

100% Digital Learning Resources



This is a sanitized version in which names have been replaced and most technical details have been removed. Please note that this document would typically be paired with more technical breakdowns of each requirement. This document is meant to serve as a blueprint for functional testing and a starting point for design efforts.

Description

The 100% Digital Learning Resources Initiative is a proposal to provide Course Digital Materials (CDM) to all students at our institutions. To do this, we will build upon the existing <XTEL> CDM infrastructure to provide digital materials through additional platforms using <BOOKSTORE> as an intermediary.

Initially, it was believed we only needed to update our API with the <BOOKSTORE>-provided parameters. However, under deeper analysis it was found that our approach to course versioning, data management, and order uploads needed to change to accommodate the new API and our new requirements. Since this will require a significant change to the existing system (and to support other architectural efforts), it has been decided to consolidate the processes relating to <BOOKSTORE> Integrations under the umbrella of the 'Learning Resource Management System'.

At a high-level, we will:

- Consolidate processes for better integration and support
- Migrate to <BOOKSTORE>'s JSON API
- Update Course Builds/Parameters to support existing 'Special Populations' as well as the new Pilot CDM functionality
- Add Drops/Restarts to Process
- Add Actual/Projected Enrollment Reporting for Improved Purchasing
- Automate Course Build Sync w/ <SIS> Discrepancy Reports
- Ensure Solution is Stable and Easily Supported

Background

This initiative builds on the <XTEL> CDM infrastructure that provides immediate online access to our proprietary textbooks. <XTEL>'s 140 CDMs are used in the most highly enrolled courses and represent 70% of all course enrollments at XX and 10% at XX. While <XTEL> has and continues to be successful in providing tailored content to the institutional needs, there are over 600 courses that do not currently utilize CDM or have <XTEL>-published materials available.

The goal of this initiative is to incorporate a CDM fee in these 600+ remaining courses from both institutions and deliver all course materials to students through the online classroom. This will be accomplished by completing master pricing agreements with external publishers at deeply-discounted rates and automatically delivering course materials to students through a CDM fee via LTI Integration.

Students would benefit from immediate access to their materials at a reduced price, and the institution benefits from a revenue boost due to the difference between the fee amount and the reduced-resource cost. We estimate that if fully implemented at current enrollments the net profit would be \$2.5 million annually.

In assessing the PILOT Project, it was determined that the current Order Upload Web Service integration for both XX and the XX should be updated to reflect changes in both the client-side business requirements driving the integration and to incorporate changes which have been made to the OPENVUE® platform since the integration was first implemented some time ago. This includes a migration from an older PHP/XML Web Service to <BOOKSTORE>'s newer .NET/JSON Web Services, including the business-logic transition from 'Promotion Codes' to 'Validation Rules'.

This initiative will not replace <XTEL>, but will build on the CDM infrastructure by providing additional digital materials for courses where enrollments are not high enough to justify the <XTEL> investment (or where external content is our desired solution). Importing publisher content into the <XTEL> platform or using other eBook platforms, such as VitalSource, will expedite the move towards a 100% digital solution.

Goals

General Goals

- Provide the *ability* to migrate 100% of our courses to the CDM Model
- Be capable of automatically provisioning required digital materials from <XTEL> AND <BOOKSTORE>-Integrated Providers

Student Goals

- In CDM Courses, eBooks are automatically provisioned and accessible through the LMS with no intermediary action required
- Returns are automatically initiated when applicable
- Special Student Populations have their cart automatically loaded with the correct configuration and discounts
- Core Student Population has their Cart Loaded at Full Cost

Faculty Goals

- No delay or accommodations in class due to Students missing materials. Students have their required reference materials on time, every time.

Staff Goals

- Eliminate need to manage Custom Course Versions for Special Populations
- Easy to Migrate Courses to CDM Model
- Order Upload errors/exceptions are rare, but easily diagnosed and fixed
- Automated processes ensure that data between <BOOKSTORE>, LRMS, SharePoint, and <SIS> are kept in sync
- Automated Discrepancy Reports are generated wherever automated processes cannot be implemented
- Can Provide Projected and Actual Enrollment Reports to <BOOKSTORE> for Intelligent Purchasing

BTS Goals

- Processes require zero oversight from technical teams on a day-to-day basis
- Processes are easy to debug and support
- Proper documentation and Support SOPs are in place so that the process can maintain a high level of support in the future
- The addition of other special populations require minimal coding effort
- Process is easily configurable (credentials, connection strings, API endpoints)
- Major Exceptions or Process failures are reported and handled by the proper teams before needing to involve developers
- Processes are designed to accommodate known potential future requirements

Assumptions

- Content changes will be updated in <SIS> in a timely fashion
- Content will be established 3 weeks prior to class start

Requirements

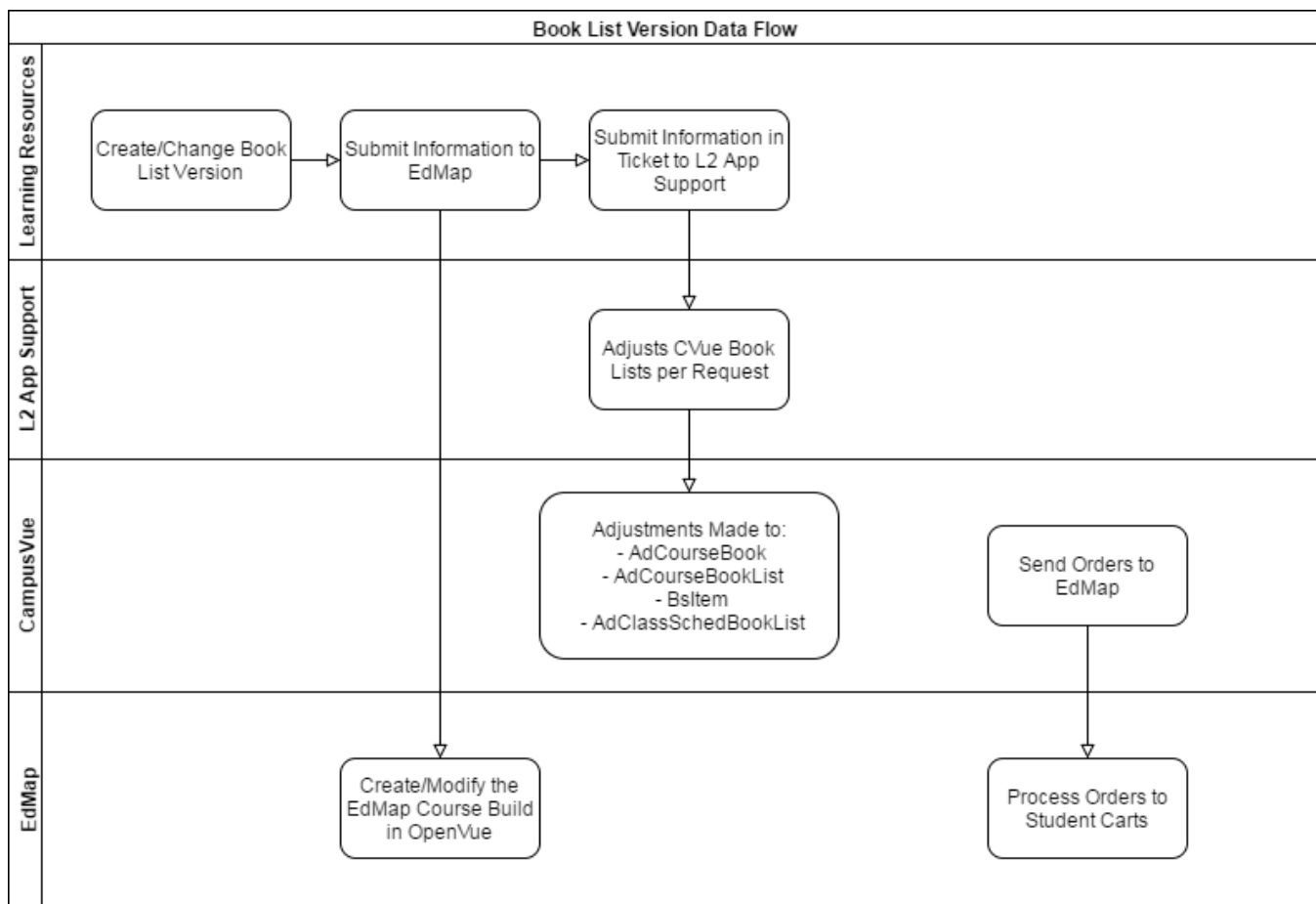
	Actor	Title	User Story	High-Level Test Process	Notes
1	Student	PILOT eBooks (CDM-TPV)	As a Student Enrolled in a PILOT Course, all required TPV eBooks will be made available through my LMS classroom automatically with no intermediate action required so that I can ensure I always have my materials on-time	<ul style="list-style-type: none"> • Enroll Student in Pilot (CDM-TPV) Course • Run Process • Verify Access 	<ul style="list-style-type: none"> • 21 Days Before Start • Use Tuition Inclusive API Option • Assumes CDM Fees are Pre-Configured in <SIS> • To validate, the student may require access to the classroom which run off different access dates than course provisioning (may only need to match <XTEL>)
2	Student	<XTEL> eBooks (CDM-BPI)	As a Student Enrolled in a <XTEL> Course, all required <XTEL> eBooks will be made available through my LMS classroom automatically with no intermediate action required so that I can ensure I always have my materials on-time	<ul style="list-style-type: none"> • Enroll Student in Pilot (CDM-BPI) Course • Run Process • Verify Access <p>This requires the <XTEL> Process to Run</p>	<ul style="list-style-type: none"> • The <XTEL> Access is handled by a different process that should ideally be looped into this larger LRMS process • This particular user story is referencing the NON-INV (\$0.00) item that is used as a placeholder in <BOOKSTORE>. It includes a note that says the book is available via their LMS since it isn't provisioned by <BOOKSTORE>. • They're getting this for 'free' because they already paid the CDM
3	Student	PEREGRINE-AutoLead-Free *NOT GOING TO IMPLEMENT-SPECIFIC PEREGRINE-SELECTION AT THIS TIME	As a Student that is entitled to 'Required Items Free' and enrolled in a course that requires a Peregrine Exam, I will automatically have the correct Peregrine Exam for my Program loaded into my cart for validation at no cost to myself	<ul style="list-style-type: none"> • Enroll 2 Book Grant-Students from 2 Different Programs in Same Course that Requires Peregrines • Run Process • Verify each student has correct Peregrine added for free 	<ul style="list-style-type: none"> • GENMIL, GENCORP, PRINTCORP, FWDML • Ensure we can easily map Program Exam
4	Student	PEREGRINE-AutoLead *NOT GOING TO IMPLEMENT-SPECIFIC PEREGRINE-SELECTION AT THIS TIME	As a Student that is NOT entitled to 'Required Items Free' and enrolled in a course that requires a Peregrine Exam, I will automatically have the correct Peregrine Exam for my Program loaded into my cart for validation at full cost to myself	<ul style="list-style-type: none"> • Enroll 2 Students that do not receive a Book Grant from 2 Different Programs in Same Course that Requires Peregrines • Run Process • Verify each student has correct Peregrine added at full cost 	

5	Student	GENMIL /GENCORG - Other Items	As a Student in the GENMIL or GENCORG Populations AND Enrolled in a Course with Required 'Other Items', I will automatically have the required items loaded into my cart for validation at no cost to myself or have the option to purchase their alternates discounted by the price of the required item	<ul style="list-style-type: none"> Enroll GENMIL and GENCORG Students in Course with Required 'Other Items' (all scenarios) Run Process Verify Required 'Other Items' are in cart free, with the option for alternates discounted by the price of the required item 	<ul style="list-style-type: none"> 'Other Items' does NOT include: <ul style="list-style-type: none"> Required <XTEL> eBooks Required Peregrine Exams Required TPV eBooks in PILOT Courses 'Other Items' does include: <ul style="list-style-type: none"> Required TPV eBooks in Non-PILOT Courses Required Print Items Required eScience Kits Required Webcams Required Anything Else Not Excluded in the List Above
6	Student	PRINTCORP /FWDML - Other Items	As a Student in the PRINTCORP or FWDML Populations AND Enrolled in a Course with Required 'Other Items', I will automatically have the required items loaded into my cart for validation at no cost to myself without the option to purchase alternates	<ul style="list-style-type: none"> Enroll PRINTCORP and FWDML Students in Course with Required 'Other Items' (all scenarios) Run Process Verify Required 'Other Items' are in cart free without the option for alternates 	<ul style="list-style-type: none"> 'Other Items' does NOT include: <ul style="list-style-type: none"> Required <XTEL> eBooks Required Peregrine Exams Required TPV eBooks in PILOT Courses 'Other Items' does include: <ul style="list-style-type: none"> Required TPV eBooks in Non-PILOT Courses Required Print Items Required eScience Kits Required Webcams Required Anything Else Not Excluded in the List Above
7	Student	PRINT EXCEPTIONS	As a Student in the FWDML or PRINTCORP or STUACWELL Populations AND Enrolled in a Course with Required eBooks of any type, I will automatically have the Print Alternates to those eBooks loaded into my cart for validation at no cost to myself	<ul style="list-style-type: none"> Enroll PRINTCORP and FWDML and STUACWELL Students in Course with Required eBooks w/ Print Alternates Run Process Verify Print Alternates in cart free 	<ul style="list-style-type: none"> Will there be an instance of required TPV content that is not covered by the CDM Fees? or Will we need to accomodate for courses where the student doesn't necessarily get the eBook free but DOES get the print alternate? (would they in that case?) Confirm <XTEL> AND <BOOKSTORE> eBooks Alternates
8	Student	STUDENTPAY - Other Items	As a Student Enrolled in a Course with Required 'Other Items' and NOT entitled to 'Required Items Free', those materials will be added to my cart for validation at full cost to myself, with choice of alternates at no discount	<ul style="list-style-type: none"> Enroll a Non-Book Grant Student in Course with Required 'Other Items' (all scenarios) Run Process Verify Required 'Other Items' are in cart at full cost with the option for alternates at full cost Need to verify if we include NON-INV CDM items in this legie (Technically not an 'other item')...create separate user story? 	<ul style="list-style-type: none"> 'Other Items' does NOT include: <ul style="list-style-type: none"> Required <XTEL> eBooks Required Peregrine Exams Required TPV eBooks in PILOT Courses 'Other Items' does include: <ul style="list-style-type: none"> Required TPV eBooks in Non-PILOT Courses Required Print Items Required eScience Kits Required Webcams Required Anything Else Not Excluded in the List Above <p>Do we want to include Non-Inv CDM items (to give students choice of CDM print alternate?)</p>
9	Student	DROPS - RETURN	As a Student that has purchased materials and subsequently unregistered on or before the 14th day after a class started, the Book Return Process will be initiated automatically when applicable to save me time	<ul style="list-style-type: none"> Enroll Student in Class Run Process Unregister Student Run Process Verify Drop Record Sent <ul style="list-style-type: none"> We may not be able to test the return functionality. I believe it will require an actual book purchase (though I have seen a return label e-mail...) 	<ul style="list-style-type: none"> Also triggered by Rescheduling (therefore unregistering from the current course) Reschedules work in tandem with the RESTARTS use case It is possible that a student can reschedule after purchasing materials which would then trigger the refund process...and then need to purchase again later (or know not to if they don't return?)
10	Student	DROPS - CART	As a Student that has pending items in their cart and subsequently unregistered on or before the 14th day after a class started, the pending items will be removed from my cart automatically to prevent confusion and accidental purchase of unnecessary items	<ul style="list-style-type: none"> Enroll Student in Class Run Process Verify Cart Contents Unregister Student Run Process Verify Empty Cart <p>May be worth enrolling student in 2 classes and only unregistering from 1 to verify the other course contents remain</p>	

11	Student	RESTARTS	As a Student that is Rescheduling or Retaking a Class, the Order Uploads for that Course will be sent to <BOOKSTORE>	<ul style="list-style-type: none"> Enroll Student in Class Run Process Verify Cart Contents Reschedule Student for Following Term Run Process Verify Cart Contents <ul style="list-style-type: none"> Cart Contents would be the same, but should be new emails and records in the logs. If we can access the metadata in the upload it will represent the updated class Could manually clear the cart after the first verification to prove that it is reloaded 	<ul style="list-style-type: none"> The previous process would only send a specific course version once, so if the student rescheduled or retook the class... the books wouldn't resend. In this case, we are going to send the content for each course each attempt
12	Student	STUDENT NOTIFICATION	As a Student that has had <BOOKSTORE> Materials Successfully Ordered on my behalf, I receive an automated e-mail based upon my Student Population Group	<ul style="list-style-type: none"> Enroll Student from Each Group in Class Run Process Verify Activity 	<p>WHEN 'AWPRT' THEN 1848 --AW - Print Materials Authorization Follow-Up WHEN 'MILPRT' THEN 1851 --28 AA-Approved for Print Materials WHEN 'CORPRT' THEN 1851 --28 AA-Approved for Print Materials WHEN 'MILGEN' THEN 1858 --38 FA-Military Eligible for <BOOKSTORE> Course Materials WHEN 'CORPGEN' THEN 3160 --38 FA-Corporate Eligible for <BOOKSTORE> Course Materials WHEN 'UORAWPRT' THEN 3148 --AW - Print Materials Confirmation (UOR) WHEN 'UORMILPRT' THEN 3152 --28 AA-Approved for Print Material (UOR)</p> <ul style="list-style-type: none"> Failed = No Activity
13	LR	PEREGRINE-Management	As a LR Specialist, I can manage the mappings of Programs to Peregrine Exams	<ul style="list-style-type: none"> Enroll Student in Course that Requires Peregrine Run Process Change Mapping of Program to Peregrine Enroll Different Student in Same Course Run Process Verify Different Peregrine 	<ul style="list-style-type: none"> Ensure we can easily map Program Exam Create SP List for Business to Manage Mappings and Sync to DB Before Process Run
14	LR	PILOT-Management	As a LR Specialist, I can easily designate a Course as PILOT-Ready so that the Order Upload routine can send the correct upload parameters	<ul style="list-style-type: none"> Enroll Student in Non-Pilot-TPV Course Run Process Verify Order Upload for TPV-Book Mark Course as Pilot-Ready in SP List Enroll Student Run Process Verify Tuition Inclusive-eBook Order <ul style="list-style-type: none"> Might not have valid Dev/QA-SP Environment Need to verify if changes in Pilot designation will affect existing live records (it shouldn't) 	<ul style="list-style-type: none"> Potentially use SharePoint List to Designate Is Course/Start Date enough, or specific Course Version?
15	LR	PROJECTED ENROLLMENT REPORT	As A LR Specialist, I receive a weekly report via e-mail that contains course enrollment numbers for courses starting 4-10 weeks from the report date	<p>Report Validation</p> <ul style="list-style-type: none"> Run <SIS> Report Run SSRS Report Verify Data <p>e-Mail Validation (If needed)</p> <ul style="list-style-type: none"> Adjust Schedule and Recipient List in SSRS Verify Report Received (contents may be contingent on run-date) 	

16	LR	ACTUAL ENROLLMENT REPORT	As a LR Specialist, I receive a weekly report via e-mail that contains course enrollment numbers for courses starting 2 weeks from the report date	Report Validation <ul style="list-style-type: none"> • Run <SIS> Report • Run SSRS Report • Verify Data e-Mail Validation (If needed) <ul style="list-style-type: none"> • Adjust Schedule and Recipient List in SSRS • Verify Report Received (contents may be contingent on run-date) 	
17	LR	LR - Course Content Discrepancy Report	As LR, I receive a daily report via e-mail that contains a breakdown of discrepancies between <BOOKSTORE> Course Content and <SIS> Book List Versions so that I can quickly address them and limit data-related upload exceptions	<ul style="list-style-type: none"> • Change <BOOKSTORE> Build • Run Process • View Report 	<ul style="list-style-type: none"> • SSRS or from Process?
18	LR	LR - Order Upload Report	As LR, I can view the Order Upload Transmissions in a Report so that I can diagnose content provision problems and provide audit data without requiring BTS support	<ul style="list-style-type: none"> • Run Process • View Report 	
19	LR	LR - Order Upload Report Email	As LR, I receive a daily e-mail of Order Upload Exceptions so that they can be quickly remediated	<ul style="list-style-type: none"> • Run Process • View Email 	<ul style="list-style-type: none"> • Also handy for SIS, but may also be noise • SSRS or from Process?
20	BTS	BTS - LRMS Variables	As BTS, I can modify LRMS Variables such as Connection Strings and API Endpoints without a code change so that small adjustments don't have to go through the typical change process	<ul style="list-style-type: none"> • A review of the Environment Variables vs the Planned Configurable Values should be sufficient 	<ul style="list-style-type: none"> • Currently, use SSIS Environment Variables • LRMS Connection String • Records per Transmission • Endpoint URL • API Username • API Password • Time Between Staging Interval (Might not be configurable)
21	BTS	BTS - Process Logs	As BTS, I can view process logs from the LRMS so that I can easily debug any issues	<ul style="list-style-type: none"> • Run Process • View Logs 	
22	BTS	BTS - On-Call Alert	As BTS On-Call, I receive an alert if the LRMS encounters a process failure so that I can quickly address it and minimize impact	<ul style="list-style-type: none"> • Force Failure • View Email Alert 	
23	BTS	BTS - On-Call SOP	As BTS On-Call, I can view a detailed SOP in the event there is a process failure so that I can easily remediate it without the involvement of other teams	Verify that document exists and would be helpful in event of expected failures	
24	BTS	BTS - Documentation	As BTS, I can view documentation detailing the current state of the LRMS so that I can maintain a high level of support without having prior experience with the system	Have someone unfamiliar with process review and verify it would be sufficient context.	

User Interaction (High-Level)



Risks

	Risk	Mitigation
1	Many moving parts that require coordination of multiple groups within the organization.	Careful planning, build institutional support, and provide continual communication
2	Pricing concerns, the textbook price is occasionally lower than fixed CDM fee	CDM is defined in catalog as an all-inclusive course fee and isn't meant to only apply to the textbook cost.
3	Student expectations: full <XTEL> features (PDF, audio) not available with external publisher content	Clear messaging, negotiate with publishers to allow <XTEL> team to enhance textbook.
4	Time and resource constraints	Set realistic expectations, work closely with teams
5	Content Sync between <BOOKSTORE> and <SIS> don't always match and produce logical errors	Create <BOOKSTORE> <SIS> Discrepancy Reports

Glossary

Term	Summary
Pilot Course	<p>A Pilot Course has an associated CDM/MAT Fee and contains a Required TPV eBook. In this model, the student will pay the fee with their tuition and we will purchase and deliver the eBook on their behalf. It is essentially the same as a CDM Course, except that the eBook is delivered as a 'Tuition Inclusive' item through <BOOKSTORE> instead of through <XTEL>.</p> <p>To be a 'Pilot Course', the course must contain a required TPV eBook AND be identified as a Pilot Course by LR (potentially through a SP List).</p>
TPV	Third Party Vendor - Used in the <SIS> Publisher field to denote eBooks from Non-<XTEL> Providers.
BPI	In this context, BPI is used in the <SIS> Publisher field to denote <XTEL> eBooks

CDM Course	Course Digital Materials, sometimes (incorrectly) referenced as <XTEL> Digital Materials. Previously, this referenced <XTEL> Courses, but will now apply to any course where required eBooks are provided through a CDM Fee
<XTEL> Course	Any Course with a Required <XTEL> eBook (and associated CDM fee?)
LRMS	Learning Resource Management System - Name for the Application that Consolidates the various integrations between LR, <SIS>, and <BOOKSTORE>. (and potentially <XTEL>)