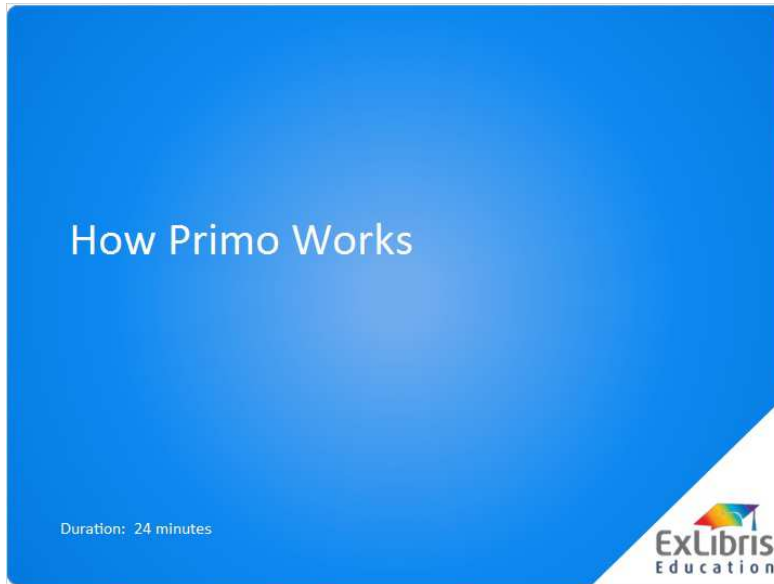# How Primo Works

1.1 Welcome

Notes:

Welcome to how Primo works.

1.2 Objectives

Objectives

By the end of this session, you will know:

- What discovery, delivery, and optimization are in Primo
- How the library's collections and e-resources are presented in Primo
- How to understand search results
- How the user experience can be optimized in Primo

Notes:

By the end of this session, you will know

- What discovery, delivery, and optimization are

- How the library's collections and e-resources are presented in Primo
- How to understand search results, and

- How the user experience can be optimized in Primo

1.3 Agenda

Notes:

Discovery, Delivery, and Optimization

## 1.4 Discovery, Delivery, and Optimization

Notes:

Primo allows fast, intuitive, and personalized discovery of physical, electronic, and digital resources.

Once users find the resources they're looking for, Primo provides access or information on how to access the resource, regardless of its source or format.

And Primo also provides insights that support continuous enhancement of the user experience, and analyses that inform collection development.

1.5 Discovery, Delivery, and Optimization
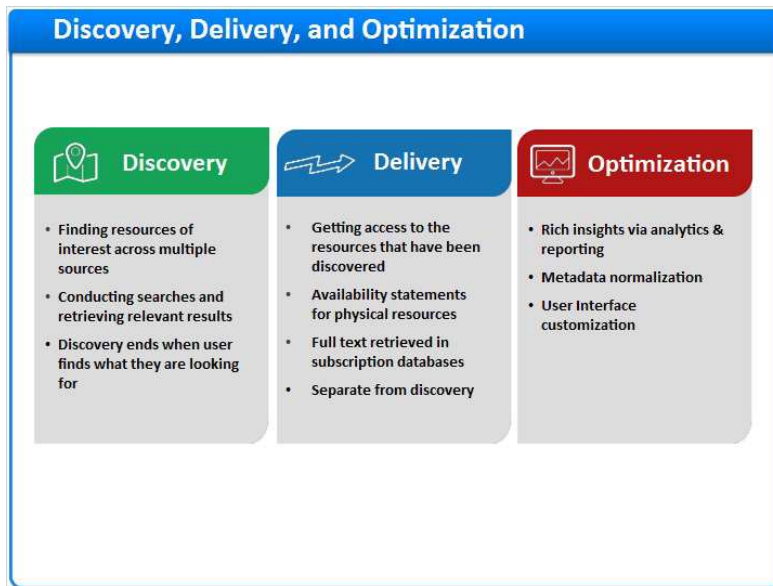
Notes:

To understand how Primo works, it's important to understand the concepts of discovery and delivery, and how Primo can shape the discovery experience.

Discovery is about finding resources of interest across a broad variety of sources - the library catalog, subscription databases, open access repositories, and more. To do this, we need a way to enter our search and a way retrieve and view relevant results. Discovery ends when the user finds the citation or record for a material that they are interested in, regardless of where it's located.

Delivery is all about getting access to the resources that have just been discovered. While researchers are using Primo to find the resources, they will be using the availability statement to guide them to where the physical resource resides, or even connecting directly to databases to retrieve the full text. Discovery and delivery are separate functions in Primo (and in other Discovery Services).

Since Primo contains robust reporting functionality, libraries can take their unique collections as well as their users'

behaviors into account when optimizing the discovery experience. This can be done through metadata normalization as well as user interface customization in Primo.

1.6 Library Collections and Primo Central
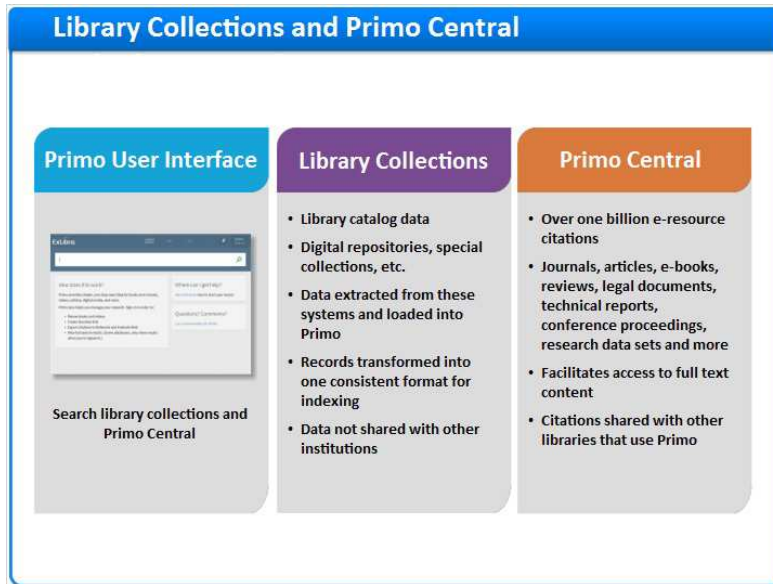
Notes:

Searching in Primo takes place in the Primo User Interface.   This user interface allows you, your staff, and your patrons to search both the library's collections and Primo Central.

Library collections contain your local data. Primo can take the records that are extracted from your library catalog, digital repositories, and special collections, convert them into standardized records, and then index them for searching.

The Primo Central Index (or just Primo Central) is a database of over one billion e-resource citations from various aggregators, publishers, and open access repositories. Primo Central includes citations for journals, articles, e-books, reviews, legal documents and technical reports, conference proceedings, research data sets and more. These citations facilitate access to full-text content in both open access repositories and your subscription databases.

While Primo can provide discovery and delivery for both local and remote resources, it is important to note that the library collections are not shared with other Primo institutions, with the exception of a consortium. Primo Central records, on the other hand, reside in a database that's shared with other libraries in the Primo community.

Let's take a closer look at how local and remote resources are implemented within Primo.

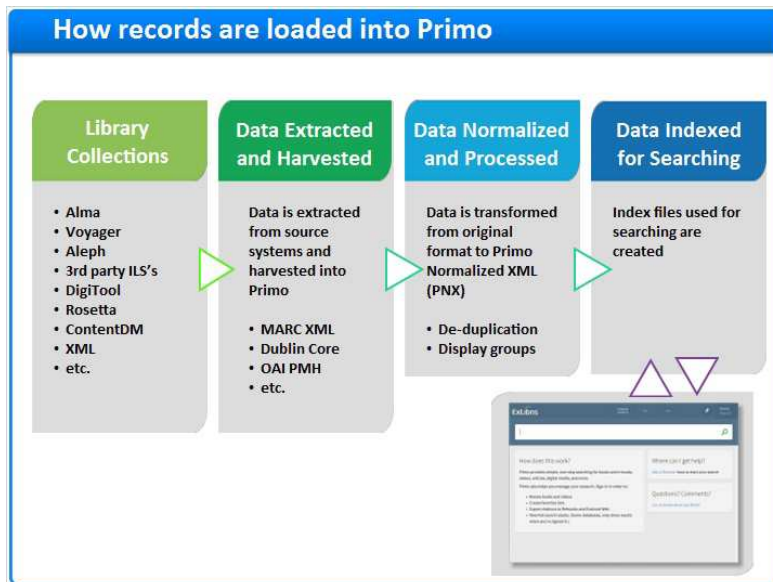## 1.7 Library collections in Primo

Notes:

Library collections in Primo

1.8 How records are loaded into Primo

Notes:

Primo is used to discover and display records in the library catalog and other local repositories.

During a Primo implementation, Ex Libris and your library work together to load your local records into Primo. This usually includes your library catalog records, but it can also include data from digital repositories as well.

To do this, we extract data from each source system and harvest it into Primo. This extract can be in a variety of formats - MARC XML, Dublin Core, and OAI PMH to name a few.

Then, the data is transformed - or normalized - into a proprietary XML format called Primo Normalized XML. There are several other data processes that occur at this stage as well - duplicate records are consolidated, and certain records are grouped for streamlined display.

Once the records have been processed, index files are created. When a patron or staff member conducts a search, the Primo user interface uses this index to quickly search and retrieve results.

1.9 Primo Normalized XML

Primo Normalized XML (PNX)

Why PNX?

- Start with different data repositories and different formats
- End result – all records in same format
- Allows Primo to search all records at once
- Consistent display
- Targeted searches, filters, browse

What PNX looks like:

MARC XML

```
<datafield  tag="245"  ind1="0"  ind2="0">
<subfield  code="a">Diverse methodologies in the study of music teaching and learning /</subfield>
<subfield  code="c">edited by Linda K. Thompson and Mark Robin Campbell.</subfield></datafield>
```

becomes PNX

```
<display>
  <title>
     Diverse methodologies in the study of music teaching and learning
  </title>
```

Notes:

So why do we transform these records into a different format?

We do this because Primo can harvest records in multiple formats. Normalizing these records allows us to load different types of data into Primo, and have all of the records end up in the same format.

Having all of the records in the same format allows Primo to search across all of the records at once. It allows Primo to display the records consistently in the user interface, and it prepares the records for searching, filtering, and browsing.

The normalization process consists of a set of rules that determine how to transform the data from the source record to the appropriate fields in the PNX record. For example, here we have the 245 field in MARC XML - the normalization rule would transform that field into the 'display:title' field in the PNX.

Each field in the PNX serves a purpose in Primo, whether it's to present the record for display, or optimize it for searching.

1.10 Display Source Record
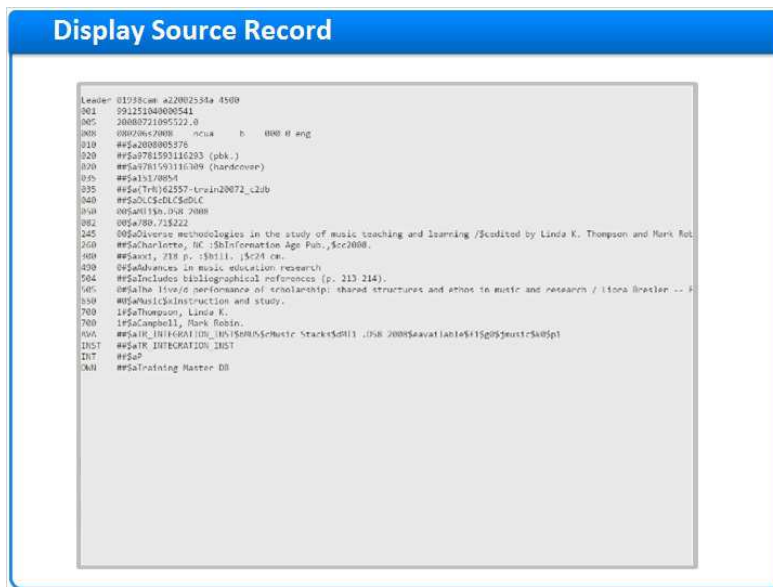
Notes:

Even though the local records are transformed into PNX, Primo still retains the record in its original format for reference.

Here we're looking at the full record display for *Diverse methodologies in the study of music teaching and learning* in the Primo user interface. In the Links section, we can click on 'Display Source Record' to see the bib record in its MARC format.

1.11 Display PNX record
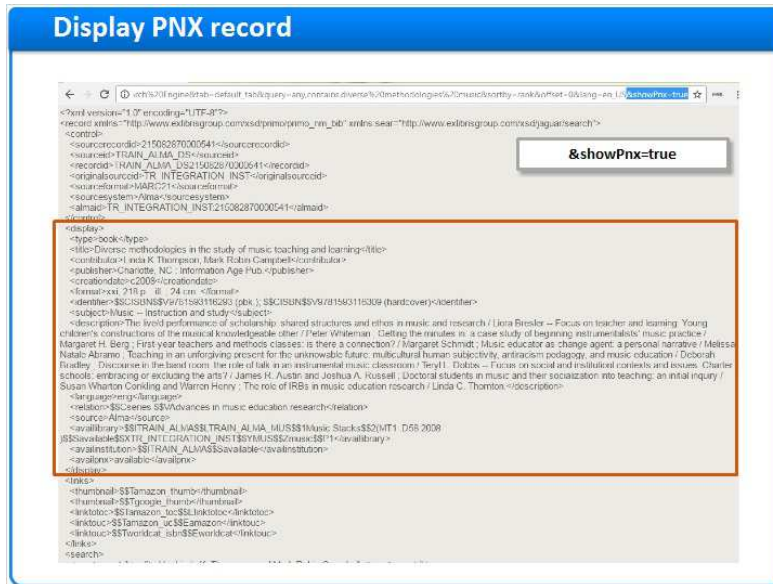
Notes:

We can also see the PNX for this record from the full display, too. In the full display of a record, we would go up to the URL bar and add &showPnx=true to the end of the URL, then hit enter.

Now we're looking at the PNX record. There are 13 different sections in the PNX - so on the screen here we just have the first part of the record. Still, we can see all of the fields we want to display in Primo, including the title, contributors, identifiers, subjects, the description, language and more. For each of these PNX fields, there is a corresponding normalization rule that was defined to process the data found in the MARC record.

You may notice that some of the information is replicated in some of the fields, and not all information from the MARC is always used. If you're noticing that a specific piece of data is missing, you can work with your Primo Administrator to correct the issue.

1.12 E-resources in Primo
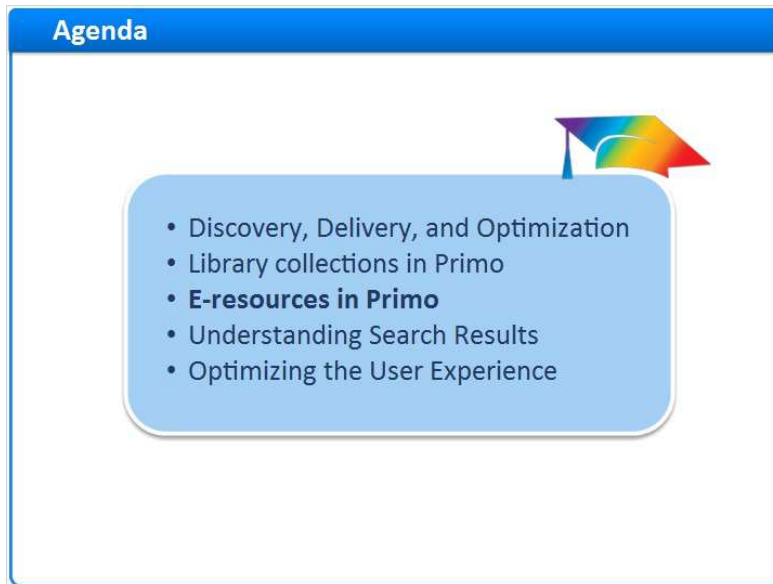
Notes:

E-resources in Primo

1.13 How Primo Central works
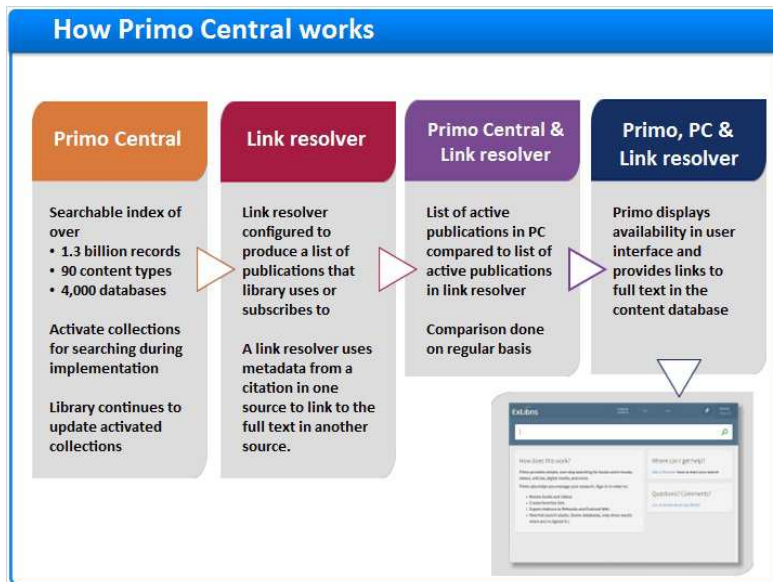
Notes:

Primo is also used to discover and display records in subscription and open-access repositories as well. Primo Central is a searchable index of over 1.3 billion records, with 90 content types and 4000 databases.

During a Primo implementation, Ex Libris and your library work together to activate collections for searching in Primo Central. After implementation, the library will continue to update these activations when needed.

We also configure the library's link resolver to produce a list of publications that the library uses or subscribes to. A link resolver can use metadata from a citation in one source to link to the full text in another source.

The list of active publications in Primo Central collections is then compared to the list of active publications in the link resolver. This comparison happens on a regular basis, as the library continually updates both the collections in Primo Central, and the active collections and publications in the link resolver.

The results of this comparison allows Primo to determine whether or not any given e-resource result will be available. Generally, if a given publication is active in both Primo Central and the link resolver, Primo will show the resource as 'full text available'.

1.14 Getting to the full text

Getting to the full text

Getting full text using the link resolver

- Preferred method of delivery
- Use citations in one source, link to full text in any of the library's subscription databases

Getting full text using link in the citation

- Link resolver not the best option for every collection
- May not have enough data in citation to form request
- Database with full text may not be able to handle LR
- In these cases, we use the URL provided in the citation
- Called 'fixed availability'

Notes:

For the most part, Ex Libris prefers this method of linking to the full text.

Primo can use the citations in Primo Central to provide metadata to the library's link resolver, and the link resolver in turn uses that metadata to provide all of the possible links to the full text - whether it's in the same database or a different one. In other words, we might get a citation from one vendor or publisher, and the link to the full text may go to a different vendor or publisher's website.

This isn't always the best option for every collection, though. Sometimes there isn't enough information in the citation to pass along to the link resolver. And sometimes the database with the full text can't interpret the link resolver's request.

So in these cases, we use the URL provided in the citation. We call this type of delivery 'fixed availability'.

1.15 Full text via link resolver
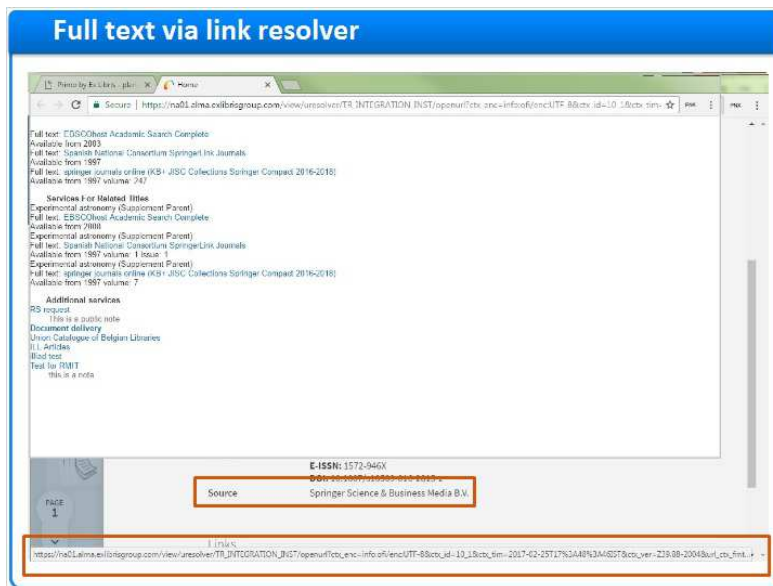
Notes:

Let's take a look at a few examples in Primo.

In the search results for 'planet nine', we can see the first three results all show that full text is available.

Clicking on any of these links will bring me to the full text in a different database - but first, let's look at each record in the full display.

Here's the full record for *Planet Nine, dark matter and MOND.* The source of the citation is Springer Science and & Business Media B.V. - this means that the citation is from this collection in Primo Central.

The link to the full text, however, is using the Alma link resolver to go to the full text. If I mouse over the link I can see the URL it will go to down here at the bottom of the screen - notice that it contains 'openurl'.

Once I click on the link, I'm brought to a separate tab that contains multiple links to the full text - in both EBSCO, and several SpringerLink Journal databases. It's possible to bypass this screen and just go to the first link in the list, but I've enabled this screen for demonstration purposes.

This is an example of a Primo Central citation coming from one source, and the link resolver providing access to the full text in multiple databases.

1.16 Full text via fixed availability

Notes:

Let's take a look at the second search result.

Here's the full record for *Solar Obliquity Induced by Planet Nine.* The source of the citation is Cornell University, which means that the citation is from this collection in Primo Central.

The link to the full text in this case is fixed - it goes directly to the article in Cornell University's Arxiv database. If I mouse over the link I can see the URL it will go to down here at the bottom of the screen.

Once I click on the link, I'm brought to a separate tab that goes to the article.

This is an example of when we use the link provided by the publisher in the Primo Central citation to link to the full text content.

1.17 Understanding Search Results
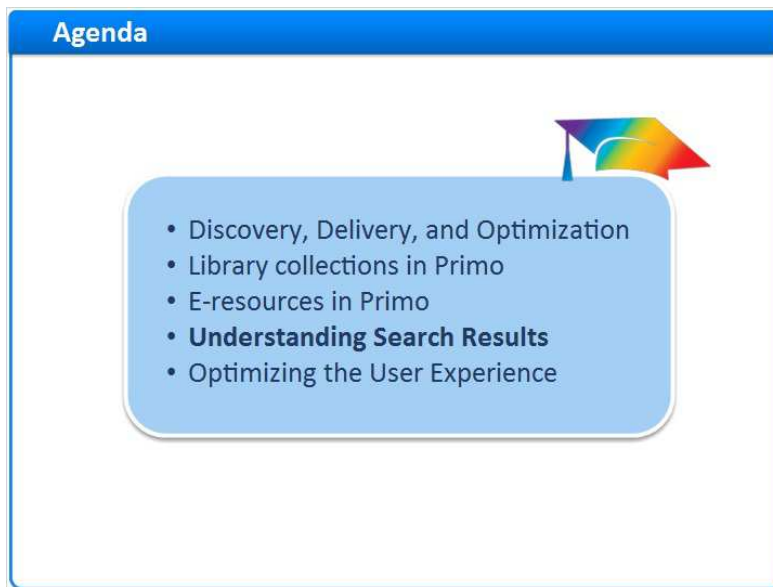
Notes:

Understanding search results

1.18 Search Query

Notes:

Let's take a closer look at how searching works in Primo, and what happens when search results are returned.

Primo's search allows us to quickly type in a keyword and conduct a search in simple search. And we can conduct advanced searches using multiple search terms and methods. Advanced search includes keyword, title, author, and subject searches.

Context can be applied to the search terms as well - we can search the entire record with a contains search, search the beginning of a record with starts with, and also do an exact match search. In the advanced search, we can also apply pre-filters to our terms, like material type, language, and publication date.

Primo includes boolean operators - AND, OR, and NOT, and also knows not to include common stop words like a, and, and the in the search.

Phrase and wildcard searches are also possible in Primo.

When the number of search results returned is low, Primo can expand the search to include word variants by removing word endings like 'ed' and 'ing'.

And Primo can suggest alternate terms for searching to correct typos and misspellings.

When a user enters a search query, Primo takes all of these functions into account and matches the term to the values in the search section of the PNX.

1.19 Relevance
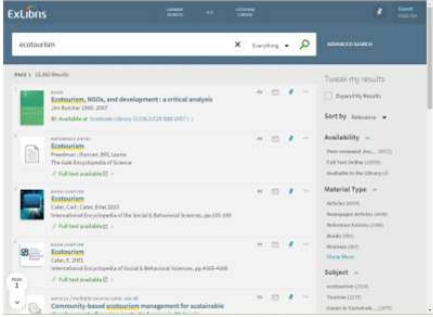
Notes:

Primo uses a set of proprietary algorithms to determine the relevance of each result., and ranks the result accordingly.

When we determine relevancy, we make a series of calculations based on several factors to produce a Relevancy Score.

The first is how well an item matches the query. For example, Primo assigns more weight to an item if the query terms occur in certain fields in the item's record-primarily the author, title, and subject fields. Primo also takes into account the order of the query terms or phrases, and if that order is the same in the record.

A value score representing an item's academic significance. The item's academic significance is calculated from factors unrelated to the query, such as whether the item was published in a peer-reviewed journal, how many times it has been cited, and what type of material it is, for example a journal article is considered more significant than a newspaper article.

An item's relevance to the type of search. Primo infers the type of search that the user is conducting, such as a known-item search or a broad-topic search, and takes the type of material into account. In broad-topic searches Primo boosts overview material, such as reference articles. In known-item searches Primo takes into account authors, exact titles or other variations including entire citations to boost the appropriate item to the top of the result list.

1.20 User refinements
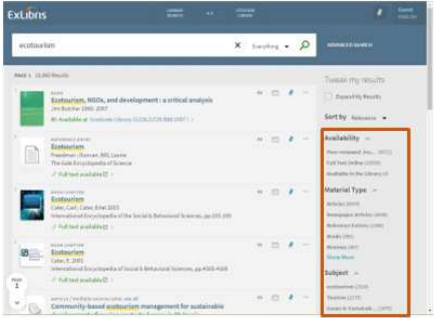
Notes:

And finally researchers can refine their results in a few ways.

By sorting the results, the user can control the order of the results.   Sort options include relevance, date, author, and title. The sort section in the PNX includes the values used to sort the record.

The user can also refine results using filters, or facets. Facet options include availability, material type, subject, author or creator, creation date, the library, the collection, journal title, and the Library of Congress Classification. The facets section in the PNX contains the values available for filtering.

1.21 Sign in

Notes:

When a user signs in, they can see their library account information, place requests, and renew items. But signing in can also have an effect on the search results.

It's possible for libraries to configure local record search restrictions.

This means that certain search results would only be available to specific users - and the only way Primo would show those results is if the user was signed in. This functionality is useful if the library has collections that are restricted to certain groups of users, like course reserves or staff only resources.

Some collections in Primo Central are considered restricted to search - usually this happens when the vendor or publisher provides their data for searching, but only wants libraries who subscribe to the collection to be able to search it. Web of Science is an example - since Thompson requires a subscription to access the citations in their database, they require it in Primo Central as well.

This means that these citations would only return in the search results if Primo could tell that they were affiliated with the library. Though a user wouldn't necessarily need to sign in if they were on campus, they would need to sign in to see results outside of the library.

1.22 Availability for local results

Notes:

Once the search results have returned, the user can start accessing the resources.

In Primo, physical materials in the library will have an availability statement that provides the status and location of the resource. It may be available, checked out, or show 'check holdings'. Check holdings usually indicates that more information is needed to determine whether or not the material is available. In this case, we have a journal with multiple holdings.

This status is updated in real time. As the search result displays in Primo, it's making a real-time call into the library catalog to see if the material is available.

For local online materials, we'll see the 'Online access' link. This link takes the user to the URL that was provided in local record. In this case, the link will take us to the journal website, as indicated in the 856 field in the MARC record.

1.23 Availability for PC results

Notes:

The Primo Central resources show availability a bit differently.

When the result is from a Primo Central collection that uses the link resolver, the citations will show as 'full text available' if the publication is active in both Primo Central and the link resolver.

If the Primo Central collection uses fixed availability, the citations will always show 'full text available'.

No full text results show when the 'Expand My Results' option is selected. No full text results only appear if the publication is active in a Primo Central collection, but not the link resolver.

1.24 Unexpected results
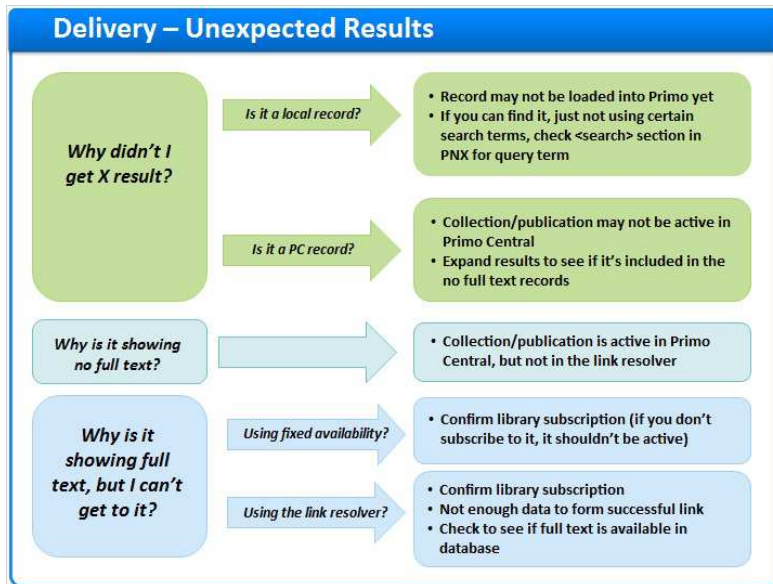
Notes:

Occasionally in Primo, you may encounter unexpected results. If you do, check with your Primo Administrator - they can help you determine the cause and if a fix is needed.

But in the meantime, let's walk through a few scenarios, and what might cause them.

Let's say you searched for a specific resource, and didn't find it in the search results. First, you would want to determine if the resource should be in the local repository, or Primo Central.

If it's a local record, it may not be loaded into Primo yet. On the other hand, the record may be in Primo, but the values in the record didn't match your query. If this is the case, you could check the search section in the PNX to see the values that were indexed for searching.

If it's a Primo Central record, the collection that contains the publication may not be active in Primo Central, or full text may not be available. Try expanding the results to see if it's included in the no full text records.

If it's showing no full text and you know that you should be able to access it, it means that the collection is active in Primo Central, but may not be in the link resolver.

The last scenario is when a record shows full text, but you can't access it. You would want to determine what type of delivery the resource used. If the collection was using fixed availability, try confirming whether or not the library is still subscribed to it.

If the collection is using the link resolver, there are several potential causes. If the library is still subscribed to the

collection, there may not be enough data in the citation to form a successful link. Try checking in the subscription database directly to see if the full text is available there.

Again, your Primo administrator can help you understand unexpected results in Primo.

1.25 Optimizing the User Experience

Notes:

Optimizing the User Experience

1.26 Optimization

Optimization

User Interface Customization	Data Normalization	Primo Analytics

• Branding
• Search
  • Search specific local collections or everything at once
  • Advanced pre-filters
• Brief and full results
  • Data in details (local)
• Filters (facets)
  • Left or right side
  • Hide/display facets
	For local records, can determine the data
	• That appears in display
	• Available for searching
	• Used for filtering
		• Search actions
		• Filter usage
		• Search results actions
		• Devices (web, mobile)

Notes:

Libraries can optimize the user experience in several ways.

Through user interface customization, the library can brand the interface, using their own institution's logos and color themes.

Search options can be customized - for example collections can be grouped various ways for searching. The pre-filters in Advanced search can also be customized - for example, pre-filters can be hidden or added if necessary.

The way the brief and full results can be displayed is customizable as well.

Filters can show either on the left or right side of the screen, and it's possible to show, hide, and re-label these facets

When local data is normalized, it's possible to adjust how the data is transformed. This allows libraries to control the way local data appears in the display, the data that is available for searching, and the data that is used to generate the filters.

Primo Analytics allows the library to see how patrons are searching, how they're using filters and facets, what they're doing with their results, what devices they're using to access Primo, and more.

1.27 Summary

Notes:

In this session, we covered what discover, delivery, and optimization are in Primo, how the library's collections and e-resources are presented, how to understand search results, and how the user experience can be optimized in Primo.

1.28 Additional Resources
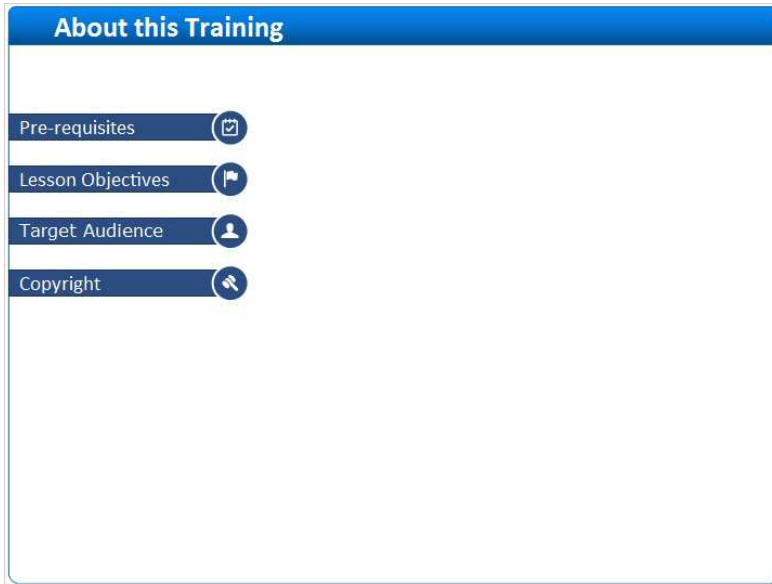
Notes:

Thank you for watching How Primo Works. For more information about Primo, please visit the Knowledge Center.

1.29 About this Training

Notes:

1 (Slide Layer)

2 (Slide Layer)

3 (Slide Layer)

4 (Slide Layer)