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### **Project ReShare**

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## **Project ReShare: An Open, Community-Owned, Resource Sharing Solution**

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## **Abstract**

*The ReShare Community is a group of libraries, information organizations, and developers, with both commercial and non-commercial interests, who came together in 2018 to create a new and open approach to library resource sharing systems. Libraries have long established protocols and agreements among local, regional, national, and international networks to provide discovery and access to print and digital resources, extending the use and value of each library's collection exponentially. However, current resource sharing solutions leave much to be desired. The marketplace has been characterized by stagnating technology, closed or siloed environments, and a consolidation of commercial options, leaving consortia to desire a fresh start; a re-imagined infrastructure that promotes an increased ability to innovate, experiment, and communicate across diverse library systems (ILS, discovery, resource sharing, etc.) and more sustainably pursue shared collection development and print retention initiatives. ReShare aims to inject new life into the space by developing a community-owned, modular resource sharing platform, enabling libraries and consortia to place library users at the center, from discovery to request management and fulfillment.*

*Project ReShare's key differentiator is its foundation as a wholly community-owned solution. This approach offers libraries and commercial partners a fundamentally new model for shaping collections and connecting people with what they need, by greatly deepening our ability to collaborate and develop systems responsive to the needs of libraries and their users. In this paper, members of the Project ReShare Steering Committee and Product Management Team explore the frustrations with the current resource sharing environment, share perspectives on the importance of community-owned, open source tools, and discuss the benefits of this type of collaboration for the library community at large. The paper tells the story of Project ReShare, including how it is being developed, how the community has grown, and the potential for this new resource sharing solution.*

**Keywords:** Project ReShare; Open Source; Community-owned; Resource Sharing; Interlibrary Loan

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### **Today's resource sharing environment**

The Resource Sharing field is collaborative, innovative, and creative. We provide core services to obtain requested material to complement local collections in the quickest, most user-centered, efficient way possible, and we do so through partnership with one another around the world. Products such as ILLiad, RapidILL, Relais D2D, and the IDS Project's Logic Rules allow libraries flexibility to customize systems to local workflows and to automate routine processing, and we can leverage and expand consortial partnerships to ensure timely fulfillment and user-friendly loan policies. However, the siloed nature of our underlying systems hampers our ability to improve user experience and provide efficient, sustainable services. Ideally, our discovery and fulfillment systems would interoperate to allow users a more informed request experience and libraries to capitalize on efficiencies that consider local, offsite, and electronic availability, real-time availability and loanability from our consortial partners, and geographic and shipping information, among other factors.

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This information exists to varying levels in our fulfillment systems, yet these systems were not consistently built to interoperate, which makes leveraging the data to improve the users' experience difficult and often impossible. Furthermore, while we've had success manipulating our current systems to automate workflows and better meet changing user expectations, especially through the work of the IDS Project in New York state, we're still limited by systems which reflect legacy practices. In recent years the resource sharing community has begun dialogue around these issues, exemplified in the Big 10 Academic Alliance's work envisioning the future of resource sharing, and their report, "A Vision for the Next Generation Resource Delivery"<sup>1</sup> where they, "envision a future state where system interoperability and communication replace today's silos." This is a founding principal of Project ReShare.<sup>2</sup>

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<sup>1</sup> Barton, Bruce, Melissa Eighmy Brown, Zoe Chao, Kurt Munson, and Ken Varnum. A Vision for Next Generation Resource Delivery: Report of the Big Ten Academic Alliance Discovery to Delivery Project Action Committee. [2019-07-29] 2016. Available at: <https://www.btaa.org/docs/default-source/library/d2dnov2016report.pdf?sfvrsn=4>.

<sup>2</sup> Project ReShare. [2019-07-29] Available at: <http://projectreshare.org/>.

## Challenges

Libraries have long established protocols and agreements among local, regional, national, and international networks to provide discovery and access to print and digital resources, extending the use and value of each library's collection exponentially. However, current resource sharing solutions leave much to be desired. The technology marketplace has been characterized by stagnating technology, closed or siloed environments, and a consolidation of commercial options, leaving us to desire a fresh start. Some specific challenges include the user experience throughout the request process, our inability to share across consortia with the same efficiencies available when borrowing within a single consortium, and decreasing agency for libraries to affect functionality enhancements.

## Opportunities

In 2018 a group of consortial leaders and resource sharing experts coalesced to form Project ReShare and act on these strategic concerns, bolster libraries' agency in the provision of resource sharing services, and advocate for user needs. ReShare aims to inject new life into the space by developing an open source, community-owned, modular resource sharing platform, enabling libraries to use modern approaches that place library users at the center, with accompanying interoperable software applications for the discovery, management, and fulfillment of unmediated interlibrary loan requests, supporting consortial and inter-consortial library borrowing networks.

Ultimately ReShare will provide a platform that any library or consortium may use to expand sharing within and between networks, regardless of choice of integrated library or discovery system. ReShare will help libraries support teaching, learning, and research activities by building their capacity to provide rich collections to users in the most timely and efficient manner. We envision a re-imagined infrastructure which puts the user first and promotes an increased ability to innovate, experiment, and communicate across systems for resource sharing and other strategic library functions such as shared collection development and print retention initiatives.

## A community-owned & open governance structure

Project ReShare's key differentiator is our foundation as a wholly community-owned solution. This approach offers libraries and commercial partners alike agency, and a fundamentally new approach to the pursuit of technology solutions and new models for shaping collections and connecting people with what they need, by greatly deepening our ability to collaborate and develop systems responsive to the needs of libraries and their users.

Project ReShare established its governance model in August 2018, and has since gained membership in the Open Library Foundation<sup>3</sup> for key infrastructure needs and ownership of intellectual property. Project ReShare is organized around a Steering Committee, Product

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<sup>3</sup> Open Library Foundation. [2019-07-29] Available at: <http://www.openlibraryfoundation.org/>.

Management Team, and Subject Matter Experts (SMEs). The project is developed by Index Data<sup>4</sup> and Knowledge Integration<sup>5</sup> with UX by Samhæng.<sup>6</sup>

The Steering Committee is a collaboration of libraries, software developers, related organizations, and consortia, specifically the Big Ten Academic Alliance, the Greater Western Library Alliance, the Midwest Collaborative for Library Services, the Pennsylvania Academic Library Consortium, The Alberta Library, and the Triangle Research Libraries Network. The Steering Committee is responsible for the vision, resourcing, and outreach.

The Product Management Team takes primary responsibility for the internal activities of ReShare development. The team manages the scope of the ReShare project, agrees upon development priorities at the feature level, sets the final content of each release, and strives to create a cohesive and transparent working environment for project participants.

Subject Matter Experts possess expertise and experience in day-to-day resource sharing workflows. They describe existing and desired workflows, share documentation, and provide use cases. SMEs review UX sketches and prototypes to ensure they meet usability and functionality requirements, and provide feedback to the UX designer. They will also perform user acceptance testing on ReShare software and provide feedback to the product owner and developers.

### **User first development process**

The ReShare development process is founded upon an open, community-owned, and iterative model which begins with an extensive process to gather and refine specifications and test prototypes before commencing development. Similar to the FOLIO (open source library services platform) project,<sup>7</sup> ReShare is organized in modular applications (apps) based upon resource sharing activities such as Supply, Request, Shipments, Box, Unbox, Send, Receive, Shared Index, Directory, and Consortia. Starting in January 2019, SMEs, working alongside UX designers, created and refined requirements and priorities for each app based upon current practices and future needs. Based on SMEs' input, UX designers provided sketches for both "happy paths," requests with no errors or special exceptions, and "unhappy paths," requests with errors or special handling. After the SMEs and Project Management Team reviewed and edited the sketches, UX and UI designers created prototypes which were field-tested by resource sharing staff at two libraries in New York City. This process was repeated until the community agreed the prototype was ready for development. Figure 1 illustrates the iterative nature of this development process.

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<sup>4</sup> Index Data. [2019-07-29] Available at: <https://www.indexdata.com/>.

<sup>5</sup> Knowledge Integration. [2019-07-29] Available at: <https://www.k-int.com/>.

<sup>6</sup> Samhæng. [2019-07-29] Available at: <https://samhaeng.com/>.

<sup>7</sup> FOLIO. [2019-07-29] Available at <https://www.folio.org/>.

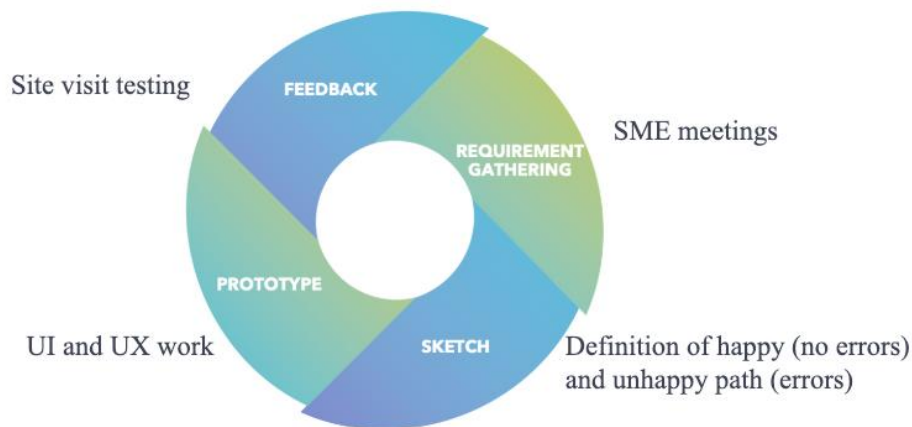


Figure 1: ReShare Iterative Development Process

The test-release of the ReShare Minimum Viable Product (MVP), codenamed Inevitable Narwhal (IN), is planned for fall 2019. The MVP focuses on physical material fulfillment within the consortial environment, and is planned to include the library directory; shared index; support for discovery, including real-time availability status; and fulfilment, including requesting, supplying, shipping, and reporting. While we’re starting with a focus on returnable items, there’s a strong desire to quickly move into the development of tools for electronic content delivery and to make this platform work well with others outside of the ReShare community, allowing libraries and consortia to integrate this tool (or not) as it makes sense for local needs.

The strong foundation and shared index will allow for future development to support key priorities such as shared print initiatives and consortial / local collection analysis to inform print retention.

### Resource sharing technical history

The ISO10161 protocol specification, and its sister service definition, ISO10160 were first published in 1993. Their direct descendent, ISO18626 followed in 2014. The aim of the standards body through these specifications was to formalize the conversation that can take place between an institution looking to acquire a copy or loan of a resource and any one of the multiple institutions able to supply that copy or loan. The vision assumed that by defining the conversation between these parties, a community of practice would emerge free to innovate independently in each setting - with institutions able to develop or buy into the solution that best fit their own procedures. All parties would work collectively to maintain and refine the standards, and those standards would ensure that widely variant visions of the interlending application (profiles) could still exchange a fundamental set of messages and interoperate with each other. A healthy market of solutions that offered “the right tool for the job” would emerge.

This approach to loose-coupling the activity of legally distinct institutions, bound by a common purpose of knowledge sharing did indeed yield results. Often consortia would lead the charge in setting up viable interlending networks built upon easily replaceable, substitutable or upgradeable components. Results are documented in the publications of

projects such as LIDDAS.<sup>8</sup> These projects are characterized by the leading role of standards and standards bodies, collaboration between vendors, institutions, staff, and users and interoperability by consensus rather than consolidation.

Key components in these loosely coupled systems included the UI, the service directory, and the protocol messaging adapters.

Around 2003/4 a new model of service delivery started to emerge, spurred by the rise of HTTP/HTML as a ubiquitous “Zero Install” platform. The “Application Platform” became the default sharing mechanism for everything from photos to music, files and social networks. These platforms ensure interoperability not by having vendors agree to abide by a common standard, and then allowing institutions a free choice in how they adhere to that standard, but by encouraging all participants to adopt a single ubiquitous application. This approach has substantial benefits in the way it reduces the complexity of systems. The need for a shared service directory falls away (replaced by a proprietary internal database) as does the need for complex protocol implementations. The approach increases ease-of-use for end users, who no longer need to worry about these details. Some of these benefits come to the institutions; many, however, come to the provider of the platform.

The strongly engineered international standards started to be set aside in favor of proprietary APIs. Because the web could be accessed from anywhere, the need for interoperability standards was reduced. Anyone could participate provided they had a browser. Any institution could use the internet to access the application platform of any other, so interoperability changed from a technical on-the-wire problem, to one of humans having to access several different applications in different contexts.

It is not uncommon for providers of these platforms to provide legacy hooks for the older protocols – although this seems to be a dying practice, and where the practice remains it appears to be a more fundamental, if hidden, part of what the platform does behind the scenes. Interoperability testing with these systems is harder today than it was in the prime of the distributed systems movement.

The downside of the “application platform” approach comes primarily in the reduced influence that an institution can exert on the development and direction of that platform. As a platform grows in popularity, and choice reduces in the marketplace, this power is effectively reduced to zero, and there is only one game in town.

The architecture behind ReShare seeks to meet the sometimes conflicting needs of high-end integrated and interactive user experience with loose coupling, “Design for unforeseen use” and “Design for replacement.”

### **ReShare architecture and aims**

ReShare has drawn on resources and models made available by the FOLIO project, although the two are separate projects with discrete funding and personnel. Specifically, ReShare has

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<sup>8</sup> Roxanne Missingham (2006) LIDDAS Goes Live: How Close is Australia to Interlending in One Easy Step?, *Australian Academic & Research Libraries*, 37:1, 38-54, DOI: [10.1080/00048623.2006.10755321](https://doi.org/10.1080/00048623.2006.10755321)

been able to reuse the FOLIO platform architecture, which again, supports the building of modular applications that sit atop a system layer and API gateway and their Stripes UI toolkit, which helps create a consistent look and feel between applications. By reusing these FOLIO components, ReShare developers have not only saved the time needed to develop these components on their own, but also have begun to test the true potential of community ownership of software.

FOLIO takes a microservices approach to systems infrastructure. The ReShare MVP is drawing primarily on the existing FOLIO users and inventory service components and adding to that a directory services module and a resource sharing service (along with a number of plugin modules that communicate over a message bus which provides guaranteed delivery and message non-repudiation). At the front end, our user facing apps are more granular and are modelled more closely with the various functional tasks commonly undertaken in resource sharing departments. Currently these are: Supply, Request, Shipments, Box, Unbox, Send, Receive, Shared Index, Directory, and Consortia. This split reflects the different needs of the system's internal interfaces and modules, and the UX led process – with the user experience split much more finely over the different roles that can be taken, and with the core software “domain model” being a more stable and static arrangement. Our aim is to provide an “app” which supports each specific activity taking place in the department.

The current arrangement of apps provided at the front end may change as the project learns from its experiences in running the MVP service. One of our great strengths is in adaptability and our ability to learn and apply user input as we move forward.

### **Service Provider model**

To support the effort to create a sustainable, open source, user-centered resource sharing platform for libraries, Project ReShare created the Certified Service Providers (CSPs) program.<sup>9</sup> CSPs are partners approved by the ReShare Steering Committee as trusted providers and community contributors. These organizations have demonstrated expertise and a significant community effort to support ReShare's open technologies through community leadership, a minimum number of hours of in-kind community contributions annually, and a flat annual fee toward support of community infrastructure.

The CSP program is aimed at supporting and elevating those service providers who offer ReShare services while adhering to community standards and giving back to the Community. ReShare takes a radically open and transparent approach to collaboration between nonprofit and commercial interests. With that approach in mind, CSPs commit to open and transparent pricing, caps on annual increases, use of open standards and protocols, participation in leadership roles, contributions of ReShare code, and excellent service to ReShare customers.

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<sup>9</sup> Project ReShare Service Provider Model. [2019-07-29] Available at: <https://projectreshare.org/get-involved/commercial-service/>.



## Get involved

The ReShare Founding Members Program<sup>10</sup> provides a direct path to project participation, offering a variety of benefits to individual libraries and consortia interested in advancing our goal for the development of an open, community-owned resource sharing infrastructure. ReShare Membership includes a voice in project governance, recognition on the ReShare website, and discounts with ReShare service providers. Founding Members play a critical role in bringing this open source software to market and shaping the Community's trajectory as a disruptive and innovative force for open, standards-based, user-centered resource sharing services in libraries.

With the support and collaboration of ReShare Founding Members, we believe we can transform resource sharing, focus on our collective user needs, and build innovative tools and business models that work for libraries and consortia. Membership allows libraries and consortia to become a partner in project governance with a voice in ensuring that ReShare meets the needs of this community. Membership dollars will be used to establish ReShare as a resource sharing service option for libraries and consortia and ensure the long-term sustainability of this project.

## Acknowledgments

The authors would like to acknowledge that this article reflects the work of the entire Project ReShare Community (<https://projectreshare.org/about/>).

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<sup>10</sup> Project ReShare Founding Member Model. [2019.07-29] Available at: <https://projectreshare.org/get-involved/libraries-consortia/>.

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