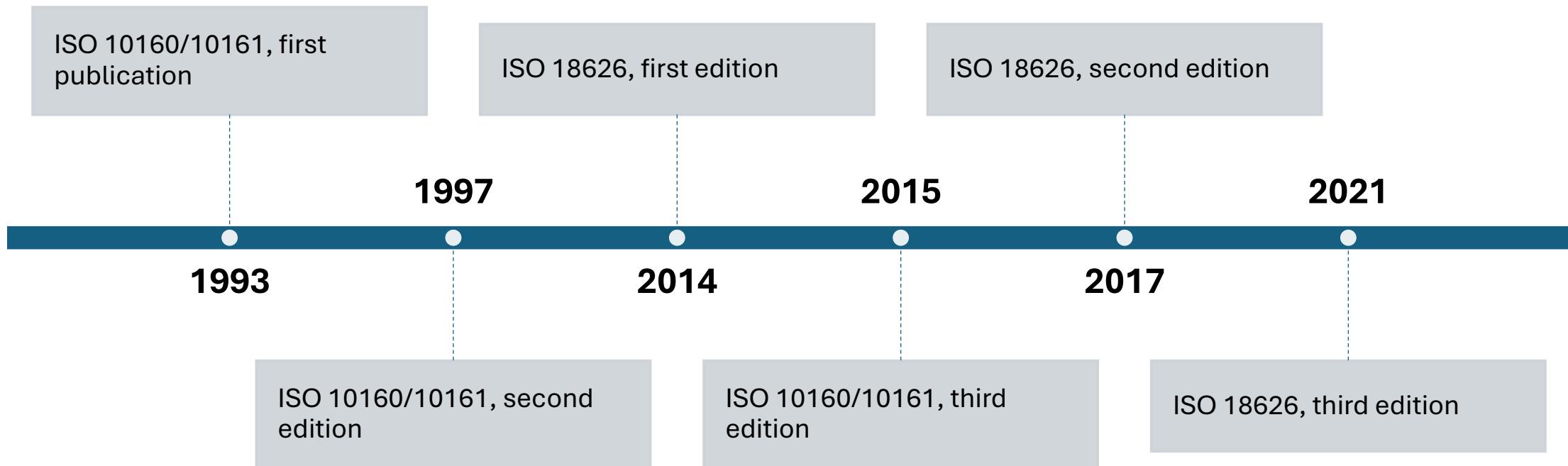
Liaise with ISO TC46/SC4 Technical Interoperability  
Hosts meetings to discuss interoperability and promotion for the current version  
Publish use cases and guidelines for the protocol  
Draft the proposal for a new version (approved May 2025)



**WG14 drafts the **new**  
version of the  
ISO18626 protocol**

Collects input from the community of users (endusers, implementers and stakeholders)  
Drafts the protocol, codes and other relevant documentation  
Builds consensus across stakeholders

# Publication Timeline



# ISO 18626

Merged ISO 10160 and ISO161 into a single standard

- OSI Model : Transition from protocol layer to Application layer (XML over HTTP(s))
- Used XML to structure and validate messages between endpoints
- Supposes Library to Library Communication, not Library to Network (Proxy)

Disconnected the message structure from the states

- XML would validate the message and its structure, but not the sequence the messages were in (stateless)
- Error Messages were based on the form of the message, not the implementation itself (sequence of steps)
- Difficult to troubleshoot

# Parts of the ISO18626 Message - Requester

- Header
- BibliographicInfo
- PublicationInfo
- ServiceInfo
- SupplierInfo
- RequestedDeliveryInfo
- RequestingAgencyInfo
- BillingInfo

# Parts of the ISO18626 Message - Supplier

- Header
- MessageInfo
  - ReasonForMessage
  - ReasonUnfilled
  - ReasonRetry
- StatusInfo
  - Status: “loaned”
  - ExpectedDeliveryDate
  - DueDate: “2025-01-10”
- DeliveryInfo
  - Method
  - URL
  - addressSentTo (physical or electronic)
  - DeliveredFormat
- ReturnInfo

# Advantages of ISO18626

- Web-Native: XML over HTTP(S)
- Flexible : Less reliance on hard-coded state model / closed code lists allowed for innovation in different areas of the protocol
- Simplified : Only three core messages vs. dozens
  - Initial Request
  - Supplying
  - Requesting (updates after initial request)

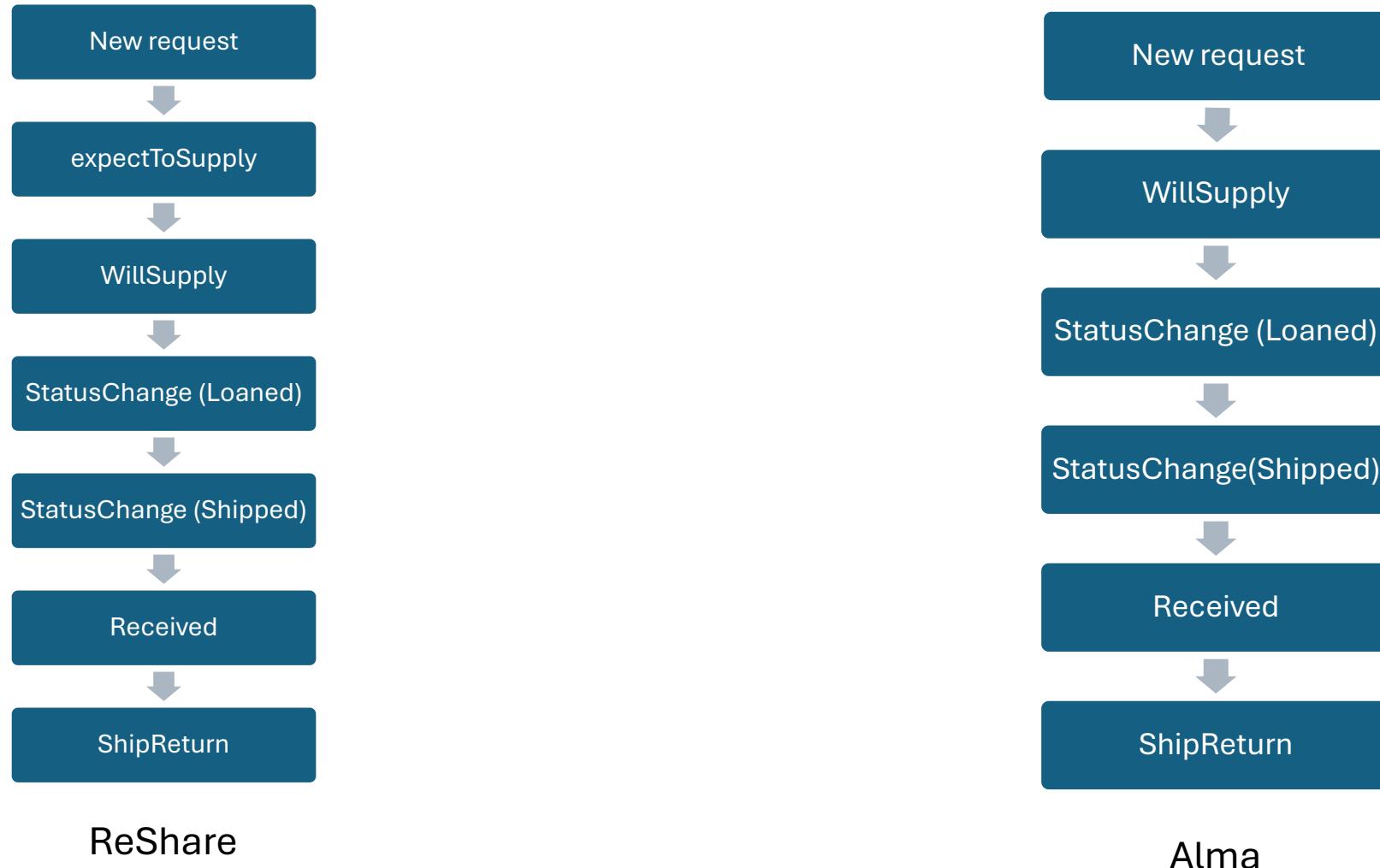
# Alma Resource-Sharing

- Partners may build workflow profiles for interactions they wish to support
- ISO partners can be added from the community zone or manually entered as transactions occur or automatically
- Lending Profiles can also be defined per partner or network

## Edit Workflow Profile

Workflow Profile *	Type
ISO 18626 - Borrowing	Borrowing
Steps *	
<input checked="" type="checkbox"/> Automatic renew	<input checked="" type="checkbox"/> Automatic will supply
<input checked="" type="checkbox"/> Cancelled by partner	<input checked="" type="checkbox"/> Cancelled By Patron
<input checked="" type="checkbox"/> Cancelled by staff	<input checked="" type="checkbox"/> Cancel Recall
<input checked="" type="checkbox"/> Cancel request not accepted	<input checked="" type="checkbox"/> Conditional
<input checked="" type="checkbox"/> Damaged communicated	<input checked="" type="checkbox"/> Declared lost by partner
<input checked="" type="checkbox"/> Externally Obtained	<input checked="" type="checkbox"/> Lender check in
<input checked="" type="checkbox"/> Lost communicated	<input checked="" type="checkbox"/> Manual renew
<input checked="" type="checkbox"/> Mediated Patron Renewal	<input checked="" type="checkbox"/> Reactivated
<input checked="" type="checkbox"/> Recalled by partner	<input checked="" type="checkbox"/> Reject
<input checked="" type="checkbox"/> Renew requested	<input checked="" type="checkbox"/> Request accepted
<input checked="" type="checkbox"/> Waiting for cancel response	<input checked="" type="checkbox"/> Waiting for receive digitally
<input checked="" type="checkbox"/> Will supply	

# Issues with Alma Interoperability with ReShare two different state models



# Philosophical differences lead to different implementations of the standard

- ReShare uses conditionals in almost a “chat-like” way, negotiation until the supplier agrees to ship
- Conditions for Alma/Rapido are “friction” that can impede offers where suppliers do not apply conditions. Focus is on speed to fill and not on loan negotiation.
- For Alma, conditionals are sent once during WillSupply message
- For ReShare, conditionals can be sent multiple times

## TROVE/CAVAL

CAVAL is a not-for-profit company that provides specialized support for 11 Australian universities (Ex Libris).

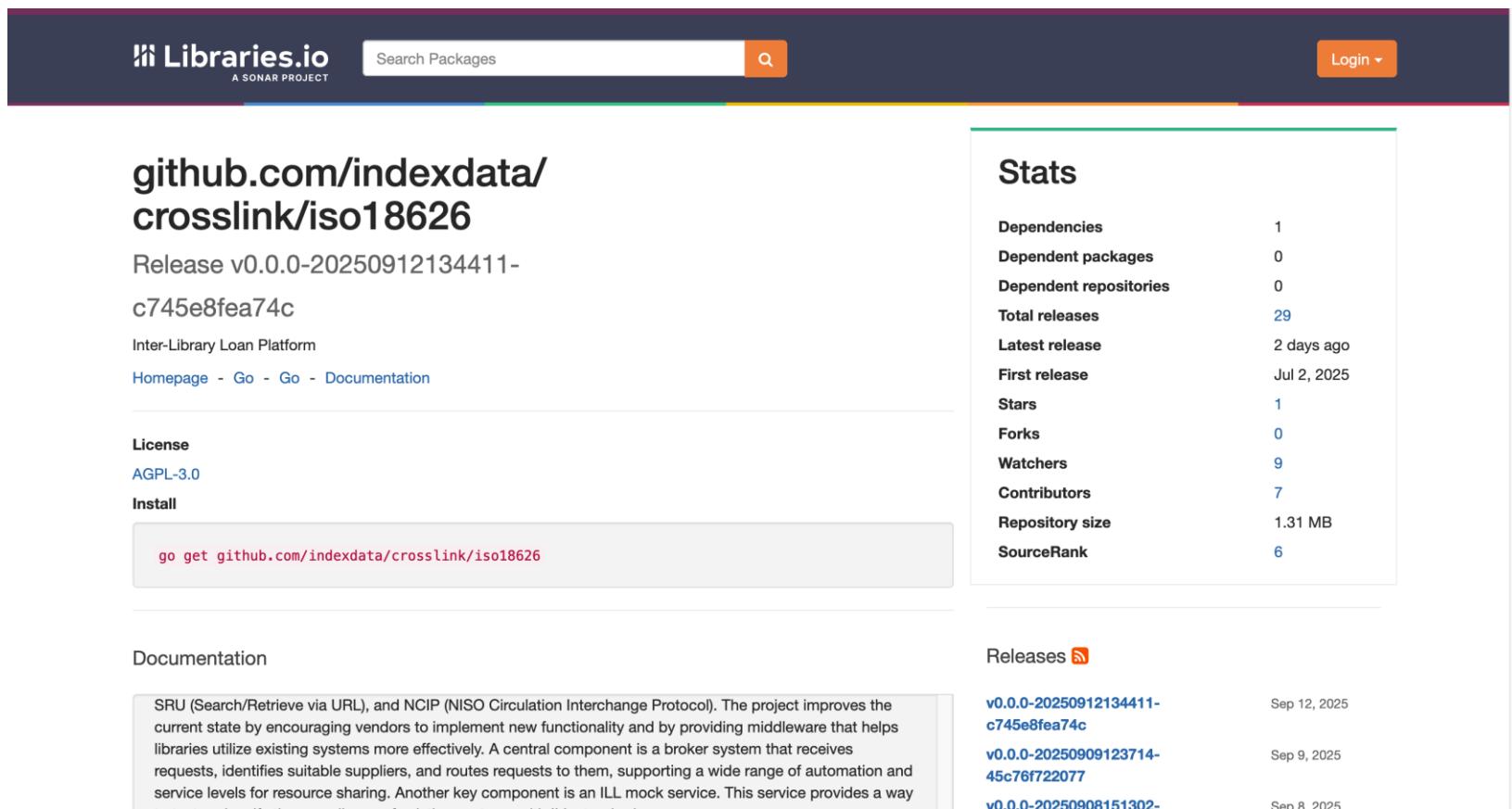
TROVE is a collaborative group of libraries, universities and Australian cultural organizations (ReShare) organized by the National Library of Australia. Over 400 participating libraries.

# The Problems to Solve

- Problem – When a particular title reaches end of rota, pass ISO18626 requests between networks to fill the request.
  - Must support returnables and non-returnables
  - Must support pay for peer service - Standard, Rush and Express levels.
  - Must Support Loan Conditionals for Returnables
  - Must Send an External URL for non-returnables (ReShare uses a tokenized URL on an Amazon File Store to deliver files to patrons)

# CrossLink

- CrossLink is an open-source interpreter of the ISO18626 standard that can transform
- <https://github.com/indexdata/crosslink/iso18626>



The screenshot shows the Libraries.io package page for the CrossLink project. The page has a dark header with the Libraries.io logo, a search bar, and a login button. The main content area displays the package details: name (github.com/indexdata/crosslink/iso18626), version (Release v0.0.0-20250912134411-c745e8fea74c), description (Inter-Library Loan Platform), and links to Homepage, Go, Go, and Documentation. It also shows the license (AGPL-3.0) and an install section with the command `go get github.com/indexdata/crosslink/iso18626`. To the right, there is a 'Stats' section with various metrics and a 'Releases' section listing three recent releases with their dates.

github.com/indexdata/crosslink/iso18626

Release v0.0.0-20250912134411-c745e8fea74c

Inter-Library Loan Platform

[Homepage](#) - [Go](#) - [Go](#) - [Documentation](#)

License

AGPL-3.0

Install

`go get github.com/indexdata/crosslink/iso18626`

Documentation

SRU (Search/Retrieve via URL), and NCIP (NISO Circulation Interchange Protocol). The project improves the current state by encouraging vendors to implement new functionality and by providing middleware that helps libraries utilize existing systems more effectively. A central component is a broker system that receives requests, identifies suitable suppliers, and routes requests to them, supporting a wide range of automation and service levels for resource sharing. Another key component is an ILL mock service. This service provides a way

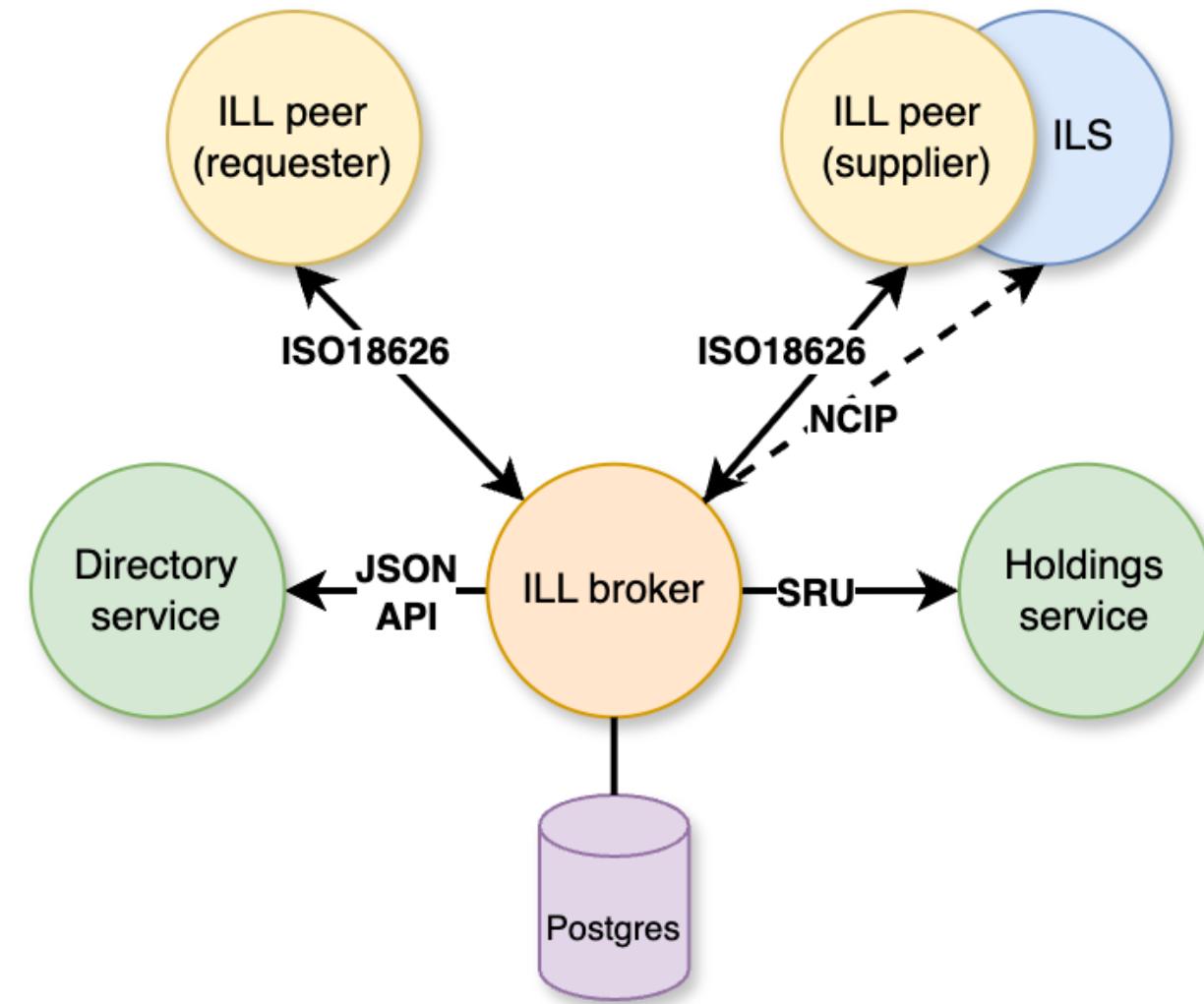
**Stats**

Dependencies	1
Dependent packages	0
Dependent repositories	0
Total releases	29
Latest release	2 days ago
First release	Jul 2, 2025
Stars	1
Forks	0
Watchers	9
Contributors	7
Repository size	1.31 MB
SourceRank	6

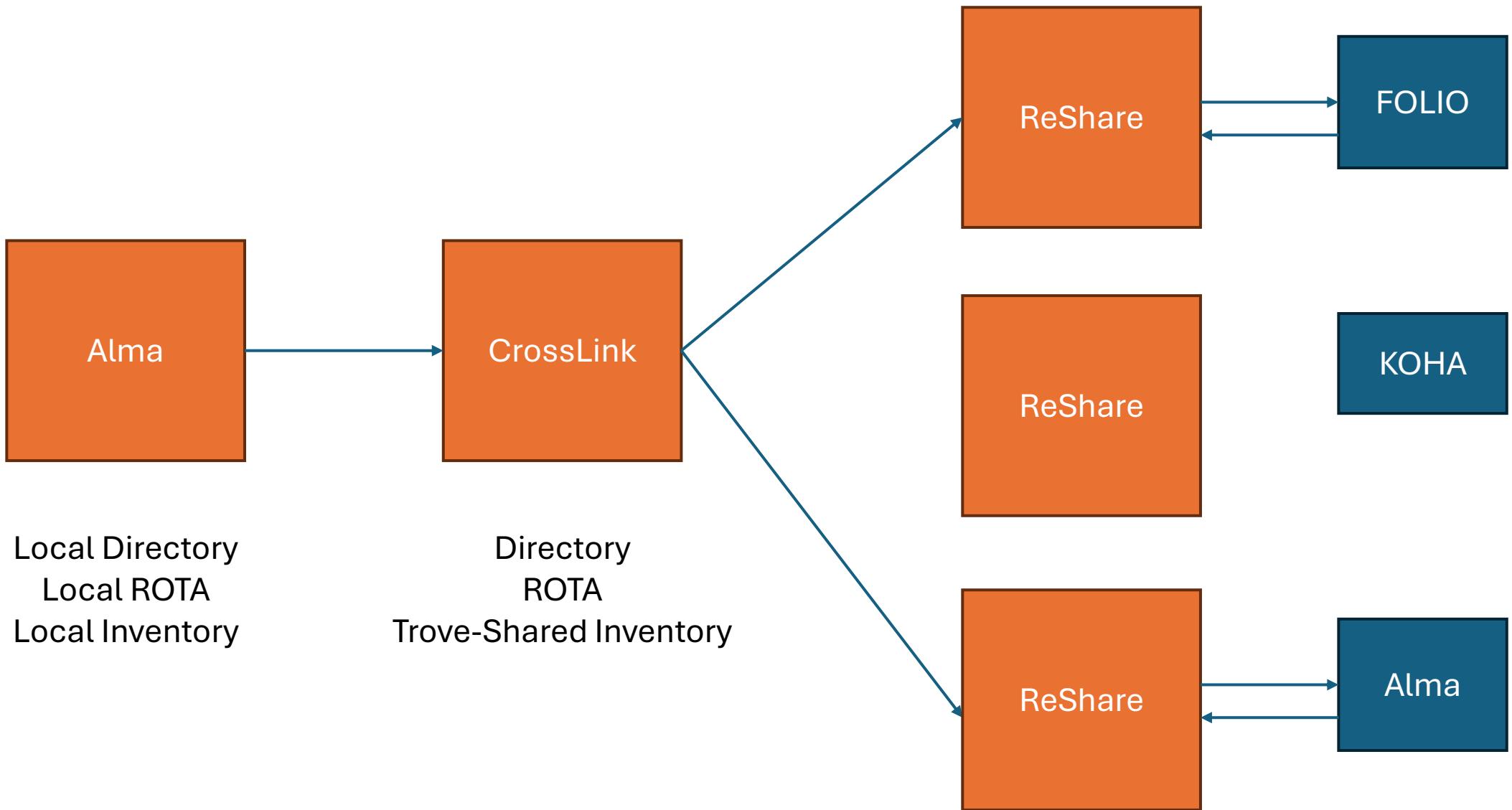
**Releases** [RSS](#)

v0.0.0-20250912134411-c745e8fea74c	Sep 12, 2025
v0.0.0-20250909123714-45c76f722077	Sep 9, 2025
v0.0.0-20250908151302-	Sep 8, 2025

# CrossLink Architecture



# CrossLink - Proxy (Opaque Mode)



# PullSlips - Notes

- Since the entire network is the partner entry and not individual libraries, shipping and return addresses are put into notes instead of slips

## Resource Sharing Borrowing Request

[Cancel](#)

Date	Operator	Field Name	Old Value	New Value
			Data	Was sent to TROVE
8 06/05/2025 19:49:15 EDT	jonesa@newscho...	Return Date	-	06/05/2025
9 06/05/2025 19:49:15 EDT	jonesa@newscho...	Status	Physically received by library	Returned item to partner
10 06/05/2025 19:47:59 EDT	jonesa@newscho...	Partner Related Data	-	Received message was sent to TROVE
11 06/05/2025 19:47:58 EDT	jonesa@newscho...	Note to Partner	so long and thanks for all the fish!	[Receive] Note:so long and thanks for all the fish!
12 06/05/2025 19:47:58 EDT	jonesa@newscho...	Arrival Date	-	06/05/2025
13 06/05/2025 19:47:58 EDT	jonesa@newscho...	Status	Shipped Physically	Physically received by library
14 06/05/2025 19:47:58 EDT	jonesa@newscho...	Item Barcode	-	01NYUTNS0051753
			[Ship] Note:#RETURN_T...	
			Albury City Libraries (ISIL:AU-NALB)	
			Albury City Libraries, Inter- library loans, 540 Kiewa Street Albury, NSW, 2640 AUS	
			#RT_END#	
15 06/05/2025 19:47:57 EDT	jonesa@newscho...	Note to Partner	so long and thanks for all the fish!	
16 06/05/2025 19:47:57 EDT	jonesa@newscho...	Shipping Cost		
17 06/05/2025 19:46:21 EDT	System	Note to Partner	-	[Ship] Note:#RETURN_TO# Albury City Libraries (ISIL:AU-NALB) Albury City Libraries, Inter-library loans, 540 Kiewa Street Albury, NSW, 2640 AUS #RT_END#
18 06/05/2025 19:46:21 EDT	System	Actual Shipped Format	-	Physical
19 06/05/2025 19:46:21 EDT	System	Status	Request sent to partner	Shipped Physically
20 06/05/2025 19:46:21 EDT	System	Due Date	-	07/30/2025



# Other Issues

- Different copyright schemes are not sent by default for Alma 18626 messages
- Copyright schemes are not displayed in the transaction, so requester could pay license, but supplier would not know and reject the transaction

Resource Sharing Borrowing Request

Cancel

Resource Information	
Title	Vogon poetry
Author	Mallory Kasinec
Edition	-
LCCN	-
Other standard ID	-
Remote record ID	return-ISIL:AU-SYDNEY::98754541231
Publication date	-
Additional person name	-
Series title number	-
Note	-
Part	-
Chapter author	-
Pages	50-75
End page	75
Composer	-
Song/movement	-
Permalink	-
Author initials	-
ISBN	97812345678
System Control Number	-
Barcode	-
Publisher	-
Place of publication	-
Source	-
Call number	-
Volume	-
Chapter number	-
Chapter title	-
Start page	50
Editor	-
Opus	-
Music part	-

Request Attributes	
Title	Vogon poetry
Internal Identifier	12723782630007875
Specific Edition Only	Yes
Requester	Jones, Allen
Labels	-
Owner	Resource Sharing Library
Partner	TRUVE SANDBOX

# Max Costs and Retries

- When costs are sent to supplier, if MaxCost is under threshold, then supplier should fill the transaction
- While Alma can track Maximum Cost as an analytic, it cannot apply a label or act on a transaction that exceeds a cost threshold.
- Supplying ILL Librarians CAN send notes back and forth to negotiate price before an item is shipped

# CrossLink Current Mode = Opaque

- Creates problems – one partner means slips and letters all go to the broker and not to the supplying libraries

- Modifications in letter XSLT allow for supplier address to be printed in shipping and return slips

See <https://developers.exlibrisgroup.com/blog/connecting-alma-rapido-to-trove-partners-resource-sharing-tprs/> for XSLT

- Similar modifications can be made to docDel letter to enable ExternalURL to appear email to requesting library for non-returnable transactions.

```
<xsl:when
test="notification_data/resource_sharing_request/external_file_ur
l!=''">
<p>
<a class="button">
<xsl:attribute name="href">
<xsl:value-of
select="notification_data/resource_sharing_request/external_file_
url"/>
</xsl:attribute>@@click_here@@</a>
</p>
<div class="alert alert-warning">
<p>The link expires after 90 days.</p>
</div>
</xsl:when>
```

## On Locate - Notes

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Bibliographic matching is on Australian National Bibliographic Identifier, not on local 001s or OCLC ID

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In Alma, ANBD is manually added to Remote Record ID to connect request to correct Bib in TROVE Shared Index

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Possible integration with Library Open Workflows to automate lookup?

# TROVE as Resource Sharing Partner in Alma

The screenshot shows the Alma Resource Sharing Partner configuration interface. The main title is "Resource Sharing Partner" with a "TROVE\_SANDBOX" label. The interface includes tabs for General Information, Contact Information, Parameters, Notes, and Attachments. The Contact Information tab is active. The General Information section contains fields for Code (TROVE\_SANDBOX), Profile Type (ISO 18626), System Type (ReShare), Average Supply Time (0), Currency (AUD), and Delivery Delay (days) (0). The Contact Information section contains fields for Name (TROVE\_SANDBOX), Status (Active), Alternate Symbol (BROKER\_DEV), and Borrowing/Lending Workflows (ISO 18626 - Borrowing and ISO 18626 - Lending). The Parameters section includes checkboxes for Supports Borrowing, Supports Lending, Automatically Generated, and New Request Alert. The Notes section contains a "Enable Direct Charge Functionality" section with a checkbox for "Enable Direct Charge Functionality". The Attachments section is empty. The interface includes a sidebar with a list of icons and a right-hand panel for "TROVE\_SANDBOX" with fields for Partner Code, Profile Type, and System Type. The bottom right corner features the Ex Libris logo and the text "Ex Libris, Part of Clarivate 20".

**Resource Sharing Partner** **TROVE\_SANDBOX**

**Contact Information**

Code **TROVE\_SANDBOX**

Profile Type **ISO 18626**

System Type **ReShare**

Average Supply Time **0**

Currency **AUD**

Delivery Delay (days) **0**

Alternate Symbol **BROKER\_DEV**

Locate Profile

Supports Borrowing

Supports Lending

Automatically Generated

New Request Alert

Borrowing Workflow **ISO 18626 - Borrowing**

Lending Workflow **ISO 18626 - Lending**

Enable Direct Charge Functionality

Enable Direct Charge Functionality

Automatic Claim/Cancel (active only when 'Resource Sharing Claiming and Cancellation' job is active)

Automatic Claim

Automatic Cancel

**TROVE\_SANDBOX**

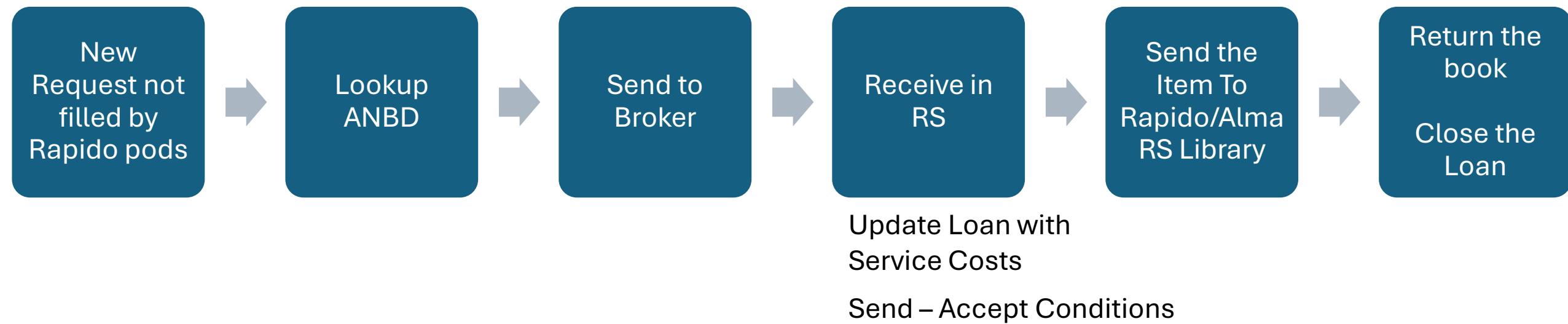
Partner Code: **TROVE\_SANDBOX**

Profile Type

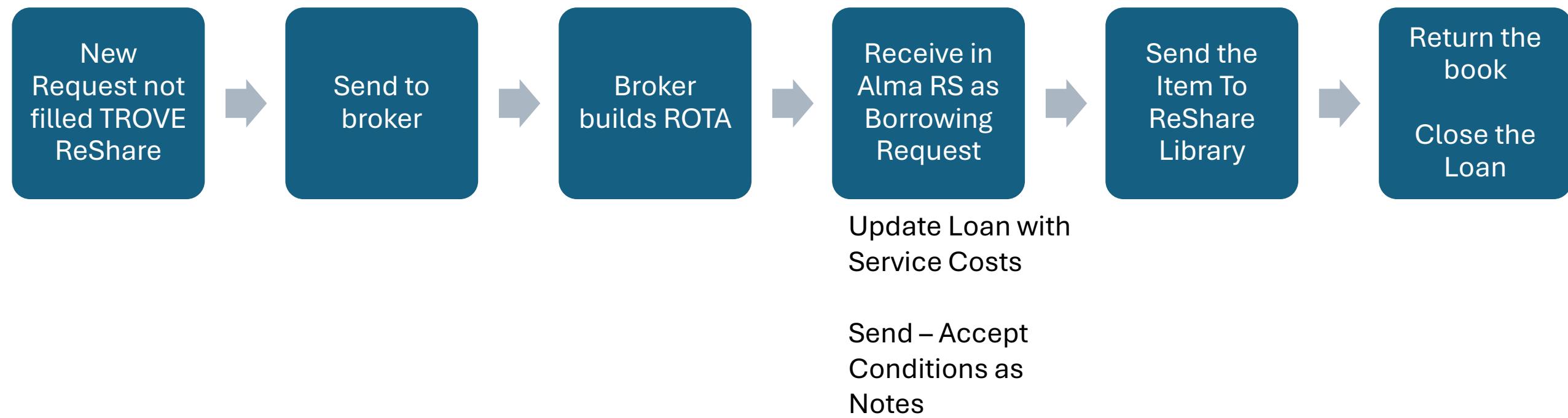
System Type

Ex Libris, Part of Clarivate 20

# Happy Path



# Happy Path



# Progress

- Basic Returnables workflow – passed and in production
- Basic Non-Returnables workflow – passed, with some changes to Alma letters to notify recipients of External URLs
- Tiers of Service – communicated between partners, but...
  - Conditionals – pending
  - MaxCost and Fees – MVP of transmission of service level, but max cost conditionals pending
- Copyright
  - Pending further investigation
- Peer to Peer
  - Shorthand way to do this, but not automated or standards based

Cross-Share specific remote-recordID:

return-ISIL:AU-SYDNEY::98754541231



Citations ▾ Citation ID ▾



Receiving Department Items | Scan In Items | Vendors | Funds and Ledgers | All PO Lines | Monitor Requests & Item Processes | Deliver Digital Documents | Create Purchase Request | Citations | Manage Purchase Requests

Active Facets

Status:

- Request Completed (x)
- Remove all

Find specific facet

Include Zero Values

Rapido Indicator

- No (7)

Borrowing Library

- ReShare\_Broker... (2)
- TROVE\_SANDB... (5)

Status

- Request Comple... (7)

Activity Status

- Completed (7)

Creation Date

- Yesterday (1)
- 2-3 days ago (2)
- 8-30 days ago (1)

Lending Requests (1 - 7 of 7)

External Identifier ▾

1	<input type="checkbox"/>	Reconsidering difference by Derida ReShare_Broker_Dev	<span>(Request Completed)</span>
2	<input type="checkbox"/>	Reconsidering difference by Nancy, Derrida, Levy ReShare_Broker_Dev	<span>(Request Completed)</span>
3	<input type="checkbox"/>	Amazing edamame recipe by Test TROVE_SANDBOX	<span>(Request Completed)</span>
4	<input type="checkbox"/>	Something smart goes on TROVE_SANDBOX	<span>(Request Completed)</span>
5	<input type="checkbox"/>	Some article iV / Test TROVE_SANDBOX	<span>(Request Completed)</span>
6	<input type="checkbox"/>	Partying with Allen	

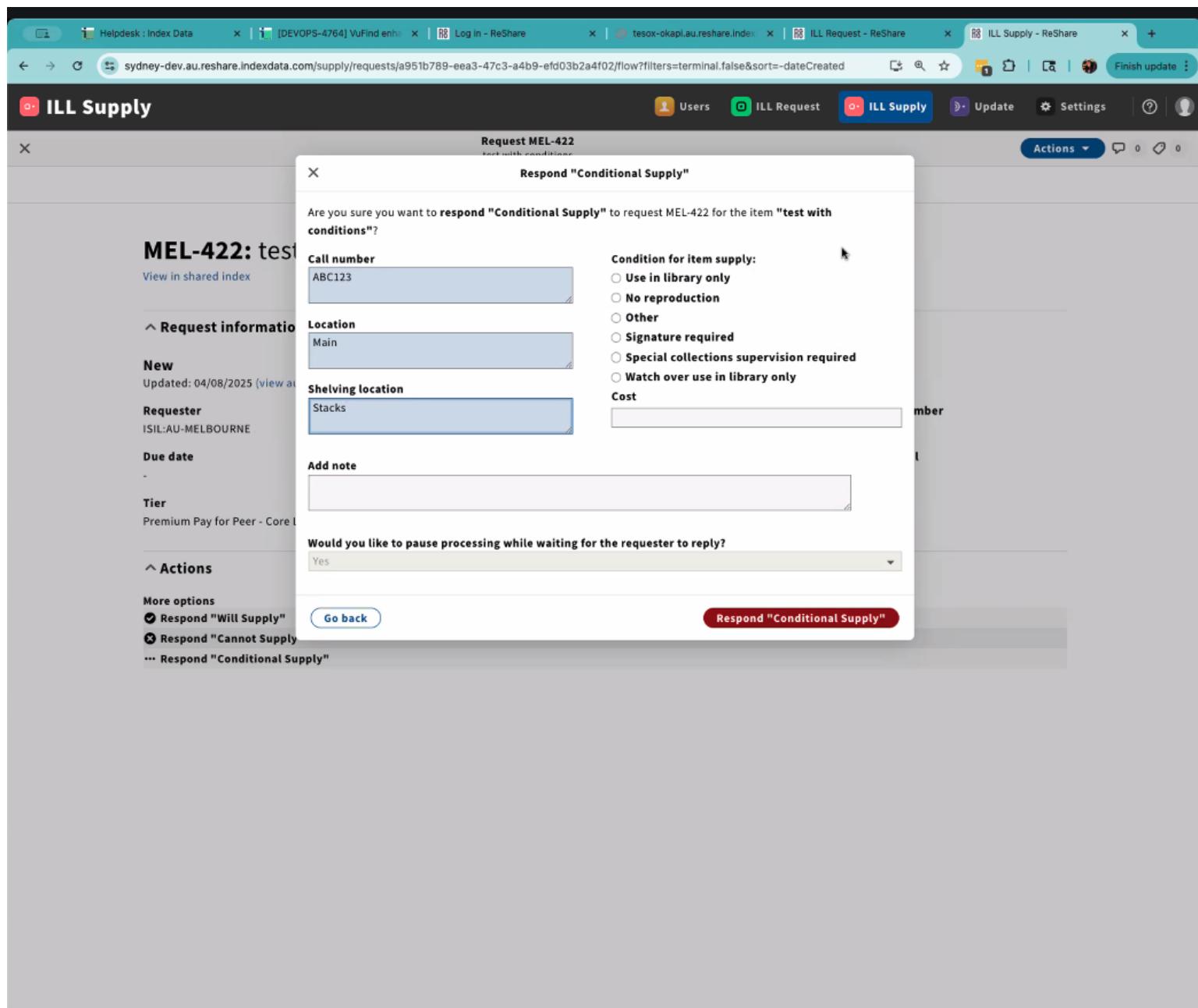
Audit

	Date	Operator	Field Name	Old Value	New Value
1	06/02/2025 09:55:30 EDT	jonesa@newschool....	Status	Returned by partner	Request Completed
2	06/02/2025 09:55:30 EDT	jonesa@newschool....	Partner Related Data	Check-in barcode(s): 31207040363958	Checked In message was sent to ReShare_Broker-Dev
3	06/02/2025 09:55:30 EDT	jonesa@newschool....	Return Date	-	06/02/2025
4	06/02/2025 09:55:29 EDT	jonesa@newschool....	Partner Related Data	Returned message was received from ReShare_Broker-Dev	Check-in barcode(s): 31207040363958
5	06/02/2025 09:54:33 EDT	System	Note to Partner	[Receive] Note:got it - thanks again#seq:2#	[Return] Note:shipped it back - UPS:87598759827#seq:3#
6	06/02/2025 09:54:33 EDT	System	Status	Received by partner	Returned by partner
7	06/02/2025 09:54:33 EDT	System	Partner Related Data	Received message was received from ReShare_Broker-Dev	Returned message was received from ReShare_Broker-Dev
8	06/02/2025 09:53:43 EDT	System	Note to Partner	-	[Receive] Note:got it - thanks again#seq:2#
9	06/02/2025 09:53:43 EDT	System	Status	Shipped Physically	Received by partner
1...	06/02/2025 09:53:43 EDT	System	Partner Related Data	-	Received message was received from ReShare_Broker-Dev
1...	06/02/2025 09:53:13 EDT	jonesa@newschool....	Due Date	-	10/06/2025
1...	06/02/2025 09:53:13 EDT	jonesa@newschool....	Send Date	-	06/02/2025
1...	06/02/2025 09:53:13 EDT	jonesa@newschool....	Status	Will Supply	Shipped Physically
1...	06/02/2025 09:53:13 EDT	jonesa@newschool....	Partner Related Data	-	Shipped message was sent to ReShare_Broker-Dev
1...	06/02/2025 09:53:11 EDT	jonesa@newschool....	Item Id	-	23227568270007875

# ReShare View (with conditionals)

## Problems with conditionals:

- ReShare sends as an array
- Alma sends as a string
- Alma conditionals work for non-returnables
- ReShare accepts conditionals one at a time, Alma accepts conditionals as a bundle in a string literal



# Other Issues

- Notes are used for many shortcomings in the protocol (such as Conditions in Alma and ReShare) and **we'll keep doing this until there is a new version**
- We all handle money differently
  - ReShare handles shipping costs
  - Alma has multiple fee types and sends them as such in the ISO18626 message

# Thank You's All Around

- Based on work of CrossLink, ReShare AND Alma
- Thank you
  - Ex Libris - Katie Birch, Mike Richens, Moshe Schechter, Oren Farkas
  - ReShare –Sebastian Hammer, Mallory Kasinec, Jakub Skoczen
  - IDS - Mark Sullivan
  - Trove – Pham Giang, Deanna Cronk
  - CAVAL -- Sae Ra Germaine, Jessie Donaghey, Paul Wei
  - CILLT – Leif Anders, Clare Mackeigen

# Lessons Learned from work with Ex Libris and ReShare

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## Collaboration is addictive...

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Just because we're speaking  
ISO18626 doesn't mean we're  
compatible...

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Different assumptions of state  
models between  
implementations

Partner ReShare Trove Test

name

Labels

External  
identifier

BROKER\_TEST//nalb-74~...

Profile  
Type

ISO 18626

General Information

History

General Messages

Notes

Items

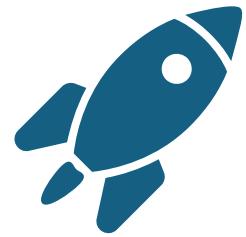
Attachments

Communications

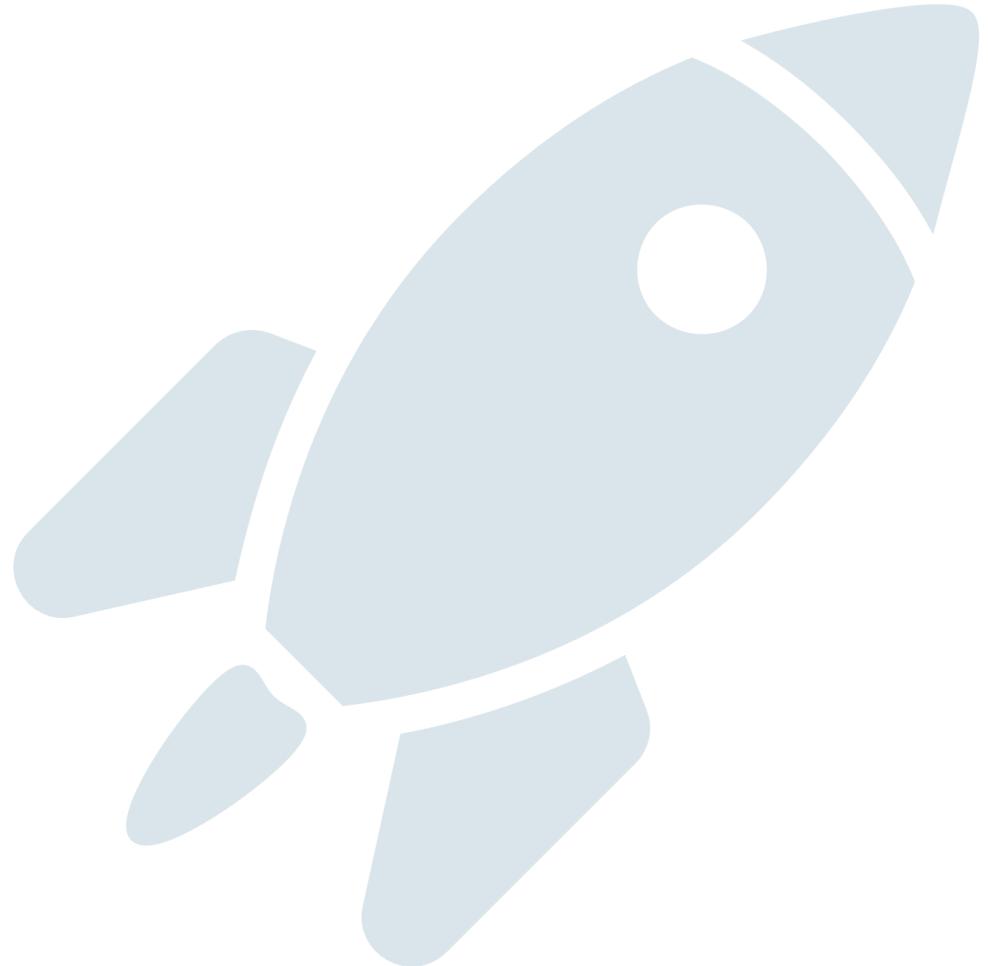


	Created On	Type	Status	Message	
1	06/18/2023 18:36:08 EDT	Received	Active	still hereeeee	...
2	06/18/2023 18:37:14 EDT	Received	Active	💕	
3	06/18/2023 18:37:57 EDT	Received	Active	...	
4	06/18/2023 18:35:49	Sent	Active	are you there?	

Left to their own devices, users will use it differently, “emoticons, really?”



# What's Next?



# Proposal for ISO 18626:2027

- Fees and payment information
- Extension framework
- Better error handling options / guidelines
- Pickup location information
- Better support for digital lending / doc delivery
- Encryption and authentication guidance
- Network to network communication
  - Peer to Peer
  - Peer to Broker
  - Network to Network
- Machine-readable implementer profiles
- Uniform handling of conditionals
- Error fixes of 2017/2021 stylesheets

# Getting the band back together

- 
- Allen Jones, The New School
  - Abijheet Roy, OCLC
  - Ed Davidson, Retired
  - Kristen Wilson, North Carolina State
  - Mike Richens, Ex Libris/Clarivate
  - Moshe Schecter, Ex Libris/Clarivate
  - Dustin Stokes, Atlas Systems
  - Mike Sullivan, IDS
  - Chas Woodfield, OpenRS
  - Ian Ibbotsen, OpenRS
  - Paul Jensen, OCLC
  - Jakub Skoczen, IndexData
  - Sebastian Hammer, IndexData
  - Mallory Kasinec, IndexData
  - Olli-Anti Kivihähti, Koha

# Rules of Engagement and Code of Conduct

- Goal of the group is consensus
- If we can't reach consensus on a particular issue, then we will assemble a group of both sides to investigate proposed solutions, then make recommendations
- ROPES (Respect, Openness, Participation, Educate/Escuchar, Stewardship)
- Each mention of AI will cost your organization \$10,000

# Next Steps

- Will schedule meetings for ISO WG14 once we hear from approval by all national standards organizations
  - SC14 has voted on preliminary slate, but there are some late additions/substitutions (projected kickoff in early October)
    - Monthly implementer meetings
    - Subgroup meetings throughout month
    - Meetings will be virtual (Zoom)
  - WG14 will have similar structure to CILLT
    - Mark Paris – Liaison with ISO
    - Allen Jones – Project Lead
  - Work will be collected in BaseCamp and Google Drive

# Timeline (Proposed)

- October 2025 Kickoff
- January 2026 First Sprint (Cleanup/Fix stylesheet from 2017/2021, Financials)
- April 2026 Second Sprint (Extension Framework, Authentication)
- June 2026 Third Sprint (Machine-Readable Profiles and Network-to-network)
- December 2026 Fourth Sprint (Conditionals, Digital lending, Pickup Locations/Shipping)
- February 2027 Public comment period (30 days)
- April 2027 ISO Member Vote
- May 2027 Recommendation for Approval

Subject Areas – problem statements, recommendations and sample supplier/requester messages with use cases and guidelines

# How Can I Get Involved?

- Library SMEs Group
  - SMEs are temporary assignments for specific subject areas, not a standing group. The important part is to provide insight/recommendations on **features of the protocol** (not request management software)
  - Contact [iso18626ill@gmail.com](mailto:iso18626ill@gmail.com) along with the subjects you wish to discuss/view
  - Expect to work  
(3-5 hours per month, 1.5 of meetings, 2-4 hours of writing user stories)

Thank You  
Queestions?

