

# 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

- Responsible for administrative oversight of CILLT

## Library Advisory Committee


- Members represent libraries, library organizations and library-owned institutions.

## Implementer Committee

- Members represent the vendor community as well as other organizations currently implementing or planning to implement ISO 18626

# 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)

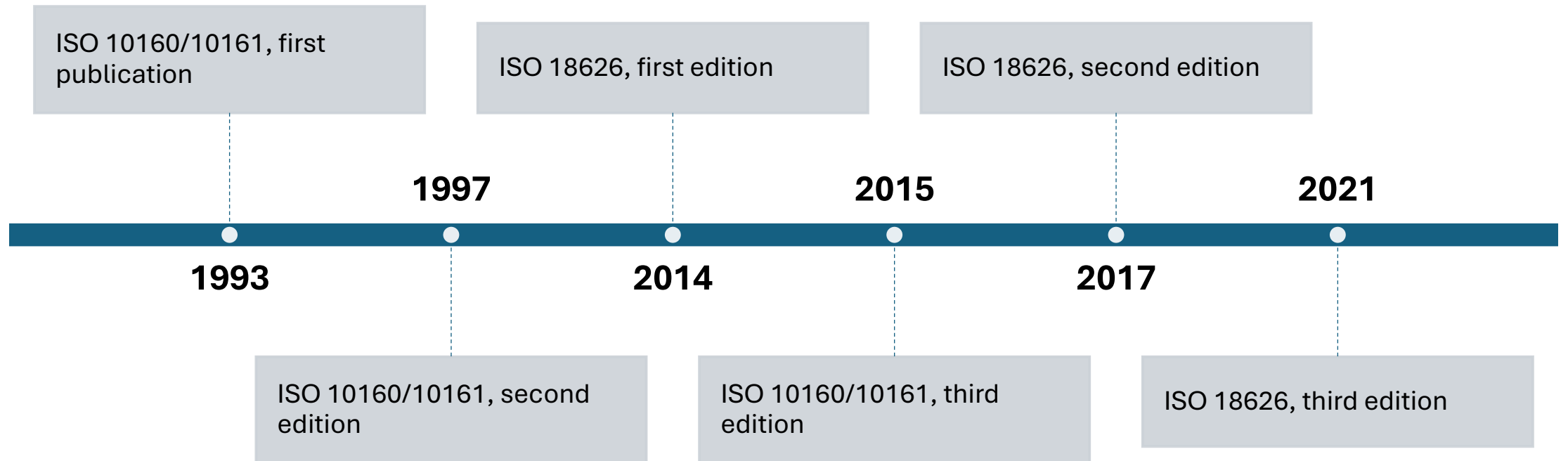
**WG14** drafts the **new**  
version of the  
ISO18626 protocol

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

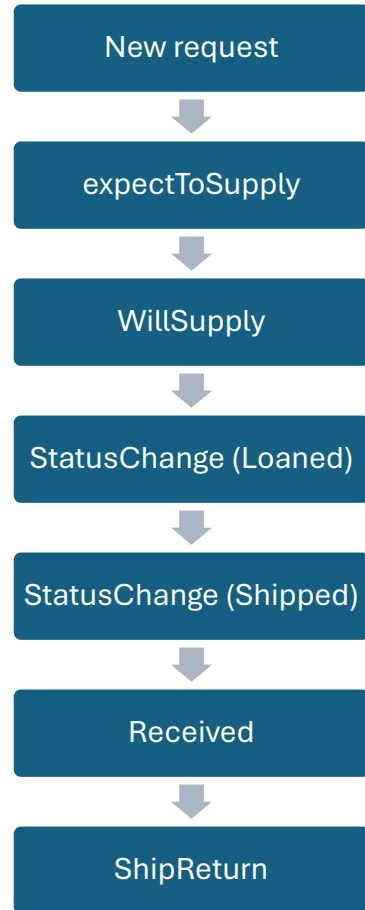
- Partners may build workflow profiles for interactions they wish to support
- ISO partners can be added from the community zone or manually entered as transactions occur or automatically
- Lending Profiles can also be defined per partner or network

## Edit Workflow Profile

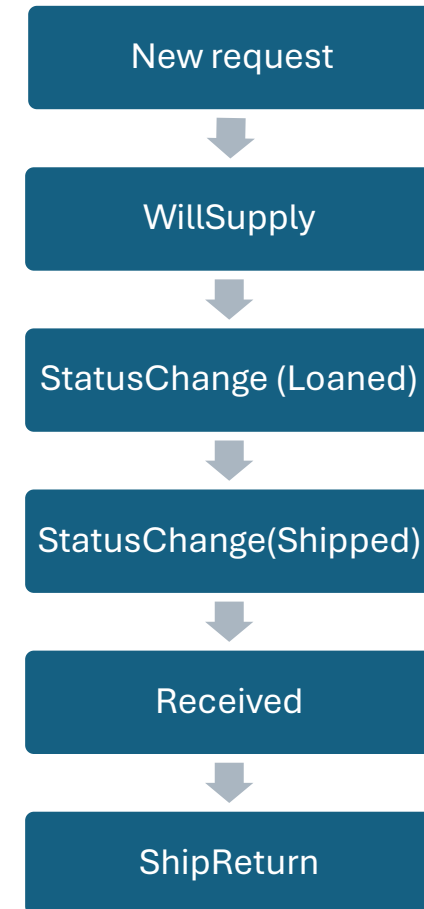
Workflow Profile *	Type	Borrowing
Steps *	<input checked="" type="checkbox"/> Automatic renew	<input checked="" type="checkbox"/> Automatic will supply
	<input checked="" type="checkbox"/> Cancelled by partner	<input checked="" type="checkbox"/> Cancelled By Patron
	<input checked="" type="checkbox"/> 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



ReShare



Alma

# 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>

 Libraries.io  
A SONAR PROJECT

Search Packages 

Login ▾

## github.com/indexdata/ crosslink/iso18626

Release v0.0.0-20250912134411-c745e8fea74c

Inter-Library Loan Platform

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

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**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 to test and modify the capabilities of existing systems with ILL standards.

### Stats

Dependencies	1
Dependent packages	0
Dependent repositories	0
Total releases	<a href="#">29</a>
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

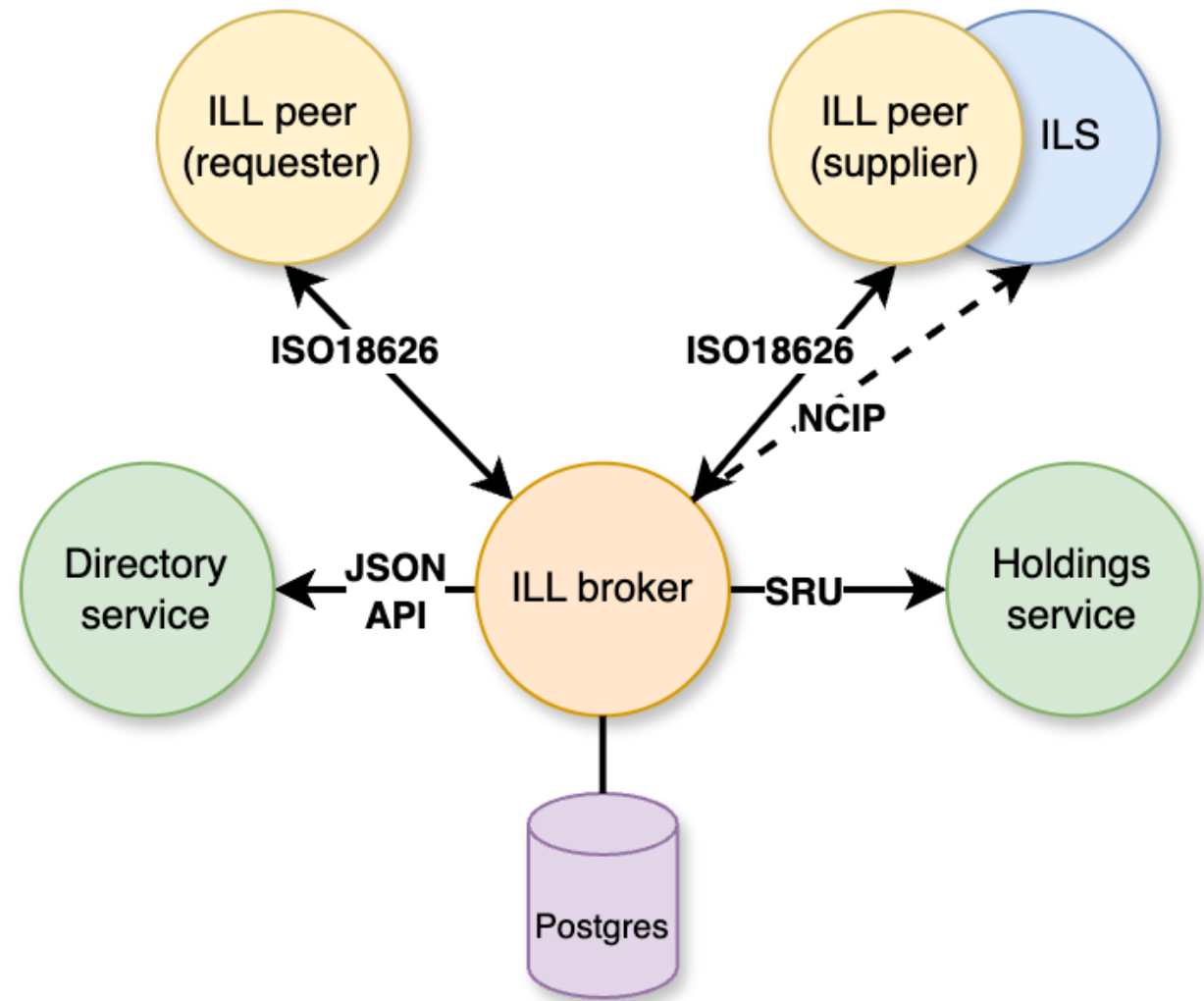
---

**Releases** 

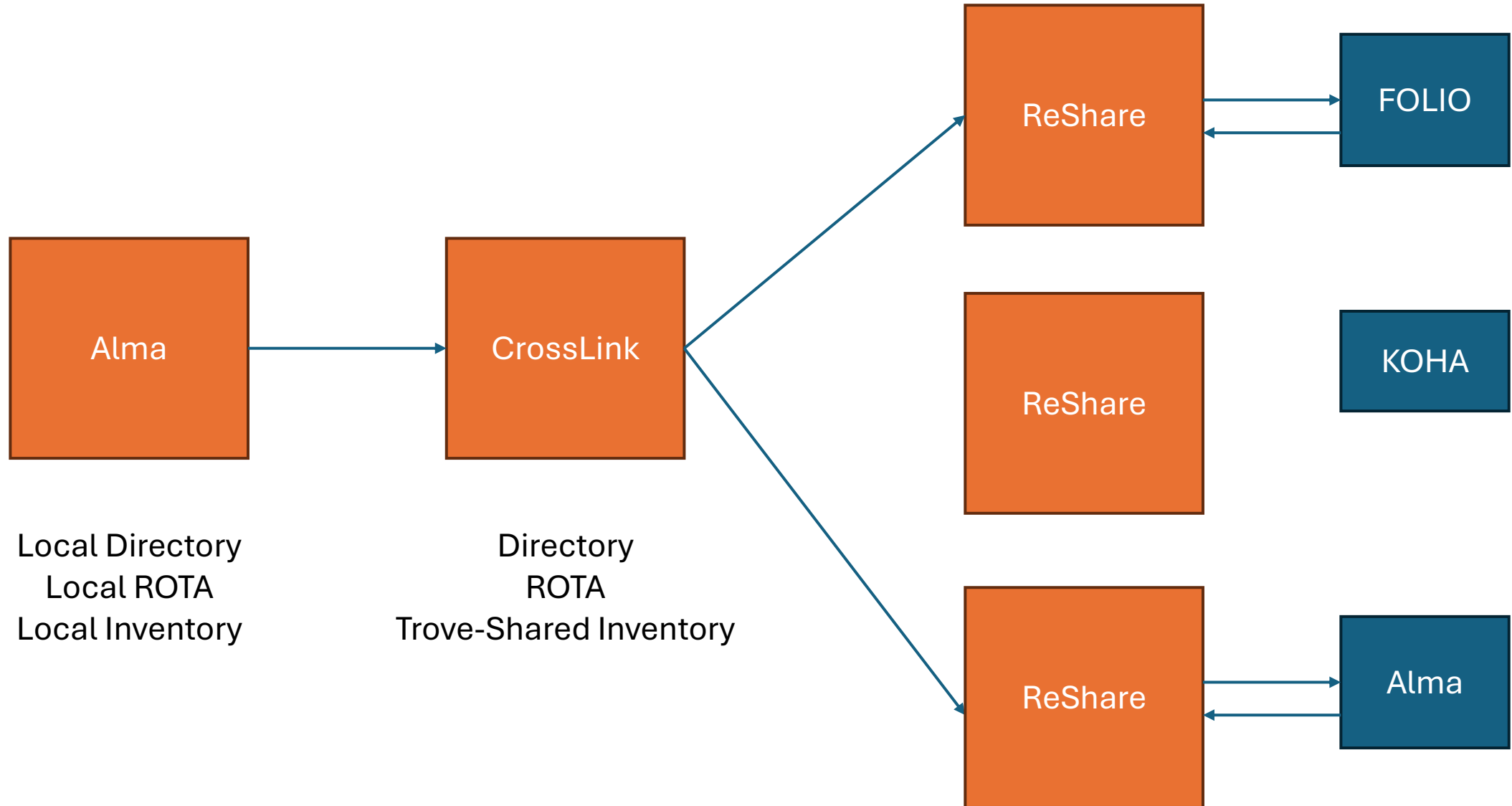
<a href="#">v0.0.0-20250912134411-c745e8fea74c</a>	Sep 12, 2025
<a href="#">v0.0.0-20250909123714-45c76f722077</a>	Sep 9, 2025
<a href="#">v0.0.0-20250908151302-</a>	Sep 8, 2025



# 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
15	06/05/2025 19:47:57 EDT	jonesa@newscho...	Note to Partner	[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#	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	Author initials	-
Edition	-	ISBN	97812345678
LCCN	-	System Control Number	-
Other standard ID	-	Barcode	-
Remote record ID	return-ISIL:AU-SYDNEY::98754541231		
Publication date	-	Publisher	-
Additional person name	-	Place of publication	-
Series title number	-	Source	-
Note	-	Call number	-
Part	-	Volume	-
Chapter author	-	Chapter number	-
Pages	50-75	Chapter title	-
End page	75	Start page	50
Composer	-	Editor	-
Song/movement	-	Opus	-
Permalink	-	Music part	-

### Request Attributes

Title	Vogon poetry	Internal Identifier	12723782630007875
Specific Edition Only	Yes		
Requester	Jones, Allen		
Labels	-		
Owner	Resource Sharing Library	Partner	TDIVE SANDROV

# 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?

CitationsCitation 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

< Resource Sharing Partner

CancelSave

General InformationContact InformationParametersNotesAttachments

Code \*TROVE\_SANDBOX

Name \*TROVE\_SANDBOX

Profile Type \*ISO 18626

StatusActive

System Type \*ReShare

Average Supply Time0

Delivery Delay (days)0

CurrencyAUD

Alternate SymbolBROKER\_DEV

Locate Profile

Borrowing WorkflowISO 18626 - Borrowing

Lending WorkflowISO 18626 - Lending

Supports Borrowing☒

Supports Lending☒

Automatically Generated☐

New Request Alert☒

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

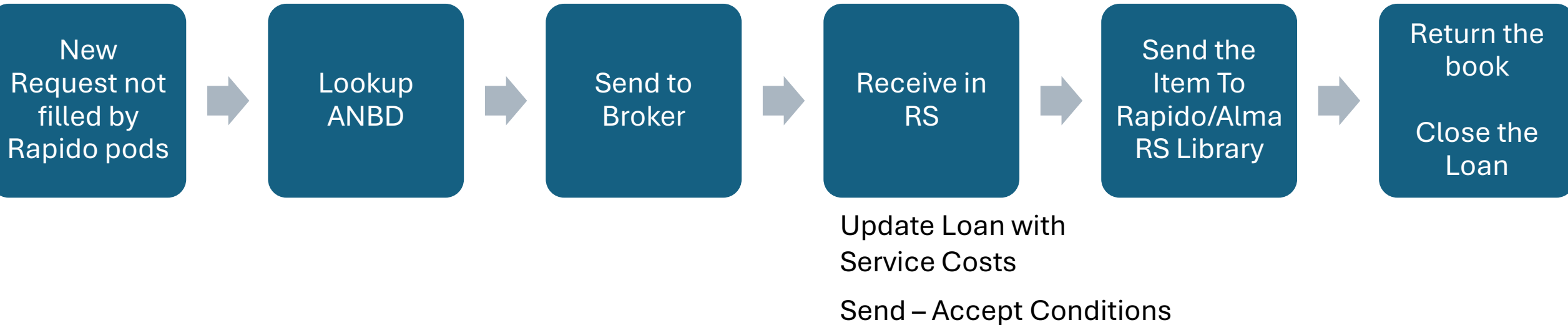
Profile Type  
-

System Type  
-

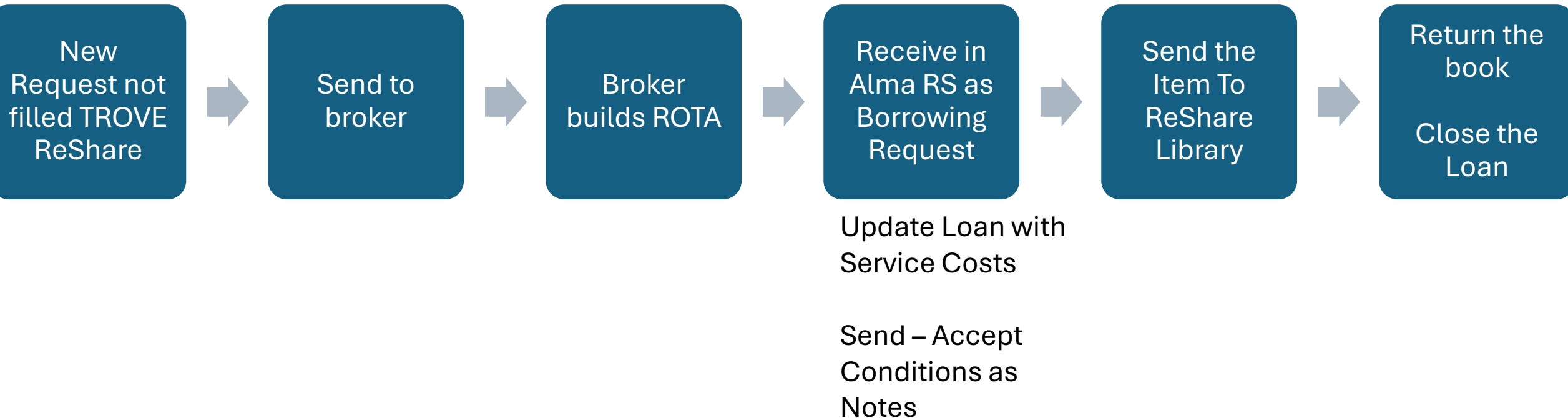
ExLibris  
© Ex Libris, Part of Clarivate 20



# 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 ✕

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)

☐ 8-20 days ago (1)

< Lending Requests (1 - 7 of 7)



External Identifier ▾

1 ☐ Reconsidering difference  
by Derida  
ReShare\_Broker-Dev  
Request Completed

2 ☐ Reconsidering difference  
by Nancy, Derrida, Levin  
ReShare\_Broker-Dev  
Request Completed

3 ☐ Amazing edamame recipe  
by Test  
TROVE\_SANDBOX  
Request Completed

4 ☐ Something smart goes wrong  
TROVE\_SANDBOX  
Request Completed

5 ☐ Some article iv / Test  
TROVE\_SANDBOX  
Request Completed

6 ☐ 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

The screenshot displays the ReShare web application interface. The main page shows details for 'Request MEL-422' with a status of 'test with conditions'. A modal window titled 'Respond "Conditional Supply"' is open, prompting the user: 'Are you sure you want to respond "Conditional Supply" to request MEL-422 for the item "test with conditions"?'.

The modal contains the following fields and options:

- Call number:** ABC123
- Location:** Main
- Shelving location:** Stacks
- Condition for item supply:** Radio buttons for 'Use in library only', 'No reproduction', 'Other', 'Signature required', 'Special collections supervision required', and 'Watch over use in library only'.
- Cost:** A text input field.
- Add note:** A text area.
- Would you like to pause processing while waiting for the requester to reply?:** A dropdown menu currently set to 'Yes'.

At the bottom of the modal, there are two buttons: 'Go back' and 'Respond "Conditional Supply"'. The background page shows request details including 'Request information', 'New' status, 'Updated: 04/08/2025', 'Requester: ISIL:AU-MELBOURNE', 'Due date', 'Tier: Premium Pay for Peer - Core L', and a list of actions under 'More options'.

# 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



General Information

History

General Messages

Notes

Items

Attachments

Communications

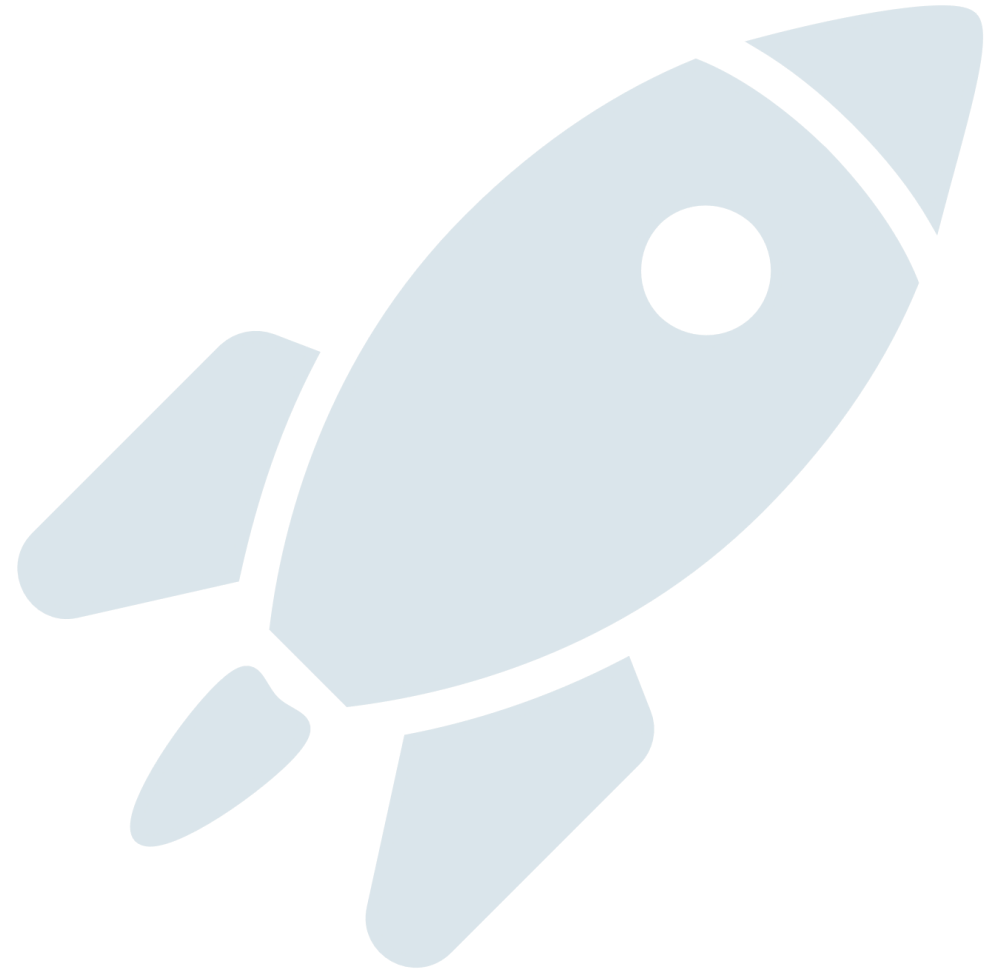


Created On		Type	Status	Message	
1	06/18/2... 18:36:08 EDT	Received	Active	still hereeeeeee	
2	06/18/2... 18:37:14 EDT	Received	Active		
3	06/18/2... 18:37:57 EDT	Received	Active		
4	06/18/2... 18:35:49	Sent	Active	are you there?	

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 Schechter, 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  
Questions?

