



# A Vision for Next Generation Resource Delivery

Report of the Big Ten Academic Alliance Discovery to Delivery  
Project Action Committee

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# Executive Summary

The Big Ten Academic Alliance Discovery to Delivery Project Action Committee (D2D Action) was charged with developing a plan for collective action. This plan has added urgency given OCLC's March 2016 announcement that ILLiad will be moved to a cloud-based platform. The foundational software platform for interlibrary loan processing is being fundamentally altered. Thus the BTAA has a unique opportunity to influence a new product's architecture and functionality to ensure that our needs are met. To this end, rather than stating resource requirements, implementation priorities, and timetables, this report outlines expectations for a next generation ILL management system's functionality. The situation is too fluid to state priorities though we should anticipate implementation in three years. In many ways, this should be viewed as a system migration rather than a series of incremental changes.

This report covers four broad topics. Specifically, it:

- Identifies issues with the discovery to delivery process as it exists now,
- Defines a desired patron-centric state for discovery to delivery while noting additional emerging trends and unaddressed needs,
- Describes the underlying architecture that the desired patron-centric state requires, and
- Defines the investments and resource requirements needed to implement the desired state.

As addressed in both the [2013 Framework for Discovery to Fulfillment Systems](#) and the [2015 D2D Phase II final report](#), the discovery to delivery process is fragmented with too many services and options presented to patrons. Moreover, the variety of discovery tools employed across the BTAA's libraries limits the degree of standardization possible. As a result, the D2D Project Action Committee recommends the development of a platform neutral "get it" functionality that can be added to any of the BTAA discovery interfaces as the way for a patron to initiate the delivery process.

Discovery and delivery are in response to patrons' information needs. While discovery can and does happen anywhere, requests for delivery of locally available, remotely available, or any other resource should be processed in one place, whether or not the library owns or licenses the resource. Access and delivery options should be communicated in terms that matter to the patron: When can I expect to receive the item? How will it be delivered? Is there a fee for this service? Similarly, our patrons should be able to go to one place to track and manage their requests, loans, and fees, however these are managed through backend systems. And, although it is a small detail, patrons should be able to choose how and when they hear from us.

In contemporary library systems architecture, discovery and delivery are managed by different systems. Commercial web scale discovery platforms (e.g., Primo, Summon, and WorldCat discovery services) and open source discovery layers (e.g., Blacklight and VuFind) provide the discovery interface to our patrons, but call out to backend systems (Alma, WorldShare, Voyager, Aleph, Summon, 360 Link, SFX, and so on) to determine access and delivery options. These options are then presented to

patrons, sometimes within the discovery interface, and sometimes on intermediate pages, as lists of possible options.

Interlibrary loan systems, e.g. ILLiad and UBBorrow (Relais), run independently of the library's library service platform (LSP) or earlier generation integrated library system. And the patron's experience of these delivery services occurs outside of the library's principal discovery platform, often jarringly so and after the patron follows a not so obvious route to get there.

Our core recommendations are:

1. Do for ILL and document delivery what is already done for local physical resources and eresources: bring these delivery options into the discovery platform.
2. Extend the discovery platform to accept OpenURLs and other citation-like input in addition to patron input at a search prompt. When the library owns or licenses the cited resource, the discovery platform presents access and delivery options per the library's policies. When it does not, the platform presents request options, again per the library's policies.
3. Whatever backend systems manage patron transactions, present all loans, requests, fees, and associated actions in a single library account interface.

Accomplishing these long-term goals will require investments in system integration by libraries through active participation in product feature design, selection, and early adoption, and by vendors independently through product development and collaboratively through the development of interoperability standards. OCLC's development of a new cloud-based ILL product and the ongoing evolution of cloud-based discovery and LSP platforms as well as shifts in product/vendor alignment provide the opportunity to exert this kind of influence through active participation.

We recommend three areas for action, in the near-term, in order to move us toward the long-term goals:

1. Exert influence on future product development. While we are limited in our ability to implement the desired state today, we are in a position to influence the direction future development of these systems takes. Promoting this vision to other consortia and large research libraries would broaden this influence.
2. Make full use of the currently available technologies and best practices.
3. Experiment with user experience design and behaviors, and share usability findings.

In the short term, BTAA libraries are investing in API-level system integrations using UBBorrow web services, ILLiad Addons, and NCIP ( NISO Circulation Interchange Protocol) integration for circulation management. Further integrations with shipping services and with document suppliers, and full NCIP integration are possible; we anticipate seeing experiments and investments by BTAA libraries at this level as well. BTAA libraries should encourage vendors to make incremental improvements to their support for these integrations. Advances at this level will improve the patron's discovery to delivery process experience through automation and simplification. Moreover, these advances will also reduce the level of (often manual) staff effort needed to process and manage requests.

Finally, we recognize the need for and encourage experiments in developing the fuller, more integrated patron discovery-to-delivery experience we envision. We look to BTAA members who have developed their own discovery platforms or use open source discovery tools to prototype and test integrations when backend systems support them.

# BTAA Discovery to Delivery Project Action Committee Report

## Purpose and Charge

The BTAA Discovery to Delivery Project Action Committee will build on the assessment work of the D2D Task Force by addressing the recommendations and developing a plan of collective action for the Big Ten Academic Alliance. Drawing on the agreed upon principles, the BTAA D2D Action Committee will:

1. Prioritize and identify near-term investments in process improvement identified in the D2D 2015 report. Areas for review and recommendation for action include:
  - a. Unified user interface to create a seamless experience for the user and smart fulfillment.
  - b. Unified user account capacity for all interlibrary loan activity, utilizing web services functionality.
  - c. Improved user notification capabilities to ensure timely information on status and delivery.
  - d. Options to increase visibility of fulfillment services across web-accessible library resources and services.
2. Review and test technology and service changes that impact the discovery-to-delivery workflow.
3. Document resource requirements and implementation priorities and timetables for BTAA member institutions.
4. Oversee and coordinate implementation of recommended actions.

This report will outline both the visionary state we would like to see implemented across the BTAA libraries and a plan of action for near-term investments in process improvements.

## Introduction

In March of 2016, OCLC announced that the ILLiad community will be moved to a cloud-based platform. While the system is under development and will not support large academic research libraries until at least 2018, the eventual move has provided context for this report. In order for the BTAA to move forward with the recommendations set forth by the Discovery to Delivery committee, we see OCLC's development of the new platform as an ideal opportunity to create a new and improved architecture of Interlibrary Loan. The BTAA libraries would like to work with

OCLC towards an ideal future-state of discovery to delivery. Similarly, consideration of an alternative ILL vendor platform would take this vision into account. At the same time, web scale discovery platforms and open source discovery tools such as Blacklight and VuFind continue to evolve. The BTAA libraries who use these platforms are often in a position to influence the future trajectory of these platforms through active participation in product feature definition and selection. Open, API-based systems that readily support interoperability on the level of fulfillment options and user transactions management will be key components supporting a unified user interface for smart fulfillment and a unified user account for all circulation and delivery activities.

We also need systems that are flexible and customizable to address each library's needs. While there is broad agreement across the BTAA in terms of creating the best possible experience for our users, the discovery-to-delivery process is not a "one size fits all" monolithic environment. We support a wide range of search experiences -- from undergraduates to medical residents to researchers and faculty -- and differences in policies, priorities, and service levels reflect the local needs of our communities and our budgetary realities. Still, there are common threads in the problems our patrons face. With consideration of each institution's unique systems and workflows, we plan to prioritize and identify investments in technology that support our collective need for an improved discovery to delivery experience for our users.

## Current and Desired State of Discovery to Delivery

The patron wants materials, books, articles, dissertations, DVDs, newspapers and such to fill an information need. Where those materials are located or from which library they come is largely irrelevant to the patron's desire to get the resources.

The previous BTAA D2D Task Force examined the current state in both 2013 and 2015. The Task Force identified ARL ILL Borrowing trends across the BTAA from 2009-2013, evaluated use cases across institutions, and tested discovery via OpenURL at three institutions. The current state in this report is focusing on the fulfillment of the users' request and where there is room for improvement.

The current discovery to delivery process is incoherent, particularly to patrons, with individual products each handling one piece of the process. The flow of information between them is disjointed. Patrons must submit requests item by item, rather than as a group, set of results selected from a completed search, or from a bibliography. Staff processing of requests remains labor intensive as each request is processed individually using several discovery layers or tools exposed within the ILL management system. The ability to automatically route requests, for which no staff review is required, remains underdeveloped and stunted. DOCLINE provides the best example of this archaic approach. Even though the vast majority of articles requested via DOCLINE are discovered via PubMed and therefore include the PMID, DOCLINE processing requires each citation be verified against PubMed again before it can be submitted by staff. Some vendors of ILL systems have been in stasis for years, while others have developed automations and technical innovations that have revolutionized how ILL processes requests. Unfortunately, these innovations are too often insular.

They are created without thought to how they can work across systems and across institutions. Furthermore, it is often difficult for services to change current workflows or figure out how to incorporate new functionality. Vendor support and local technical support are paramount if we want to progress to the desired state.

## The Current State

### Discovery

One of the most non-user friendly pieces of the discovery to delivery process begins at the point at which an item has been discovered.. The challenge each library faces is in how to present a request option without overwhelming the user with multiple possibilities. Unless these choices are enhanced with explanatory text, it is likely a patron will not understand the library service terms, such as Interlibrary Loan, and what each one is actually going to do for them. The BTAA Libraries currently use eight different main discovery platforms: 5 libraries use Primo, 3 use EBSCO, 3 use Proquest, 2 use WorldCat Local/Discovery, and Innovative Encore, VuFind and two different homegrown systems are each used at one library. In addition, requests may be submitted through WorldCat Local/Discovery, via article databases and various consortial catalogs. Due to the array of different platforms and terminology used by each library, the simplification of discovery should be an ongoing endeavor and the sharing of usability testing across institutions may be the best way to find a collective solution.

### Fulfillment for Loans

**Local Availability:** The first level of fulfillment is the locally available and circulating item. Due to the array of starting points for searching of resources, the duplication of bib records for items and the generally complex ecosystem of discovery, users will often request material that is held locally through Interlibrary Loan. Regardless of the delivery mechanism used, locally or via a resource sharing system, the process should be seamless for the patron. However in the current environment, the patron is often faced with too many options for requesting an item, with too little context for understanding the differences among the choices. There should be no expectation that users know the difference between ILL, “Get It”, and/or UBorrow.

**Consortial Leverage and OCLC Direct Request:** When items are not available locally, consortial availability is leveraged via UBorrow or another consortial system because those systems contain the critical shelf availability information. For the three libraries that do not use UBorrow, other consortial systems are used to fulfill requests in the most timely manner and at the lowest cost.

**Patron-Driven Acquisition/ILL Purchasing:** Usually selections or routing of requests to Acquisitions takes place during mediation of requests that were not filled through unmediated requesting mechanisms.

**OCLC Manual:** Finally, general availability/ownership, but not shelf availability, is determined via OCLC. In many ways, requesting via OCLC is blindly sending off a request. Although the majority of

requests are filled by the first lender asked, very long lending strings can be built which may take weeks before the request is ultimately filled or left unfilled.

**Circulation:** Usually ILLiad Web Circulation - separate from a user's main library account. At some institutions, library staff will manually create brief records to circulate materials in the LSP.

### **UBorrow Availability Web Service and NCIP Automation**

There are current technologies available that enable cross-system communication and integration, however it can be difficult to implement these automations into daily workflows. Libraries question whether it is worth the time and money to implement technologies such as NCIP now when we will be moving our ILL and Document Delivery operations to a cloud-based platform within the next few years. Currently, only Northwestern and the University of Chicago use both the Relais availability web service and NCIP.

The UBorrow Availability Web Service will take any request for an item that contains an ISBN, search the UBorrow catalog and submit the request to available locations via OCLC. If the request cannot be filled via UBorrow, it is automatically sent via OCLC to libraries selected via custom holdings. This is completely automated, and the patron doesn't need to do the searching in UBorrow - it is done for them. When the item arrives, it can be processed with an ILLiad NCIP add-on and then circulates via the local LSP. On the lender side, NCIP enables staff to update items to shipped and returned in ILLiad which send messages to the local LSP for checkout and return, eliminating the duplication of tasks.

We encourage libraries to use these available technologies now, in an effort to move towards a unified user account and smart fulfillment, as this is ultimately what is achieved.

### **Fulfillment for Articles**

The discovery process for journal literature is complex not just because of the variety of ways in which these types of publication are created and distributed, but also because of the distributed nature of the discovery tools involved in the process. A library's holdings can be determined by use of a single catalog while journal article discovery is by discipline specific databases. Moreover the process of journal article discovery is further fractured by both disciplinary and discovery-platform user interface idiosyncrasies.

Even when a patron has been able to successfully identify a citation, link resolvers often do not provide a direct path to the wanted article. Rather, they often present multiple options for access or require a patron to manually choose the one provider where that year or issue are available. Next a patron is presented with yet another layer where they must navigate the content provider's site to reach the desired article. Alternately, owned content may simply not display because the content provider does not allow for its material to display via link resolvers or does not permit the company that makes the specific link resolver used locally to display their content. Print holdings are discovered via turning the patron to the local discovery layer, introducing yet an additional discovery tool that the patron must navigate, simply to determine if the library owns the volume containing that

article. The delivery process is at best imperfect due to incomplete holdings information both false positives and false negatives. Given the above, it should come as no surprise patrons opt for the ILL link even when content is available instantly from locally-accessible content.

**Local Availability:** Electronic and print availability within each institution relies on a combination of the local discovery interface and link resolvers. Whether a patron is physically located on campus, has a campus IP address through a proxy server or VPN, or is currently signed in to a library's website severely determines both the patron's access to electronic resources and their request options. Patrons will often begin their research in a general search engine and come to publisher paywall dead ends. Ideally, patrons choose the ILL/Document Delivery option only after they have found that the electronic copy is not available through a library's subscription. Unfortunately, this is another discovery ecosystem that is unclear to patrons and complex to navigate.

**Copyright Clearance:** The copyright clearance process slows the fulfillment process for articles published in the last five years. Within ILLiad, automations are in place to bypass copyright clearance and send unmediated requests to lenders when the publication date is older than the last five years and the request contains an ISSN.

**On-Demand Purchasing:** When ILL results in copyright royalty fees, it is common practice to seek out the lowest cost option between document suppliers, publishers, and the Copyright Clearance Center.

**Full-Text and Open Access:** Identifying a full text and/or open access version of an item is almost always a manual process involving staff time to search various databases and websites.

**Rapid:** Libraries who use Rapid take advantage of an unmediated, very quick fulfillment of requests or the return of local location and call number which can be used to facilitate document delivery.

**OCLC:** While the OCLC Direct Request feature is also unmediated, it does not come back with a library's location and call number when material is available locally in print. It will, however, come back with a link indicating potential online access if a library has loaded their holding in the OCLC Knowledge Base. Again, OCLC requests may then be submitted to other libraries without knowing another library's actual holdings or licensing agreements. The OCLC KB is not used by all libraries and has not created the efficiencies expected, for many libraries, as intended when it was first released.

## In Short

Patrons' experience under the current state reflects the organization of where and how information about resources is held and the many different systems, resource states, and workflows used to obtain access to or to deliver resources to patrons. The experience has a library-centric feel; the patron workflows and language used in the interfaces reflect library needs and practices, not those of the patron. And while it has had this orientation ever since libraries grew large enough to require lists of resources and guides to where they are shelved, the experience today has become complex.

Successful navigation of this thicket requires patrons to have some insight into how libraries are organized in themselves and in their consortiums and to some extent how they function within the larger ecosystem of scholarly communication and publishing.

## The Desired State

We aim to reduce the complexity of this experience by enhancing our discovery platforms to answer more directly the patron's question "Can you get this book or article for me?" We aim to shield the patron from the details of delivery. If the patron cannot walk up to the shelf and find the book, it does not matter whether the library obtains the book from another library on campus or from remote storage, from a library in one of its consortiums or elsewhere, or through a purchase. All that matters is format, time to delivery, loan period, and costs to the patron, if any. In the desired state, asking for this book or article should not require different steps routed through different systems, each with its own quirks of organization and behavior, depending on whether the library owns or has licensed the resource or not. The discovery platform should be able to declare for a requested resource, "it is available immediately here," "we can have it delivered to your pickup location or email address in two days," "we can scan and send you a copy of a short section of the book for a \$2.00 fee," or "we don't know at this point whether we can get this item for you, but we will investigate and have an answer for you by Tuesday."

In the desired state, a researcher who uses a citation manager should be able to submit a citation to the discovery platform or enter one directly, and if the citation is full enough to resolve to a manifestation of the work, the platform together with backend fulfillment systems, should be able to arrive at one or more of these answers to present to the patron as options. And the options should be informed by what terms of use and fee structures apply to that particular patron; only options applicable to the patron are presented. The answers may be ordered by library fulfillment policies and preferences given the realities of where in fact the resource is available, but options are expressed entirely in terms of factors that matter to the patron. Roughly equivalent options in these terms are collapsed and presented as one.

In the desired state, backend systems know who the patron is because he authenticated to the discovery platform and these systems talk and share information as one might reasonably expect.

In the desired state, a patron sees her loans, requests, and fees gathered together into a single interface for her library account. While these may be managed by several backend systems, the patron does not need to know or care about that. She only wants to know what is due when, can she renew it, when is the item requested going to show up, and so on.

And finally, in the desired state, libraries, through their systems, keep patrons informed through channels of the patrons' choosing.

From the librarian's perspective, in the desired state, most of the decision making about what delivery options to present is automated in accordance with library fulfillment policies and preferences. Most

patron actions in exercising an option do not require mediation for the request to be routed. The same consolidated account views for patrons are available to library staff. Library systems support the notion of a delegate who acts on behalf of the patron to select and initiate a delivery option. And library systems give librarians a view into processing details and states that have been hidden from the patrons but are essential to investigating the status of a patron's request for service when things get stuck.

## Architectural Implications

In the guiding vision for this report, our patrons can easily and quickly find an answer to the question "Can I access this resource--book, journal, article, digital object--through my library?" The answer, if yes, will clearly lay out what to do to access the resource, indicate format choices and likely delivery times and loan periods, and declare any costs. Depending on their library's service offerings, there may be several options for patrons to select among, and the answer will describe in terms relevant to patrons the advantages of one option over another. This vision does not imply that there is a single interface for asking this question, but it does imply that the next steps towards finding the answer are clearly marked and that the number of steps is few.

Libraries and library vendors have adopted a web scale discovery strategy in recent years that goes some ways towards an easy and quick answer to this central question. If patrons can find an item through the single search box, then the library can provide access to it (subject to terms-of-use). However, we know that much of our patrons' discovery begins someplace other than in our primary discovery platforms. And, of course, we provide access to many resources we do not own or have licensed. Finally, the imbalance in collections budgets compared to faster-than-budget increases in publications costs has driven us to shift from a just-in-case acquisitions strategy to a more use-based borrowing approach. We see this reflected in emerging cooperative collections development strategies and the implied ILL activities that will power them. The upshot is that many of the items our patrons need, and that we can deliver to them, cannot be discovered in our discovery platforms. It's also worth noting that some of the time a patron will not find an item through our discovery platform when we in fact own or license it.

These facts and trends imply that simply consulting our discovery platforms will not always answer our patron's question. What might we do to improve that? And what does this imply from a system architecture point of view?

## Citation Handling

Let's begin with an assumption: Wherever discovery occurs, a patron can create or capture a citation to the resource she needs. How full the citation needs to be to resolve reliably to an item that meets her needs depends on the number of manifestations a cited work has. But, let's assume that the patron has formed a full enough citation that often an algorithm can successfully resolve to a satisfactory item and that in any case a librarian can use the citation to select and deliver an item that satisfies the patron's needs.

Let our discovery platform accept such a citation as input. We can easily imagine mechanisms that support this, for example:

- The patron completes a form with fields corresponding to the major components of the citation. (See ILLiad.)
- The platform accepts OpenURLs as input.
- The patron copies a citation in popular standard formats and pastes it into input box. The citation is parsed into its component fields.

## Fulfillment Options

The discovery platform uses the parsed citation input to attempt to resolve to a specific resource. If successful, it calls out to fulfillment systems to determine what fulfillment options are available. These options are determined by the item itself. If it is locally owned or licensed, they could include a call number and “in place” status declaration, a link to an online resource, or an option to have a digitized section of the resource created and delivered to the patron. If the library does not own or license a suitable item--the search is unsuccessful, or if the item is not presently available locally, the patron is presented with the option to have the library attempt to find the item for her. (We could imagine always providing this last option together with a field for qualifying the request along the lines of “this is the book, but I really need the latest (3rd, I think) edition.” )

Fulfillment systems here mean library services platforms that support physical materials delivery and loan management, link resolution to electronic resources, and digitization services, and interlibrary loan systems that locate, request and deliver items borrowed from and/or digitized by other libraries. We imagine the options offered by these systems aggregated and presented to the patron through the discovery platform. Each option is presented along with a description of what the patron should expect in terms of format, delivery date, loan period, and costs.

Once the patron has selected an option, the library has the discretion to deliver the item however it sees fit so long as the expectations set when the option was presented are met. It may be that whether the library can ultimately deliver a suitable item to satisfy the request remains an open question at the time the request is made. And it may be that the library will need to pursue other options which in effect do not meet the original expectations. We will come to communication and messaging below.

In this scenario the library’s discovery platform provides the interface for getting an answer to the question we started with--“can I access this resource through the library?” Let’s enumerate a couple of architectural considerations for this approach.

In this approach, fulfillment systems that calculate the options available to the patron can and typically do run independently of the discovery platform. We require only that the discovery system can request options for the fulfillment system and actionable information is returned along with a means of determining expectation characteristics for each option. Actionable information means that

the discovery platform can use the information to present an action that can be initiated by the patron in the discovery platform's interface. Expectation characteristics could be explicitly declared by the fulfillment system, e.g. expect delivery in 2-3 days, or sensible defaults could be configured and displayed within the discovery platform.

This approach does not require that the systems that calculate the options available to the patron are brought together into a single system or even that they function in a coordinated fashion. LSP and ILL systems service options requests independently: the LSP checks local availability and reports local fulfillment options; an ILL system such as UBorrow (Relais) checks availability in the BTAA consortium. Ideally, for each option a status is declared--is/is not available through this channel. The discovery system can then elect to display an option based on this status without having to execute business logic that is informed by how the fulfillment channel works.

An architectural principle here is that the discovery platform knows nothing about fulfillment options beyond how to display a sequence of options and to render the mechanism for initiating the option. This could be easy to accomplish if a standard for representing fulfillment options, including expectation characteristics, were developed and adopted in the library and library systems communities.

Note that the discovery platform's decision about which fulfillment system to consult may be determined by resource type, e.g. print vs. electronic or circulating vs. non-circulating. When configuring the discovery platform each fulfillment system is matched to resource type. If a discovery system supports citation-style request handling for resources not included in its discovery domain as described above, only the ILL system would be queried for fulfillment options.

It's also worth noting that this approach does not address the issue in which a patron's status in one fulfillment system, e.g. a service block, should be reflected in the service or denial of service offered in another fulfillment system; unresolved fines in the LSP should prevent the ILL system from accepting requests, for example. That sort of business logic falls outside of the simple rendering of options belongs in coordination integrations between backend systems.

## Accounts and Messaging

From the patron's point of view, the backend system(s) that manages loans, requests, and other transactions is not important. What is important to the patron is having easy access to all of this information. To achieve a unified view of a patron's account, it is not necessary that a single fulfillment system manage these transactions. However, a single patron library account application could manage the presentation so long as the transactions can be gathered from the managing fulfillment systems, and these transactions along with associated actions such as loan renewal or request cancellation are presented with the account application.

Like fulfillment options and associated actions described above, standardization in this area would be useful. Again, the architectural principle that separates business logic from presentation applies here.

The pattern for account status and actions display is essentially the same as the one for fulfillment options and actions.

Messaging related to fulfillment transactions, particularly those about transaction status and actions required by the patron, can be generated by backend fulfillment systems. However, messaging preferences should be managed by the account application. These preferences should then be propagated to supporting fulfillment systems. Again, standardization in this area would be useful.

## Notes on System Features

We close this section on system architecture with a few notes on system interoperability features that would contribute to building out a discovery-to-delivery ecosystem that achieves the central vision.

- The discovery platform accepts known item citation data as input and provides fulfillment options through ILL, acquisitions, document delivery, etc., even when the resource is not presently owned or licensed by the library.
- The LSP and ILL management systems provide APIs suitable for use by a discovery platform for evaluating and reporting availability and delivery options, and for accepting patron initiated delivery option execution. The APIs should be able to accept as input standard resource identifiers, e.g. ISBN, ISSN, and OCLC accession numbers, in addition to internal identifiers.
- Requests that cannot be satisfied in one system can be automatically handed off to another (local catalog to Relais to OCLC) without staff intervention.
- Real-time delivery status information can be tracked through fulfillment systems, in coordination with shipping partners, e.g. UPS, FedEx, USPS.

## Recommended Actions

We now shift our attention from the first bullet of our charge -- in effect, answering the question, “What is to be done to improve the experience of our patrons?” -- to the second and third bullets, the practical things BTAA libraries can do in the near term to move us toward the desired state.

What we can do in the near term is a function of the present capabilities and limitations of the discovery and fulfillment systems we use. Frankly, the desired state cannot be fully implemented in the present because the required functionality does not exist in the right form in each of these systems, although some aspects of the functionality exist in part. For example, real-time availability and delivery option execution between discovery platforms and LSPs exist, but the analogous functionality between discovery platforms and ILL platforms does not. Accepting a citation format exists in ILLiad and link resolvers, but does not exist in the discovery platform. Account data are exposed through APIs in some fulfillment platforms and not in others.

We recommend three areas for action:

1. Exert influence on future product development. While we are limited in our ability to implement the desired state today given the state of the systems at play in this space, we are in a position to influence the direction future development of these systems takes. Promoting this vision to other consortia and large research libraries would broaden this influence.
2. Make full use of the currently available technologies and best practices.
3. Experiment with user experience design and behaviors, and share usability findings.

## Exert Our Collective Influence on Our Vendors

Ensure vendors are aware of our needs and that they are actively working toward a better experience for our users.

### OCLC

- Continue discussions with OCLC to ensure their new ILL Platform meets the BTAA's needs as outlined in this document.
- Ensure that the new platform is open and flexible allowing for an equivalent customization mechanism and openness for development as exists with ILLiad addons.
- Ensure that we continue to have uninterrupted BTAA representation on OCLC Cloud-Based System Advisory Groups.

### Relais

- Continue to press Relais for development of the delivery web services so they support more than ISBN searching.
- In cooperation with the Ivies Plus and GWLA, explore mechanisms to transfer requests between different Relais systems and architectures.

### Proquest-Ex Libris: Alma/Primo and Summon

Currently five of the BTAA libraries use Alma/Primo as their LSP and discovery interface, and it is likely that more of the BTAA libraries will move to Alma in the coming years. And three members use Summon.

- Primo has a new UI under development and the look and feel is very clean and modern. Now would be a good time to suggest improvements in how delivery options are presented to users and to explore innovations in pop-ups and expanding and collapsable choices for users.
- Press Ex Libris on the need for full NCIP capabilities and interoperability with external ILL systems.
- Ensure that we have BTAA representation on Product Working Groups at ELUNA and participation in the Alma Enhancement Process.

### Promote the Vision beyond BTAA

The vision we have outlined in this report is general and applies to all libraries like ours. Promoting the vision to consortia like BTAA and to large research libraries could add voices to our call for enhancements in our vendors' discovery and fulfillment platforms. When opportunities arise for

sharing this report with vendors, presenting at conferences, and consulting colleagues affiliated with other libraries and consortia, we encourage our members to do so.

## Smart Fulfillment

This section describes system changes that would improve fulfillment functionality over its current state as an intermediate step towards the integrated architecture outlined above.

Once a request is placed, a request management system will take over to provide smart processing of the request. While progress has been made in this area with the introduction of the UBBorrow APIs for automated requesting, more work is needed, particularly on the part of the vendors who supply the products used across the BTAA. Atlas Systems must continue to develop ILLiad and its associated APIs with the flexibility Addons allow. Alternately, OCLC must develop its new system to provide a baseline of equal and equivalent functionality to what ILLiad provides us now but also a forward looking open platform we can customize. This development provides the greatest opportunity to improve the delivery system and advance the goals of this project. The BTAA should strongly advocate for such functionality from OCLC.

The request management system will require development of four areas of increased functionality to send or route a request.

1. First, new mechanisms for patron provisioning of the ILL system need development. The Alma User APIs are an example of a tool that can provide this data and moves us away from duplication of patron data across systems.
2. Second, local automated searching of shelf availability needs to be developed. While automated Z39.50 searching exists in products like IDS Logic, Z39.50 is reaching the end of its functional lifespan and does not provide the full functionality needed. Robust development of new mechanisms such as availability APIs that allow for searching using ISBNs, OCLC numbers, and key word searches need to be developed by vendors. EXLibris' availability API for Alma is not sufficiently robust as can only work based on the internal identifying number, the MMSID.
3. Third, a mechanism to initiate patron-driven acquisitions rather than defaulting automatically to ILL borrowing should be included. Likewise, an automated mechanism for recalls need to be developed. YBP's Gobi API is a an example of how patron-driven acquisitions could be automated as long as the ILL management system has sufficient logic built into it to route such requests though item records and patron holds in the LSP would also need to be created. Recalls present more challenges for integration.
4. Fourth, mechanisms to transmit requests to a consortial borrowing system for fulfillment outside the local collection, and if the item is not available in the consortia, automatically forward the request to a subsequent system or systems. This routing functionality for items with ISBNs exists within the Relais delivery web services used in UBBorrow. We need to continue to push Relais for further development to these services. Interoperability between shared catalog consortial systems like Voyager or Alma and other systems such as ILLiad has not yet been developed but will need to be. The process above will create the request,

associate it with a patron and provides mechanisms for that request to be routed appropriately.

When the request arrives at the potential lending library, the following needs to happen:

1. First, an unmediated mechanism to produce pull slips/labels should run. This functionality needs development by vendors.
2. Next when an item is ready for shipping, the system needs to update the request to shipped status
3. The item record in the local LSP needs to be updated
4. The request number in a UPS/FedEx tracking record is recorded
5. The system needs to notify the patron that the item is on its way.
  - a. Updating in the local system should be part of NCIP integration between the request management system and the local LSP. This is partially implemented at a select number of BTAA libraries.
  - b. Communication about tracking and tracking information in general can be gather via APIs and though no request management system has this functionality at this time, it should be developed by the vendors.

When the item arrives at the borrowing library, a mechanism to receive and route items is needed. This part of the process involves a combination of more advanced processing than ILLiad currently provides but OCLC's new platform must include, especially the UPS/FedEx integration for shipping status via API. BTAA wide adoption of NCIP will provides integration with the local LSP so that ILL loans are handled just local circulations for tracking, patron notifications, circulation, overdues, renewals and the like. Returning and tracking the item is the above shipping process in reverse and uses the same tools as above.

## Implement Current Standard Practices

The BTAA libraries should be making use of the current available technologies that facilitate quick turnaround time of patron requests and create time-saving efficiencies for library staff in both borrowing and lending. There should be a commitment on the part of staff at each institution to use the technologies we invest in.

1. **NCIP:** The NISO Circulation Interchange Protocol (NCIP) is a standard protocol used to facilitate the automated exchange of information between an ILL system and a library services platform in order to circulate all items in one place. NCIP is already built into the Alma environment and hence is no additional cost to Alma libraries. While the straightforward circulation of ILLiad items in Alma is successful, development is needed for the submission of borrowing renewal requests initiated within Alma and recalls initiated by lending libraries in ILLiad. Other LSPs may need an external NCIP addon in order to circulate ILL transactions. The automated circulation of ILL transactions within a patron's unified library account should be one of our strongest endeavors.
2. **Relais Find Item Web Service for UBorrow:** All Loan and Book Chapter requests containing an ISBN go through the UBorrow Web service. This service leverages the availability and load

leveling of BTAA libraries, facilitating unmediated requests for the borrower and location and call number verification for the lender.

3. **UBorrow Borrowing Addon:** This addon is used to quickly and easily send requests to the BTAA library partners, again leveraging availability and verification for the lender.
4. **Provide Access to Distance Users and those with Disabilities:**
  - Expand Interlibrary Loan and Document Delivery services to distance users whenever possible -- consider off campus shipping of loans and scanning of local material.
  - Scanning software that is used for document delivery and ILL should support OCR scanning. See [Appendix C](#) on this and other current trends and unaddressed needs.

## Experiment and Share User Studies and Usability Testing Results

One of the recommendations for action in this report is the development of a platform neutral “get it” functionality to initiate the delivery process. It is widely believed that if we simplify the option for users and use smart fulfillment behind the scenes, this will improve the user experience. If we have evidence through user studies that this is what users want, we should be documenting and sharing these testing results. To facilitate this need, we recommend:

- A commitment by all BTAA Libraries to report out on user studies and make this an evolving approach so we can all benefit from what our colleagues have learned.
- Create an inventory of User Studies - including strengths and weaknesses in the current environment.
- Create an inventory of systems/processes used to facilitate these studies.

### Recent Studies

Group member Zoe Chao, the User Experience Librarian at Penn State University, conducted two ILL and recall usability sessions with small groups of users in October 2016. Her first session focused on the question: what do the current two request options, “I want it” and “Request,” mean to students? Her second session focused on: will students choose differently if there are brief context for the two options? Results of her two sessions can be found in [Appendix A](#).

The University of Michigan will begin a user study later this fall to explore how their campus understands the document delivery/pulling and scanning service; this exploration may extend into their other delivery services as well. This report is likely to be released in early 2017. Currently, the University of Michigan catalog discovery interface has one “Get This” button which then expands into collapsible choices for Recall, ILL, or Request to have a small portion scanned. While these choices include heavy verbiage, the patron knows exactly what they are requesting and clear indications of how long it will take. See [Appendix B](#).

### Experimental Application for Improved Discovery and Capture of Resource Metadata

We envision a browser application open to all BTAA library systems which will capture resource metadata anywhere, authenticate the user, and run the resource through the library’s link resolver giving them access to the full-text or the ILL/Get It option - all in one click of the browser app.

This Zotero-like tool should display only to patrons with access to the delivery service. This will need to be developed within the BTAA and will require some mechanism, preferably not OpenURL but rather ISO 18626, for request submission.

## Conclusion

We have described a desired state in which our patrons can more simply find an answer to the question: Can I get access to this resource through my library? We have outlined an approach that requires incremental changes in existing discovery and fulfillment systems to unify the patron's experience and to improve interoperability and coordination between otherwise independent components of the discovery-to-delivery ecosystem.

Full implementation of the desired state requires enhancements to existing systems and appropriate functionality in OCLC's new ILL platform. While we cannot yet implement, we can influence and should continue working with our vendors to promote and achieve this simpler, patron-centric view of library discovery-to-deliver services.

# Appendixes

## Appendix A

### Penn State University User Studies

#### Background

At the Penn State University Libraries, there are two fulfillment/delivery options displayed in the item record, “I want it” and “Request,” regardless if the item is checked out or not (see Figure 1). If the item is available at the Libraries, either option will result in placing hold on the item. If the item is not available, the recall process will be initiated with the “I want it” option or an ILLiad request will be placed with the “Request” button. In most cases, “I want it” will take longer for users to receive the item than “Request.”

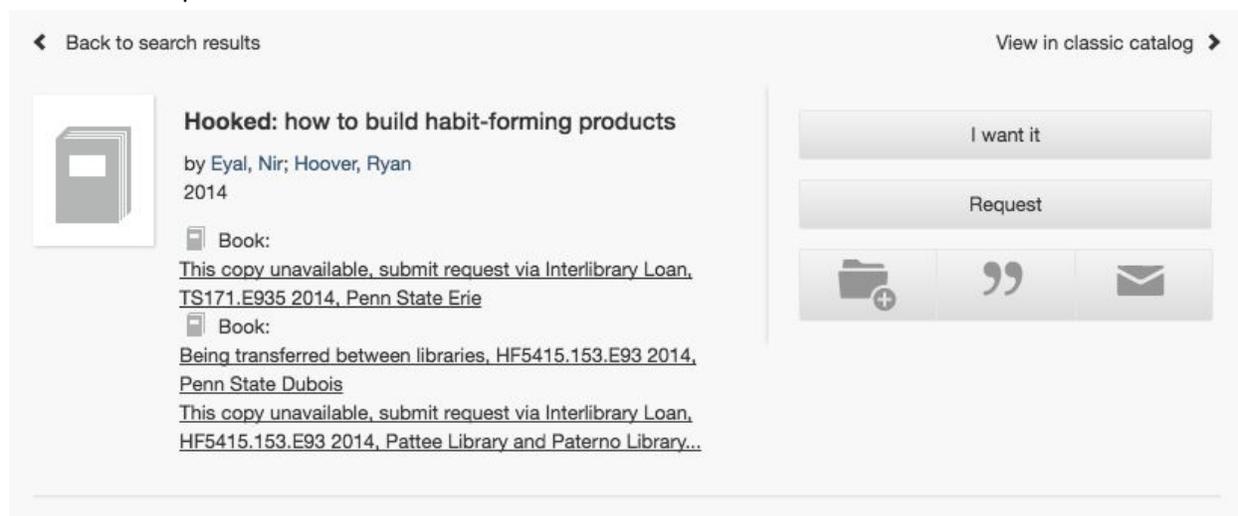


Figure 1. The record of an item owned by the Penn State University Library in Summon, the discovery system.

#### Session 1

##### Task for users:

Try to find and borrow the book “Hooked: How to Build Habit-Forming Products” by Nir Eyal. (All the copies of this book are currently checked out from the Penn State University Libraries.)

##### Results:

A total of ten students participated in the user study. All of them were able to locate and borrow the item. However, none of them knew the difference between the two buttons: “I want it” and

“Request.” Seven students clicked “I want it” mainly because they had the impression that they would receive the book sooner with this option. Three selected “Request” because it sounded less demanding or it sounded more guarantee to get the book.

## Session 2

Tasks for users:

1. Try to find and borrow the book “Hooked: How to Build Habit-Forming Products” by Nir Eyal.
2. Compared to our current record display (Figure 1), which one from the following three mockups (Figure 2, 3, 4) that you think is the most helpful when you are borrowing the book?

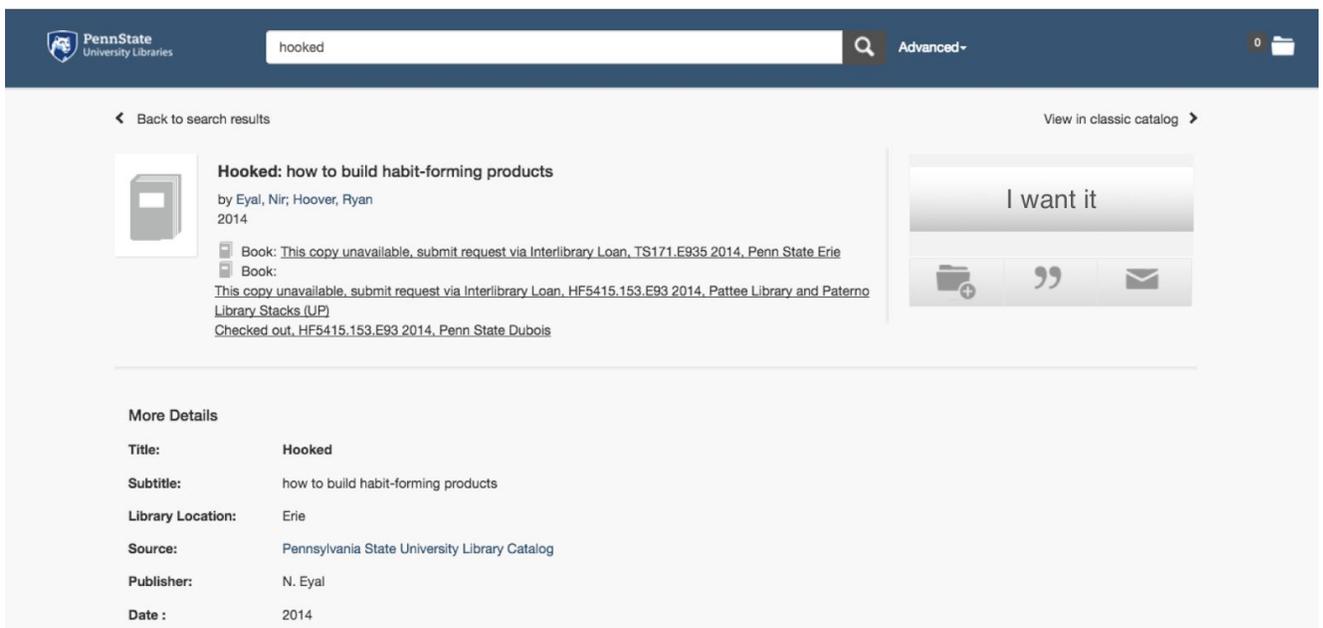


Figure 2. The mockup of item record with only one option “I want it.”

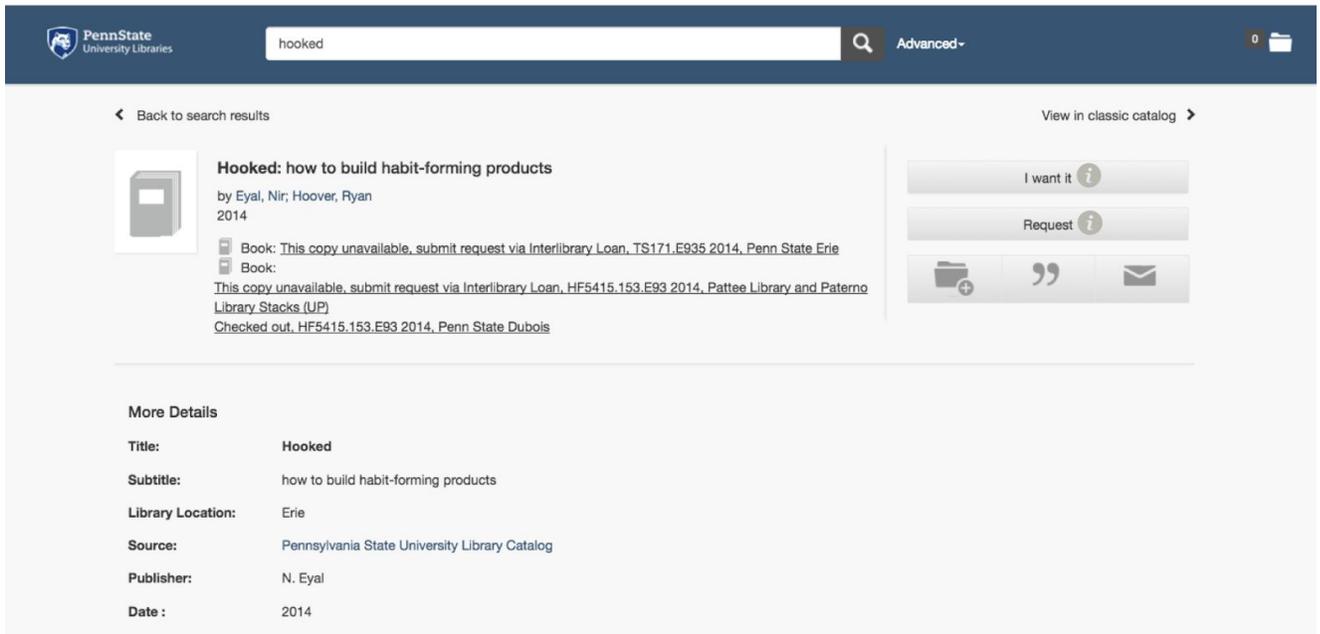


Figure 3. The mockup of item record with two options “I want it” and “Request,” with info icons.

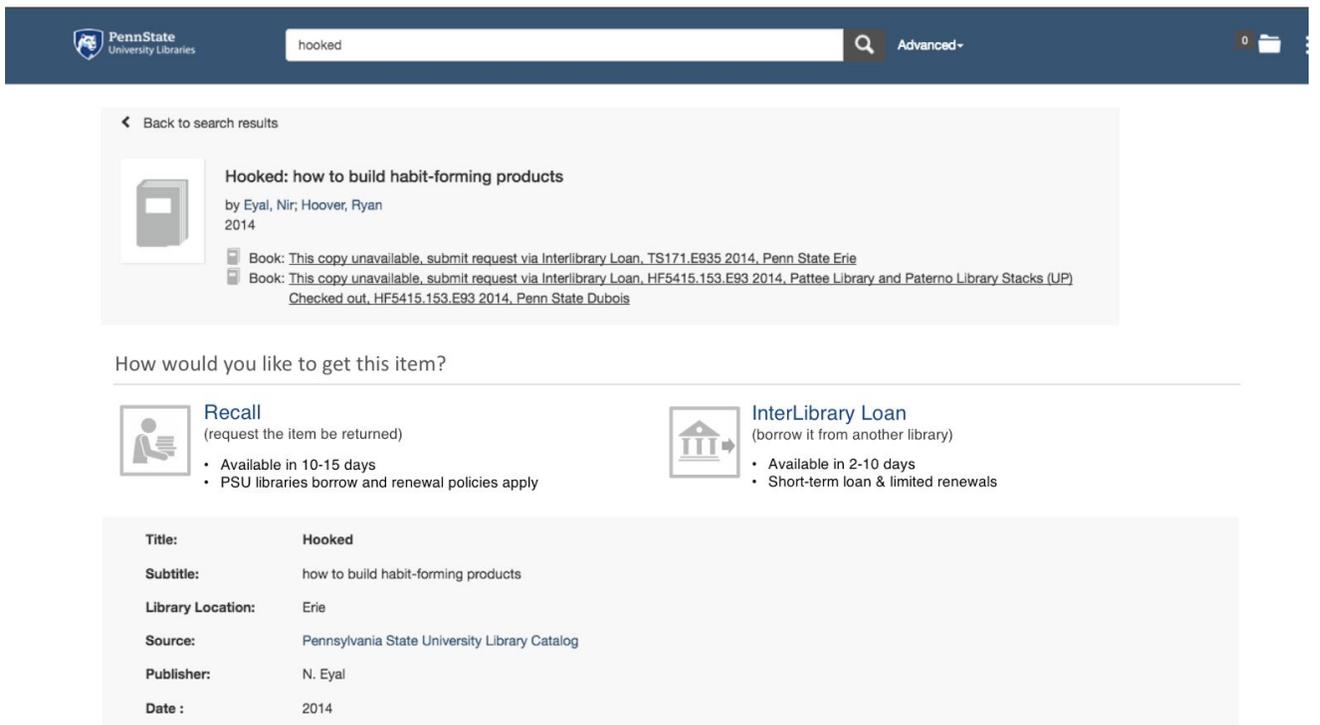


Figure 4. The mockup of item record with two options with brief explanation of the timeline and policy.

## Results:

A total of seven students and four librarians participated in the test. Similar to Session 1, none of the students knew the difference between the two delivery options. When asked about their preferred layout, one student chose Figure 2, one student chose Figure 3, five students chose Figure 4. Six students confirmed that the explanation in Figure 4 changed their perceptions of the two options and would influence their decision on which link to click. As for the librarians, three out of four prefer one button.

## Appendix B

### University of Michigan Request Options in Discovery

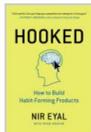
#### 1. User sees the record

The screenshot shows a library record page for the book "Hooked: how to build habit-forming products" by Nir Eyal and Ryan Hoover. The page includes a navigation bar with "Back to Results", "Previous record", and "Next record" links. Below the navigation bar are buttons for "Cite this", "Text this", "Email", "Export to reworks", and "Export to Endnote". A "For Selected items (0): List | Email | Export | Clear" button is also present. The book title is "Hooked : how to build habit-forming products / Nir Eyal with Ryan Hoover." The metadata includes: Main Author: Eyal, Nir, author.; Contributors: Hoover, Ryan, author.; Format: Book; Language: English; Published: 2014; New York, New York : Portfolio/Penguin,. The page also features a "Save to Favorites" button and a "Holdings" tab. The holdings information shows "Hatcher Graduate — Basement North" with call number "HF5415.153 .E93 2014" and a "Checked out: due Dec 23, 2016 at 11:59 PM" status. A "Get this" button is located at the bottom right of the holdings section.

2. If the user wants the item that is not available, clicks the “get this” button and sees appropriate delivery options

### How would you like to get this item?

Hooked : how to build habit-forming products /



Author: Eyal, Nir,  
Format: Book  
Call number: HF5415.153 .E93 2014  
Owning library: Hatcher Graduate  
Item status: Checked out: due Dec 23, 2016 at 11:59 PM



#### Recall it (request that this copy be returned)

Library-to-Library

- Expected availability 1-3 weeks\*
- Standard loan and renewal policies apply



#### Request a copy from another library

Interlibrary Loan (I.L.L.)

- Expected availability 6-10 days\*
- Short-term loans
- Limited renewals



#### Request to have a small portion scanned

Interlibrary Loan (I.L.L.)

- Expected availability 1-10 days\*
- Requests for portions are individually evaluated for copyright compliance
- Your requested portion will be available to you on a secure website for 2 weeks

### Check UBorrow for faster delivery

Check the [UBorrow catalog](#) to see if you can get this item for 12 weeks with 1 renewal. Expected availability in 5 days.

### Frequently asked Questions

How do I change my Interlibrary Loan or 7FAST delivery location? You have to call or email the Interlibrary Loan office.

### How will I receive my material?

Receipt of your material depends on the service you select.

- If you request it for pickup, place a hold on it, or request it to be returned, the loan is delivered to the library of your choice.
- If you request a scan, your scan will be delivered electronically. You will receive an email containing a link to ILLiad when a PDF is available.
- If you request a copy through Interlibrary Loan, loans are delivered to your departmental mailbox or to any I.L.L. pick-up location.\* Read more -->

[Read more FAQs about document delivery options](#)

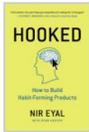


[Back to full record display](#)

3. User can expand (click the “+”) to see relevant details and start the appropriate process. The ILL “next” buttons go to the appropriate screen in the ILLiad interface (for whole book; for a section).

## How would you like to get this item?

Hooked : how to build habit-forming products /



Author: Eyal, Nir,  
Format: Book  
Call number: HF5415.153 .E93 2014  
Owning library: Hatcher Graduate  
Item status: Checked out: due Dec 23, 2016 at 11:59 PM

### Recall it (request that this copy be returned) Library-to-Library

- Expected availability 1-3 weeks\*
- Standard loan and renewal policies apply

Pickup Location:   
Cancel this hold if item is not available before:  
12/10/2016

\* A new due date will be given for this item.

Recall this item!

### Request a copy from another library Interlibrary Loan (I.L.L.)

- Expected availability 6-10 days\*
- Short-term loans
- Limited renewals

By default, items are delivered to Hatcher Graduate Library.  
**To set your delivery preference to your departmental mailbox, contact the I.L.L. office.**

>> Check your current delivery preference

\* Availability, checkout periods, and renewals depend on the lending institution.

Check the [UBorrow catalog](#) to see if you can get this item more quickly.

Next →

### Request to have a small portion scanned Interlibrary Loan (I.L.L.)

- Expected availability 1-10 days\*
- Requests for portions are individually evaluated for copyright compliance
- Your requested portion will be available to you on a secure website for 2 weeks

Requests for scanning are individually evaluated for copyright compliance.

If the requested portion cannot be scanned because doing so would violate copyright law, the volume will be delivered physically to a departmental mailbox or to a University Library pick-up location.

\* Availability depends on copyright and other factors.

Next →

### Check UBorrow for faster delivery

Check the [UBorrow catalog](#) to see if you can get this item for 12 weeks with 1 renewal. Expected availability in 5 days.

### Frequently asked Questions

How do I change my Interlibrary Loan or 7FAST delivery location?  
You have to call or email the Interlibrary Loan office.

### How will I receive my material?

Receipt of your material depends on the service you select.

- If you request it for pickup, place a hold on it, or request it to be returned, the loan is delivered to the library of your choice.
- If you request a scan, your scan will be delivered electronically. You will receive an email containing a link to ILLiad when a PDF is available.
- If you request a copy through Interlibrary Loan, loans are delivered to your departmental mailbox or to any I.L.L. pick-up location.\* Read more -->

Read more FAQs about document delivery options

Ask a Librarian

#### 4. If the book is on the shelf:

##### How would you like to get this item?

Hooked /



Author: Kael, Pauline.  
Format: Book  
Call number: 808.29 K115hn  
Owning library: Hatcher Graduate  
Item status: **On shelf**

##### Find it in the library

Self-Service

- Immediate access to a physical copy when library is open
- Find related items on shelf
- Staff assistance available on site



##### Pick it up at a library

Library-to-Library

- Expected availability 1-3 days
- Standard loan and renewal policies apply

Pickup Location:

Cancel this hold if item is not available before:

Can't find your book on the shelf? Request it for pickup, and we will search for it.

**Get me this item!**



##### Have it delivered

7FAST

- Expected availability 2-4 days
- Standard loan and renewal policies apply

Items can be delivered to your departmental mailbox or to a library.

**To set your delivery preference to your departmental mailbox, contact the ILL office.**

>> [Check your current delivery preference](#)

Microfiche scanning and delivery are not free. Read more in the [7FAST FAQ](#).

**Next →**



##### Request to have a small portion scanned

7FAST

- Expected availability 1-4 days
- Requests for portions are individually evaluated for copyright compliance
- Your requested portion will be available to you on a secure website for 2 weeks

Requests for scanning are individually evaluated for copyright compliance.

If the requested portion cannot be scanned because doing so would violate copyright law, library staff will contact you with other options.

Microfiche scanning and delivery are not free. Read more in the [7FAST FAQ](#).

**Next →**

## Appendix C

### Emerging Trends and Unaddressed Needs

We include a brief list of trends and patron needs that are not addressed in this report, but that are related to discovery to delivery issues and that may be useful areas of future work.

- Proxies - Because authentication systems authenticate individuals, delivery systems do not allow for proxies or assistants. The person who needs the item has to either place the request themselves or share their credentials. We need a mechanisms where research assistants or others can place request on behalf of someone else.
- Group or collaborative work by students - ILL and circulation assume a one-to-one relationship between items and patrons. This model does not fit contemporary practices and instructional practices. A mechanism needs to be developed to allow multiple authorized users to view the same documents.
- Sharing amongst co-authors - Again, the assumed one-to-one relationship between items and patrons does not reflect the reality of patron's interactions with and use of library materials as they participate in the the scholarly communication process collaboratively.
- Course reserves or other material use - Current ILL and document delivery service models assume items will be used by a single individual for study or in the production of new knowledge.
- Integration into tools to create and/or manage bibliographies - Library delivery systems need to integrate more seamlessly into the research process. A patron who has identified items that he or she needs, should be able to upload these into a library request function from their chosen citation management tool.
- A standard in ILL and Document Delivery for meeting the needs of those with disabilities and materials needed for teaching and learning. OCR (Optical Character Recognition) is software that recognizes and interprets text in an image and converts it to text that a computer can read. ILLiad's Electronic Delivery software will retain OCR PDF files upon delivery to users and borrowing libraries if the originating document has been OCR'd. Running OCR on a file has benefits that include:
  - Searchable text
  - Copy and paste capabilities
  - Text to speech capabilities
  - Screen reader compatibility

# Table of Contents

## [Executive Summary](#)

## [BTAA Discovery to Delivery Project Action Committee Report](#)

### [Purpose and Charge](#)

### [Introduction](#)

### [Current and Desired State of Discovery to Delivery](#)

#### [The Current State](#)

##### [Discovery](#)

##### [Fulfillment for Loans](#)

##### [Fulfillment for Articles](#)

##### [In Short](#)

#### [The Desired State](#)

### [Architectural Implications](#)

#### [Citation Handling](#)

#### [Fulfillment Options](#)

#### [Accounts and Messaging](#)

#### [Notes on System Features](#)

### [Recommended Actions](#)

#### [Exert our Collective Influence on our Vendors](#)

##### [OCLC](#)

##### [Relais](#)

##### [Proquest-Ex Libris: Alma/Primo and Summon](#)

##### [Promote the Vision beyond BTAA](#)

##### [Smart Fulfillment](#)

#### [Implement Current Standard Practices](#)

#### [Experiment and Share User Studies and Usability Testing Results](#)

##### [Recent Studies](#)

##### [Experimental Application for Improved Discovery and Capture of Resource Metadata](#)

### [Conclusion](#)

## [Appendixes](#)

### [Appendix A](#)

#### [Penn State University User Studies](#)

[Background](#)

[Session 1](#)

[Task for users:](#)

[Results:](#)

[Session 2](#)

[Tasks for users:](#)

[Results:](#)

[Appendix B](#)

[University of Michigan Request Options in Discovery](#)

[Appendix C](#)

[Emerging Trends and Unaddressed Needs](#)

[Table of Contents](#)