THE EVERGREEN PROJECT

LIBRARY SOFTWARE CONFERENCE

RESOURCE SHARING USING GEOLOCATION IN NORTH CAROLINA

4:00 PM – 5:00 PM EASTERN

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>> : Testing audio. Can anyone hear me? Okay. I will hand over the presentation in about a minute and a half. It's right at 4:00 so I will say my thank yous to sponsors and I will make sure whoever is going to share their screen can do that. It's 4:00 Eastern time and on behalf of the Evergreen Conference Committee I would again like to take this opportunity to thank our sponsors. We want to thank the Evergreen Community Development Initiative. They are platform sponsor. We do not hold you responsible for Hopin. And we want to thank Mobius for being our caption sponsor. With that said I will turn it over to Llewellyn Marshall for Resource Sharing using Geolocation in North Carolina. I know with all of the Hopin issues we've been having -- I've got Llewellyn on here, I think you have the option to present. You are on the moderation panel.

Hi, Rogan. We can't hear you. But they can hear me. I've got Llewellyn's slides. I might just go down this path. Llewellyn, if you have that button click on it again. Here is Llewellyn.

>> LLEWELLYN MARSHALL: Let's see if the screen share works. Can everyone see that? Awesome. Is Benjamin on the panel? Let's get started. Hi, everyone. My name is Llewellyn Marshall. I'm an administrator and application developer for the State Library of North Carolina's NC cardinal program. We are so happy to be here virtually at another Evergreen conference. We hope that we will be able to see you all in person at the conference in 2022. This is my second Evergreen conference but this is the first time that I presented here.

Today I will be talking you all about the triumphs and challenges the statewide has had facilitating interlibrary loans and how our process could be improved as our consortium grows to include more and more of our big and beautiful state. There are two parts to my presentation. A logistics focused geographic overview of the areas that cardinal serves and an outline of how the geolocation services and Evergreen could be expanded to improve the whole targeted process for resource sharing. NC cargo is a statewide consortium started in 2011. And incorporates the public libraries 55 of North Carolina's counties. Each year the Cardinal team and our associates Mobius renew counties on board by migrating them from their existing iOS into Evergreen.

Some of the counters already exist within regional library systems such as Sandhill regional or Appalachian regional. The counties from the systems are migrated into the consortium all at once and still maintain their structure and branding. The counties in NC Cardinal represent a wealth of diversity, both in patrons and environments. From a mountainous west to the sun beaches of the East. By the end of 2020 the number effective patrons was approximately 2.2 million people. Using 2019 Census estimate data that meets up to 21 percent of the population of North Carolina has an account in our consortium. While most consortium members are rural or suburban areas our three largest consortium members Buncombe, Forsyth, and Cumberland contain the largest cities. Most of Cardinal's patrons are in the center and Western regions of the state where most of North Carolina's population is concentrated.

After a two-month period systems nearly brought into the consortium begin to exchange material with other libraries across the state. This is a very popular benefit of joining NC Cardinal, especially for small or rural libraries that don't have the same access to materials that larger libraries have. Over time resource sharing has come to represent the majority of all holds placed on our system. Our resource sharing numbers were lower in 2020 because many of our members temporarily shut their doors due to the coronavirus pandemic. Each library system of our consortium has a shipping hub where resource sharing materials are delivered to. This is usually the main branch of the library system but not always. Some municipal libraries share shipping costs with our neighbors. When an interlibrary loan is placed library staff need to go on to our NC Cardinal Lon -- knowledge book to determine which shipping hub belongs to the courier code on their hold transit slip. The state covers the cost of shipping items between library shipping hubs but local governments handle the cost of transit between the shipping hub and the branches. As our consortium now stretches from the westernmost edge of North Carolina to the easternmost edge the new geography of North Carolina has begun to create challenges for resource sharing.

Let's go into a geography lesson to help explain why. At 503 miles across North Carolina is quite a long state. It can take up to nine hours to drive from one end to the other. As you all can probably imagine it saves a lot of time and money when materials ship 100 miles instead of 500. In addition to the length of the state there's a huge elevation difference between the western and of the state and eastern end. I like to imagine the state as a 500-mile ramp. The top of the ramp as the Appalachian Mountains at 6,000 feet and the bottom is the Atlantic Ocean at sea level.

The state is typically divided into four environments, the mountains, the Piedmont Sandhills, the coastal plains, and the Outer Banks. Because Cardinal administers library's in each of these environments we have become well-versed in the challenges that each provides.

Western North Carolina is home to the Appalachian Mountains, sometimes referred to as the eastern Continental divide. Mount Mitchell, located in recently migrated Yancey County is the tallest mountain on the East Coast at 6,684 feet. Buncombe County is our largest consortium member in this region and our largest consortium member overall with 193,000 active patrons. The jagged cliffs, steep slopes, and windy gravel roads can make shipping to this part of the state a lengthy process. On the right you can see that even major roads like interstate 40 have to weave around the hills when using dynamite or tunneling was not possible.

One time on a trip to Nashville I drove on this part of 40 in a massive SUV and struggled to stay between the concrete barrier into the rock wall. Imagine doing that in the huge delivery vehicle. If you get into an accident there's no place to pull over. There also frequent rock slides that can completely cut off regions from one another. For instance, on another trip I did what should have been a two-hour drive from Asheville to Boone turned into a five-hour drive because the highway had a mud slide.

On the left you can see highway 321 leaving Boone. This road is not as wide as I 40 because it's headed east instead of West. What you can instead is a massive grade as you change elevation from the mountains into the Piedmont. It is easy to end up going 80 miles per hour without even touching the gas pedal. Even if you don't want to you can't go slowly because the road is so steep it will ruin your brakes. All along the highway are sandy ramps where runaway trucks can somewhat safely come to a smashing halt.

Here's a little bonus video of a truck using one of these runaway ramps in the Appalachian Mountains. This happened in West Virginia on a road with a seven and half percent grade. You can see that the grade was too much for the truck's brakes and they started to smoke like crazy before the truck veered off into the ramp. This is a good example where no one got hurt. But on the right you can see there are much rougher videos online but I will leave it up to you to find those. I don't even want to think about taking a bookmobile on one of those ramps.

Central North Carolina is divided into two environments. The Northwestern portion is called the Piedmont and features gently sloping hills and the clear mountain. The Piedmont is the most urbanized region of the state containing 8 of the 10 largest cities in NC. This region contains NC Cardinals second most populous member Forsyth County with 177,000 active patrons. Forsyth receives the largest numbers of resource sharing holds. The southeastern portion of the region is called the sandhills, it's a relatively flatter region than the Piedmont featuring pine covered sand dunes with abundant lakes, swamps, and rivers.

Cumberland County, home to vote -- Fort Bragg in the Navy city of Fayetteville is our third largest consortium member with 144,000 active patrons. There seems to be not nearly as many logistical challenges for central NC then at the mountains or coast. Other than traffic jams, derailed trains, and the occasional tornado the gentler slopes and access to ample highways and interstates make center North Carolina the least application area for shipping. But if there any folks from the Piedmont here in the chat I would love to hear if you have any unique resource sharing challenges. We have a break coming up where we can chat.

Eastern North Carolina is called the coastal plain. It is very flat, sandy area dominated by rivers, swamps, bays, and giant lakes. The largest member of our consortium from this region is the newest regional library with 56,000 active patrons. This region is also home to the massive Marine base Camp Lejeune and recently migrated Onslow County. With all of the water in the low ground in this region it's frequently the target of flooding and massive storm systems. During these times even major roads can become inaccessible for weeks.

This is I 40 after hurricane Florence in 2018. Messes like these take months to fully clean up. Some poorer areas still have not recovered. Hurricanes and severe weather are a constant concern for NC during the hurricane season. It is likely that climate change is making hurricane season stronger and longer than ever before. The locals like to live with this by lifting their houses up on stilts and blocks but infrastructure can take much longer to repair and adapt.

When shipping essential items becomes a logistical nightmare you know all David Baldacci books are not going anywhere without a canoe. He said the planes across the intercoastal waterway are 200-mile long string of barrier islands known as the Outer Banks. Although frequently thought of as a vacation destination for the folks of central NC there are populations of people who live on the islands year-round and need access to libraries. Some of these islands are so far away that they cannot be seen from the mainland.

And you can only get to them by boat. One of our libraries in this region Ocracoke community library is almost 30 miles away from the mainlined United States. I more on them next. The NC DOT operates a ferry service to take these vehicles between the mainland and the Outer Banks. The HM regional library has a fellow who takes that ferry out to Ocracoke to the library. It's about a two or three hour long ride. It sounds like a sweet job but it is not always. The sea is a rough mistress and even a small storm can turn a peaceful ferry ride into the boat scene from Willy Wonka.

A while back the Cardinal team played around with a code branch where holdings and the staff client were sorted by physical distance to the patrons home OU. That code has since been included with the Evergreen 3.70. This -- as the crow flies between library. Due to the many mountain islands of North Carolina as the crow flies does not tell the whole story. We are built different; we need as the Cardinal flies distance. The map on the left shows east and there I just described. Even though Bobags is only 55 miles away from Ocracoke Island going up and down the coastline adds another 14 miles. And using the ferry brings the total travel time up to 3 hours and 41 minutes.

In the example on the right driving between Swan and Noah and Fairview public libraries is about three times the distance as the crow flies. Because of the 4200-foot tall mountain between the two. This concludes the geography portion of our presentation. I will stop bombarding you all with maps and scenic photos, I promise. Before we go on to the technical side of our presentation I would like to take a few moments to open the floor to you for questions or comments. I see there's a bunch of activity in the chat.

>> : So far we've had questions about how long libraries swayed before they start to resource share and they have up to two months for that. The other question was about how many days a week does UPS pick up and it's basically up to the libraries. We have a state contract that we do with UPS so it really depends on the volume. If there's a lot of traffic then they can choose to have five pickups a week.

Other questions, your pals in PA Appalachia fully respect the fact that every traveler requires crossing the mountains and rivers just to get groceries. Other questions?

>> LLEWELLYN MARSHALL: I have a few questions for the chat. I'm curious to hear if you all had any logistical problems when it comes to geography or climate where you are at. Barb says 30 inches of snow in a night. I don't think I've seen 30 inches of snow my whole life put together. I'm getting a lot of snow. That is not too big of a concert in North Carolina except in parts of the mountains that are really high elevation they get snow pretty frequently in the fall and winter. Islands libraries in the far north require the use of ferrys, wind slides and ice words. I never thought of an ice road for logistical purposes for libraries. That is cool. Is that in Canada? Or Alaska, maybe?

We use one big shipping hub for 13 libraries. How often do you all read target holds because the pickup libraries too far away? We have a never. Read target happens more because of lack of open hours. That makes sense. I am sure especially due to COVID there has been a lot of changes in what hours people are open. Let's move onto the second part of the presentation.

Although Evergreen 3.7 includes the code for sorting holdings by geographic distance the hold target or is not taking any of these issues I have been talking about into consideration when looking for a target copy to fulfill a hopeful MARC. Instead target properties are [indiscernible by captioner] and proximity has nothing to do with miles or feet. It represents the difference in the organ achieved between two libraries. Target copies at the pickup library will have a proximity of 0 and copies at the pickup labor Sibley's will have a proximity of 1. Copies from another system within the Consortium have a proximity of three or greater. For each level of proximity that the whole target or is looking through they have randomly choose a copy to look at.

If the targeter runs a process that determines whether the copy can be held and during this process it finds the whole policy that should apply. This whole policy could event copies from being selected if the proximity is too high. If that copy looks good to place a hold on the process is finished and the hold will target that copy. While this works great for selecting local holds with the size of our consortium and the physical distance between libraries selecting target copies randomly has a high chance of picking one that could be an issue to ship.

We are aware that using proximity adjustment could be a way to simulate his distance with over 160 libraries entering into proximity adjustments between all of them would be a huge undertaking. And this process only gets more difficult as we add more libraries. Such a long and tedious process is a great candidate for automation. We believe that focusing the community's attention on improving the library holds targeting could help to save money, save fuel, and scale Evergreen up for large consortiums like ours or even larger.

So we began thinking of ways that our shipping process could be represented in the source code of Evergreen. We have been working on a proof of concept code branch off of Cardinal's current version of Evergreen 354. Our branch introduces geolocation features to the core source code. Just like the holding sort feature use the database to store longitude and latitude for it library addresses. With our branch does different is to represent our concept of the shipping hub and to store the physical distance between each hub.

Because the term proximity was already used in the system we chose to use the word vicinity to represent these physical distances. Inside the vicinity calculator these three values can be calculated by an external application programming interface, API, or entered in manually using new angular interfaces that we have created. These values are used to create the vicinity matrix inside of the whole target to her. Similar to the proximity matrix this new data structure contains the physical distance between the pickup library and the shipping hub of each of the target copies sort clips.

The API uses driving directions for these calculations to get the most accurate representation of how long it could take to deliver. This information is used to sort the target copy array so that material that is physically closer to the pickup library will be chosen before those that are farther away. The first thing we had to do was set up a connection to a geolocation API. We chose to use being because it was free, easy to use with Perl, and the state library pretty much uses Microsoft everything already. Once the account was set up we registered our application with me to get her API key.

There are different types of application available and make sure you don't do what I did and choose an application type that limits how many times you can use it. With all due testing I was doing I managed to exceed that limit pretty quickly. The application I had selected wasn't duff tests which let you shoot an unlimited times a day until you hit a fixed limit and then you cannot use that key anymore. The second one I ended up setting up was the basic Windows application type. You can use that one on limited amounts of times a day but ate unlimited amount of times per key. We set up the vicinity calculator in the OpenSRF XML config file. This is where I put my API came from Bing maps.

This is something that the holding sort in 37 does a lot better. I really prefer having geolocation sources are abstracted and represented in the database this works all right for a proof of concept. From the org unit editor we can set the shipping hub org unit to be any other org unit regardless of library system. We did this because, as mentioned earlier, some municipal libraries shared the shipping hub with neighboring library systems. Each shipping hub much have the longitude and latitude set up on their mailing addresses so that the API can calculate driving rats between them.

The new interface allows the admin to manually enter the coordinates of an org unit or use the API to retrieve that information using the mailing address. Once that information has been entered patrons can see a map of the area and open a link to get directions to the library. If you have used these features and 37 they should look very familiar. Here is the map. Just like the proximity table works active org unit is a database template that sort of physical distance between organist. This angular interface we can view and modify the distances.

Using the calculate button we can use Bing maps to automatically calculate the distances using driving directions. Clicking the calculate button will clear out the entire table before entering and values from the API. Now that we have gone if the changes to the database let's talk about the changes we have made to the Perl code. The hold targeter will function as normal for the first two levels of proximity. These are typically the pickup library entity pickup library system. This is because we assumed that the org units at these levels will be using the same shipping hub as the pickup library.

For that reason we also chose not to include vicinity in the action hold copy map. Because we were worried that there would be additional overhead for local holes. Once it's determined that there no copies available locally the hold targeter will calculate a vicinity matrix for each copy at each level proximity above two. As mentioned earlier, the vicinity matrix is a hatch containing the physical distance between the pickup librarian each unique shipping hub entity target copy array.

The hold targeting wills sort the potential copy so that the closest to the pickup library are brought to the top of the queue. The team had set up two ways to test and track these new features that we have been working on. I never branch we have updated the concerto database so that the standard org units have longitude, latitude, and real mailing addresses. We created an automated test that places a hold and uses the shipping hub distance table to find out which copy has the shortest distance to the pickup library.

And ensures that the copy that is chosen has the shortest distance. We have also been working on several functions and a table to monitor our holds at NC Cardinal, making it pretty complex to understand. We create a hold on a table that records extra information about holds in a static audit Table 1. The audit includes the hold matrix match point, the proximity of the target copy, the minimum proximity of all eligible copies, and the number of eligible copies. These data points are captured in the extra stable whenever a hold is updated. We need to record this information at the moment a hold is updated because the hold match points and eligible country -- copies are in constant flux as people across the state use the system. With these new geolocation features the target and minimum physical distance could be recorded in the audit as well.

So we can verify that the nurse copies are being selected. One of the functions we have cooked up to debug colds lets us see each hold policy that matched to the hold and why. When there is more than one hold policy to match using a calculation that runs behind the scenes to give them a score. Each category of the score matches up with a part of the hold. Like if the hold policy says it applies to Farmville Library. Target from Farmville library will have a higher score in that category.

The policy with the highest score gets picked and that determines whether a copy can be held or not. All you have to do is put a hold IDM and the function does the rest. There are a few additional concerts to think about with resource sharing. We are hoping that Evergreen community can help us come up with something for these problems. At the top of the list is ZIP Code surcharges. Shipping surcharges are applied by UPS when delivering to ZIP Codes that are less accessible or below population.

We would like to include this information into the hold target her but are unsure of how to represent that information or keep it up to date efficiently. Due to the variables that play such as the cost of fuel, efficiency of delivery for couples, and the condition of the road, it could be hard to decide whether to eat the cost of the surcharge or to ship a further distance. One idea we have had was to tack on an additional number of miles to each shipping hub distance if the surcharge was applied.

But we did not like the idea of just storing the data done that comes out of the API nor would it be realistic to have this be a fixed number given the variables I just mentioned. Earlier in the presentation I talked about how weather events and mudslides could cut off access to vital highways. Modern map sources have gotten pretty good at recalculating routes to avoid highway closures. However, it really should Evergreen recalculate driving us to ensure that materials avoiding problem areas? Should that frequency be increased during hurricane season? Another concern is the use of other geolocation services. Currently, our proof of concept is only compatible with being maps because it is free and easy to use with Perl but next we will base our code with the latest version of Evergreen and use the geolocation services classes and clues to expand their toes and make the futures more scalable.

Surely this will be released on collaboration branch. Another problem that could come up is that a library system that is easily accessible and has a large inventory of books like Winston-Salem could get repeatedly targeted for holds by its smaller neighbors anyway that could pay let it burden on them. If they were to be target the hold it should target the next closest copy available but if that library also retargets the hold would be back on Winston-Salem again? Right now the randomness of the hold targeter could help to prevent a system from being too responsible for holds. How can we replicate that kind of behavior following our modifications to the hold targeter?

Lastly, we thought about the potential for including a new parameter on hold policies similar to the transit range that could prevent materials from traveling more than a certain number of miles away. This could be helpful for gradual materials or for kits. Are there any other ways we can introduce the concept of vicinity to hold policies? That is all we have for you today. Now we would like to turn it over to the audience for any questions, comments, or concerns. I'd been seeing lots of stuff come up the chat.

>> : One of the questions, Scott Peterson was posing was does the system account for processing time at the library as opposed to how long it's with UPS? I thought that might be something you may want to comment on. I said the system is looking primarily at the truck shipping distance rather than timed specifically.

>> LLEWELLYN MARSHALL: It's only looking at distance right now but I have thought about what if it was based more on time because then it would help solve the whole fairy problem where it takes hours wait for a fairy and that might be useful to know going into placing a hold.

>> : One of the queries I read at the beginning of this process was looking at the average shipping time between any two branches in the system. So sometimes the branch maybe a hub to hub so it's rather quick and other times it may be this branch getting to its hub and that had to that hub and that had to that branch and the longest is 14 on average from a certain branch to branch and other is as short as two days. But in general, whenever you're looking at time or so just the distance.

>> : Scott also asked a question about how libraries track the individual items in a shipment. So some libraries use spreadsheets to track those individual items that they are sending. There have occasionally been situations where a box gets wet or damaged in transit so that helps them fill the claim with UPS.

>> : I think it is Forsyth you created a nice form that they use to record the tracking number from the tracking label as well as the barcodes. They have a Google form where they track all of that stuff.

>> : Jennifer, I think, was part of the development.

>> : Jennifer Weston?

>> : Yes. And [indiscernible by captioner].

>> LLEWELLYN MARSHALL: I like [indiscernible by captioner]'s idea in the chat. Using hold transit data to inform the hold targeter. That is a cool idea. You've got to get some bad holds first.

>> : Scott is asking has your real-world experience matched up with the shipping time predictions and do you have a quality control to make sure times stay correct? I would say we don't really have predictions in the sense of it is more of what is normal rather than what we expect it to be. The thing that Llewellyn was showing about the table where it is tracking the life, the history of an individual hold request, if for instance it's targeted to a certain item and targeted to another item and targeted to another item that is really more what we have what can be a quality control thing to see for instance certain places just aren't filling holds. Llewellyn, other thoughts on that?

>> LLEWELLYN MARSHALL: I'm not really sure. You are more in charge of the resource sharing stuff. Once you handed over to UPS do they give you the tracking number that you can go and check on it later?

>> : We can go into the system and do that. We really have not had a need to do that. It's more if something gets lost. Which we have had very few instances of damaged books or that sort of thing. So we generally are not watching the tracking numbers. We are just jumping in when there is a problem. And then we do some statistics on the tail end to see how long did it take between the time where the hold was captured and the time where it was checked in on the check in shelf. But other than that, we are not actively monitoring the UPS traffic.

>> : Robert posted that they did have a box disappear and the damage was capped at $100 if there wasn't a price included in the original shipment.

>> : And we had chosen not to do additional insurance because that would significantly increase the cost of this so that is one of the potential risks. [indiscernible by captioner] the aggregate average transit time for hold filling transits. That seems like a good measure of efficiency. Do you mean this new software? Or this new development work? I guess we don't know yet.

>> LLEWELLYN MARSHALL: This is just a proof of concept right now. But it is something that we are looking at getting into the latest version of Evergreen that we would use once that is available.

>> : But Mike, to your point and to Scott that is one of the things that as we turn this on for us and look at the impact of it that is where we want to see what is the real impact of this and how do we need to configure our hold policies and that is basically our big project in the coming year is just looking at our hold configurations from top to bottom including this sort of thing and then of course run the stats and see how long this will take and how much improvements and how do we tweak it and all of that kind of fun stuff.

>> : I can say am personally very excited to incorporate some of the things that was in your presentation yesterday, Mike.

>> : And Llewellyn, we've had several thoughts for you to do a follow-up session next year.

>> LLEWELLYN MARSHALL: For sure.

>> : There is no way to bend the routes around UPS hubs, is there? I am not sure if I understand that. Is that a hair bender reference? Robert, I don't know if you want to clarify what your question is.

>> LLEWELLYN MARSHALL: I'm interested in what Diane is talking about did you do proximity adjustment between your branches? How may branches do you have?

>> : I think Robert is talking about UPS warehouse type hubs. Not our hubs. That makes sense.

>> : John is suggesting what you have enough data I wonder if it would be possible to write a script or something so much attract the average transit time between branches and then have that update the proximity adjustment between branches automatically it would then theoretically get more accurate the more it is used. It sound like artificial intelligence to me.

>> LLEWELLYN MARSHALL: That a sort of like what Blake was just talking about, too.

>> : Mike is saying MBC has modeled shipping hubs using proximity adjustments.

>> LLEWELLYN MARSHALL: How sustainable do you all think that is? Isn't something that is hard to keep updated?

>> : To Donna's suggestion that they have had success with a second check in process. Yeah, I think it is a good idea and it is something we recommend two libraries that they check in before items are sent out from a hub. And also before items -- as items are received at the hub just to make sure they are still destined to go to their end branch. So a few more check ins are always helpful.

>> : Recently we had a ticket where someone was asking about why something was available for hold and the patron got notified but then it wasn't on the shelf yet and what had happened was the item was checked in, they read the spine label, and send it to that library when it should have held at that local library. It went there and bounced back the next day [ poor audio ] Scott is asking what hasn't worked or proven to be a problem. Scott, are you referring to Diane's things with proximity adjustments? Or to the work that Llewellyn has been doing?

>> LLEWELLYN MARSHALL: If that is a question about the code I have been working on one thing that throws a wrench in things as how the mailing addresses formatted. I don't know if this is a problem with being maps and it's not something that you get if you use Google but frequently it will pick something that is totally wrong and you don't truly know until you go to that contact page I showed in the demo and see this is in a totally different state. But sometimes if it's 2 Broadway Street it's like Broadway, New York, right, when it's really Broadway in Durham, North Carolina or something.

>> : Tarran has a question about how we are physically delivering. I can answer that one. Essentially, the state library through our state library contract pays for the distribution between the 34 hubs throughout the system. So each library system has a hub so that can be Santo regional library which has 18 different entities organizational units, five different counties, that is one library system, and it has one have. Then we have places like Mooney Memorial Library in Kings Mountain, it's a municipal Libra, single library, single branch, it is a hub. So basically we will pay for the shipping tween those two entities and Sandhill, for instance, have to have a courier that will run between its branches and drop off materials that are coming from other library systems and collect materials that have been picked up for picking off the shelf and brought to the hub, shelved up, and put into boxes for UPS. UPS comes and takes those off to the other hubs where rinse and repeat.

So essentially, it is we have a limited number of points rather than a courier system where it is doing the route and it's working all over the place. You're saying similar to your courier that runs from system headquarters. So that is one of the impacts. When new library system joints, especially if it's a regional system it is going to take more work and that is part of the sharing aspect of it.

>> LLEWELLYN MARSHALL: I think we are just about at time, aren't we?

>> : Nice work, Llewellyn. That was awesome.

>> LLEWELLYN MARSHALL: Thank you. I hope you all like my David Baldacci jokes.

>> : This is wonderful. I'm a North Carolina girl, too, so this is that been a lot of fun for me. Thank you. Excellent. Very well done.

>> LLEWELLYN MARSHALL: Thank you. Goodbye, everybody.

[ end of meeting ]